

Construction & Demolition Site Stormwater Compliance

Presentation for CALBIG
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*on behalf of SMCWPPP (the San Mateo Countywide
Water Pollution Prevention Program)*

Outline of Presentation

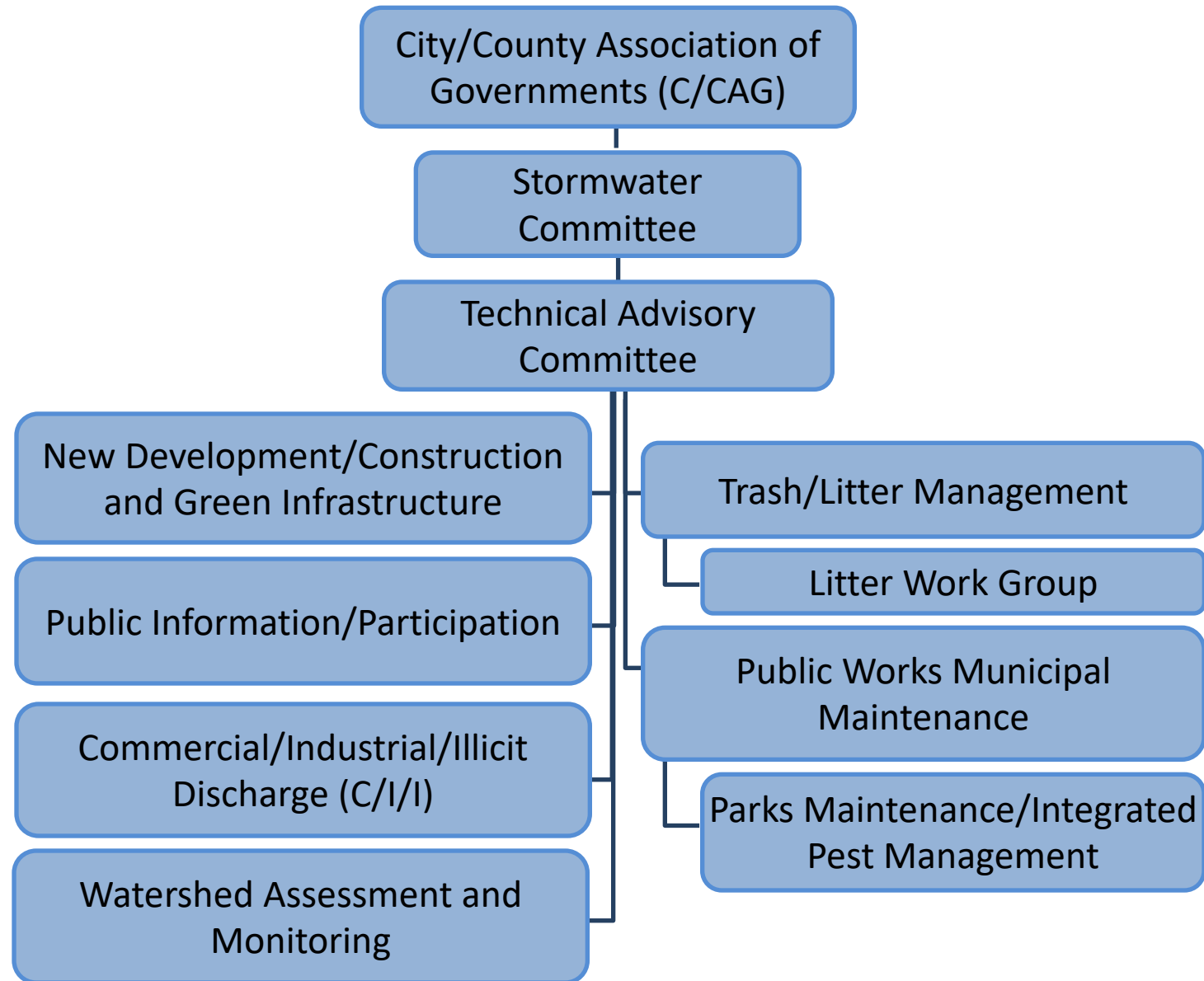
- What is SMCWPPP?
- Why are stormwater regulations important?
- Overview of stormwater regulations
- 2020 Update
 - PCBs & Demolition and Green Infrastructure
- Construction site inspection requirements
- Stormwater inspection documentation & tracking
- Construction site best management practices
- Resources

Overview of SMCWPPP

San Mateo Countywide Water Pollution Prevention Program (SMCWPPP):

- 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
- Reid Bogert, Stormwater Program Specialist
- Website – www.flowstobay.org

SMCWPPP Organizational Structure



Why are Stormwater Regulations Important?

Pollutants in the Bay Impact Human Health

- San Francisco Bay is impaired by pollutants in fish. Concentrations increase as you move up the food chain
- Exposure results in cancer risk and other health concerns



Stormwater – What's the Big Deal?

- Rain washes pollutants away
- Flows into inlets and underground pipes
- Discharge directly to creeks, the Bay, or the Pacific Ocean
- No treatment to remove any pollutants
- Impacts water quality and aquatic life

What Pollutants?

- Sediment
- PCBs
- Mercury
- Pesticides
- Trash/Litter
- Nutrients/Fertilizers
- Construction Materials
- Vehicle-Related
 - Metals, oil/hydrocarbons, washwater
- Bacteria
 - Pet waste, livestock, sewer, etc.



Many Bay Fish Are Not Safe to Eat

FISH SMART in San Francisco Bay

Harmful chemicals like mercury and PCBs are in some fish in San Francisco Bay. **Women 18 - 45 years old and children should *only* eat the fish with less chemicals in them.**

有害化学物质诸如汞，多氯联苯等存在于三藩市海的某些鱼体内。妇女**18 - 45**岁和儿童应当只吃化学物质含量少的鱼。

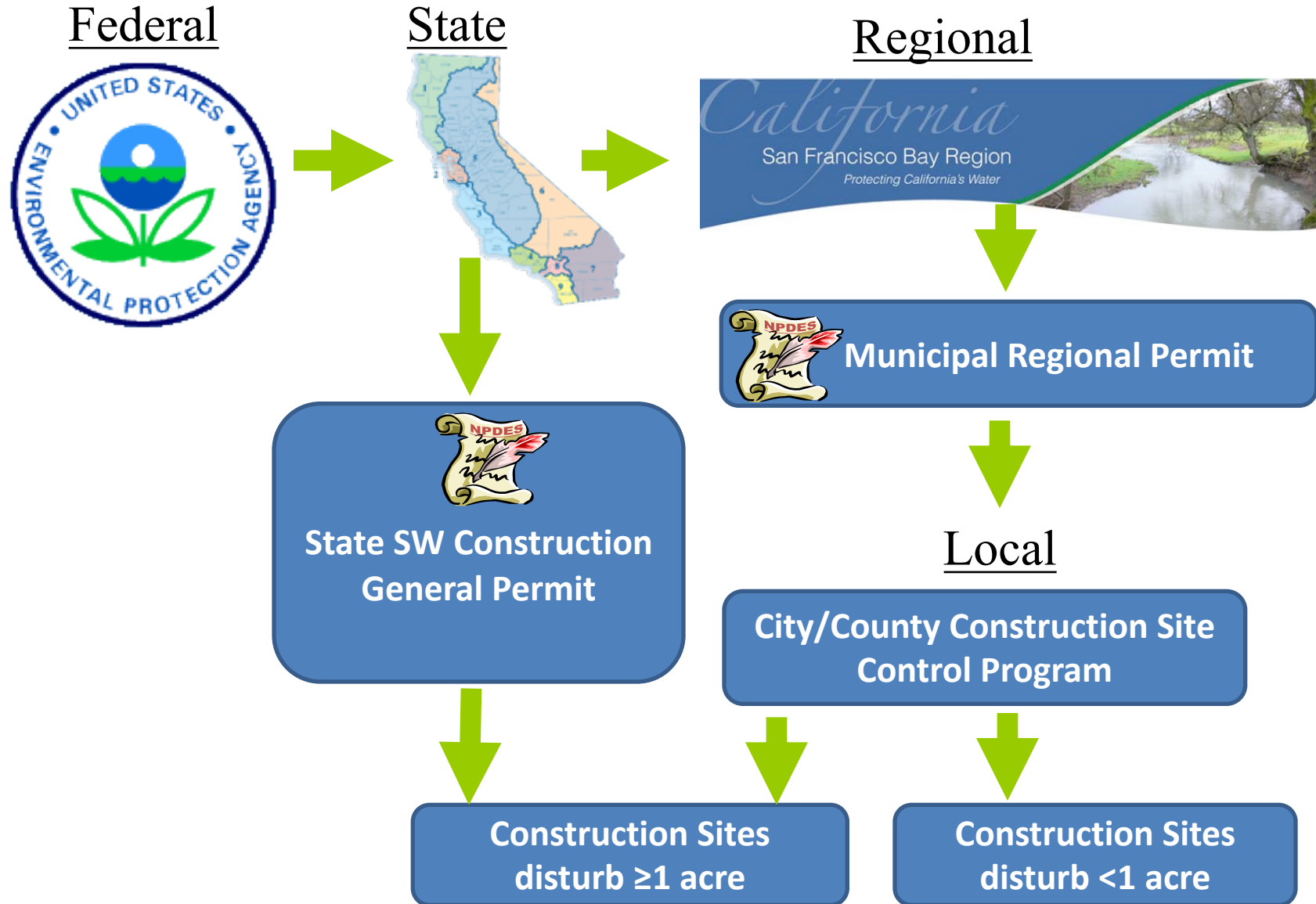
Algunos tipos de pescado de la Bahía de San Francisco contienen químicos dañinos como mercurio y PCBs. **Las mujeres de 18 a 45 años y los niños solo deben comer el pescado que contiene menos químicos.**

Learn more: www.sfbayfish.org • (510) 622-3170

EAT THIS Less Chemicals	NOT THIS More Chemicals
 Jacksmelt	 Striped Bass (Safe to eat for women over 45 and men)
 Brown rockfish	 Surperches
 Red rock crab	 Sharks
 California halibut	 White croaker (Kingfish)
 Chinook (king) salmon	 White sturgeon

- Fish consumption advisories led to the development of a pollution “diet” for PCBs and Mercury known as a Total Maximum Daily Load or TMDL

Stormwater Regulations



Municipal Regional Permit (MRP)

- Regional permit regulating municipal stormwater systems
 - Requires a Construction Site Control Program
- 1st MRP adopted in December 2009
- 2nd MRP adopted in November 2015
 - Minor changes to Construction Program requirements
- 3rd MRP being negotiated now – probably taking effect in 2022



Statewide Construction Activities General Permit

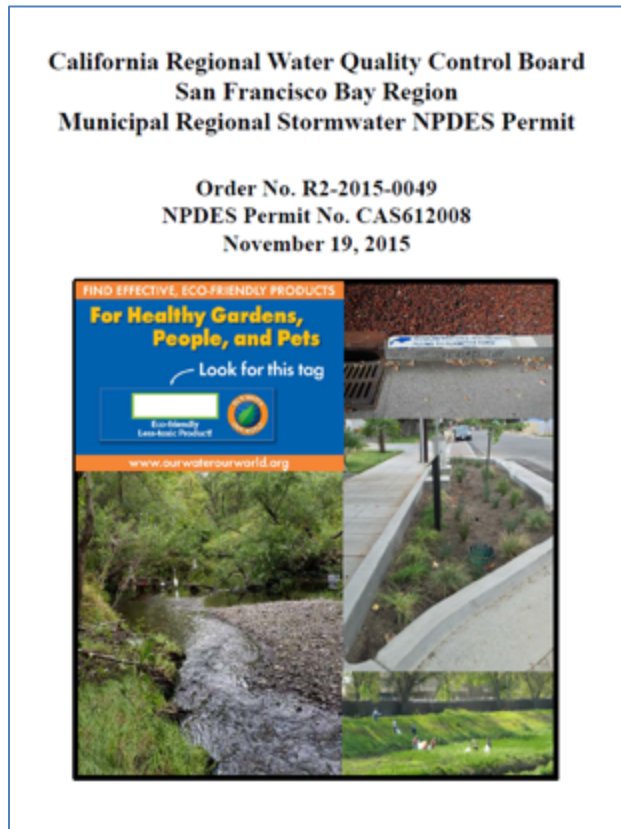
- Contains requirements for site
 - BMPs,
 - inspections,
 - sampling,
 - SWPPP,
 - reporting,
 - QSP/QSD
- Compliance inspections/enforcement by State or Regional Water Board staff

Rain Event Action Plan (REAP)			
Date:		WDEID 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 <input type="checkbox"/> Risk Level 3	
Site Stormwater Manager Information:			
Name, Company, Emergency Phone Number (24/7):			
Erosion and Sediment Control Contractor – Labor Force contracted for the site:			
Name, Company, Emergency Phone Number (24/7):			
Stormwater Sampling Agent:			
Name, Company, Emergency Phone Number (24/7):			
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"/> Blasting	
<input type="checkbox"/> Soil Amendment(s)	<input type="checkbox"/> Excavation (____ ft)	<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"/> Stucco	
<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 Stencils	<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 Site:			
<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:	

What Do You Need to Know About the Construction General Permit (CGP)?

- Speaking with the QSP and reviewing SWPPP, inspection records, and 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

MRP Provision C.12.f: Manage PCBs-containing Building Materials During Demolition

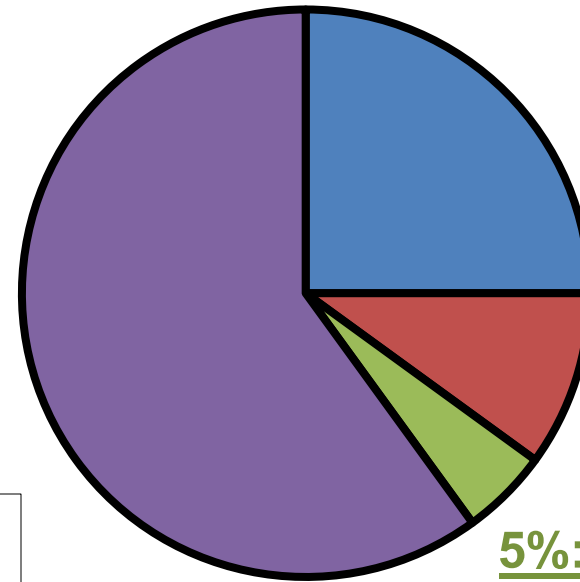


- Manage PCBs-containing materials during demolition
 - Ensure PCBs are not discharged to storm drains when applicable buildings are demolished
 - Include a method for identifying applicable buildings prior to demolition
 - Provide for the necessary authority to implement the program
 - Test and remediate when required
- Applicable to buildings constructed/remodeled between Jan. 1, 1950 & Dec. 31, 1980
 - The requirements do not apply to wood frame buildings or single-family residences

PCBs Were Manufactured from 1929 to 1979

60%:
Transformer or
Capacitor Oil

Due to their
chemical stability,
PCBs were widely
used **during this
period**



Focus of Regulation

25%:
Plasticizer
(Paint, Caulk etc.)

10%:
Hydraulic and
Lubricant Oil

5%:
Miscellaneous Uses

What is Green Infrastructure?

- Systems (stormwater control measures or SCMs) that use vegetation, soils, and natural processes to capture and treat stormwater in urban environments
- Most municipal GI projects will involve retrofitting existing public streets, roofs, and parking lots to divert stormwater runoff to:
 - Vegetated areas
 - Pervious pavement
 - Biotreatment and infiltration facilities

Permit Requirements for GI

- Develop a long-term GI Plan (2040+)
- Conduct education and outreach
- Install GI in projects where feasible - “no missed opportunities
- Opportunity projects may include buildings, parking lots, parks and streets

Missed C.3 GI Opportunity



Public GI Retrofit Opportunity



MRP Requirements for Construction Sites

MRP-required SW Inspections

- Construction Site SW Inspections (C.6)
 - During the construction phase
 - Inspect temporary BMPs
- SCM Inspections (C.3)
 - **Recommended** during construction
 - **Required** at completion of construction
 - Inspect these permanent control measures for on-going operation and maintenance SW treatment or hydromodification controls
- SW Inspections can be on public or private property or in the street (C.3-GI)

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
 - Hillside Sites of 5,000 sq. ft. or more
 - High priority sites
- Inspect both Public (e.g. CIP projects) & Private sites



Minimum Inspection Requirements

- Sites disturbing 1 acre or more:
 - Must have monthly rainy season inspections from local agency staff (required by the MRP)

AND

- Need coverage under the State Construction General Permit.
- The site (construction contractor) staff will do self inspections and report them through the SMARTS database.

Minimum Inspection Requirements

- What is a hillside site?

- Disturbs $\geq 5,000$ sf

AND

- Is on a hillside as defined by:
 - an average slope of $\geq 15\%$ (default) or
 - the Municipality using development maps or criteria (Hillsborough, Pacifica, Redwood City, San Carlos, SSF, Woodside, County)

Minimum Inspection Requirements

- What is a high priority site?
 - Identified by your municipality
 - Generally, site with < 1 acre of land disturbance that
 - Has high potential for problems
 - Is adjacent to a creek



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)						
		<u>Disturbs ≥ 1 acre?</u> (Ref 6)	<u>Hillside Site?</u> (Ref 7a)	<u>High Priority Site?</u> (Ref 7)				<u>Erosion Control</u>	<u>Sediment Control</u>	<u>Run-on & Runoff</u>	<u>Active Treatmt</u>	<u>Site Management</u>	<u>Non Stormwtr Mgt</u>	<u>Illicit Discharge</u>
1	1				EXAMPLE: Nirvana Estates	EXAMPLE: 12/12/09	EXAMPLE: Light Rain	1	1	1	1	1	1	1

Terminology

- Tracking:
 - Actual discharges or “illicit discharges”
 - actual and inferred
 - Potential discharges or “problems with BMPs”



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!



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
- If using the SMCWPPP form you will report findings of:
 - Adequate
 - Needs Maintenance
 - Problems
 - Not Applicable

Erosion & Sediment Control

- Erosion control
 - First line of defense
 - Prevent soil movement by wind and water
 - Examples: soil covers & barriers (slow the flow)
- Sediment control
 - Second line of defense
 - Remove soil before it leaves the site
 - Examples: barriers and filters
- Temporary or Permanent Controls
- Remove temporary BMPs at completion of project

Erosion Control

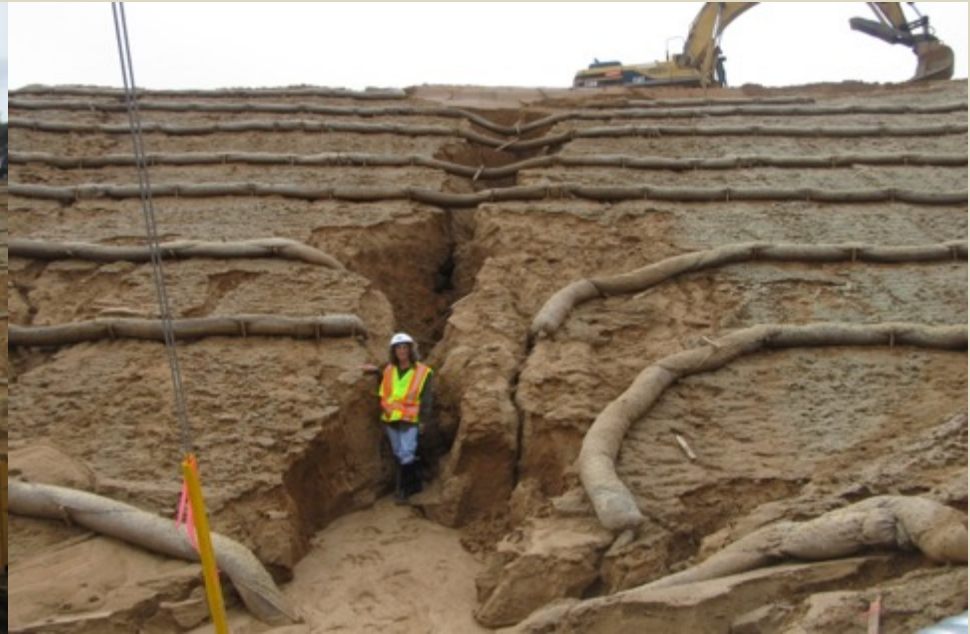
9. <u>Erosion Control Measures:</u>	Inspection Finding (A / NM / P / NA)*	<u>Location on site/Comments</u>
<input type="checkbox"/> Jute Netting/Fiber Blankets		
<input type="checkbox"/> Mulch		
<input type="checkbox"/> Hydroseed/Soil binder/Compost blanket		
<input type="checkbox"/> Mark Areas to be Preserved		
<input type="checkbox"/> Tree Protection Fencing		
<input type="checkbox"/> Riparian Area Barrier		



Examples of Bonded Fiber Matrix (BFM) and netting applications.

Erosion Control Applications

Fiber Rolls and BFM (photos courtesy of Caltrans)



Erosion Control Performance Comparisons

BFM with and without a compost blanket



Photo courtesy of Caltrans

Erosion Control Performance Comparisons

Compost berm, seed and irrigation vs. BFM and Fiber Rolls



Photo courtesy of Caltrans

Erosion Control Applications

Compost Blanket, Hydroseed, Coir Netting



Photos courtesy of Caltrans

Erosion Control Applications

Compost Blanket, Hydroseed, Coir Netting



Sediment Control

10. <u>Sediment Control Measures</u>		
<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		



Sediment Control Applications

Linear Barriers – Compost Berms



Sediment Control Applications

Linear Barriers – Compost Berms



Netting installed over the compost berm

Sediment Control Applications

Linear Barriers – Compost Socks



← Cotton Sock

← Burlap Sock



← 6 Months After Installation









Inlet Protection with Compost Sock



Inlet Protection with Compost Sock





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

Resources

Resources...

- BASMAA PCBs and Demolition Program
 - <http://basmaa.org/Announcements/date/27-8-2018>
- Caltrans Erosion Control Toolbox
 - <https://dot.ca.gov/programs/design/lap-erosion-control-design/tool-1-lap-erosion-control-toolbox>
- SMCWPPP Construction BMP Resources
 - <http://www.flowstobay.org/construction>
- CASQA Construction BMP Handbook Portal
 - Available on web by subscription
 - Contact your municipal stormwater coordinator for information on how to access the portal
 - www.casqa.org

SMCWPPP Website

- www.flowstobay.org
- Hover over “Preventing Stormwater Pollution”. Select “Construction Best Practices” in the pull-down menu under “With New and Redevelopment”. Scroll to the bottom of the page for brochures.
- Hover over “Data and Resources”. Select “Presentations & Workshops” in the pull-down menu under “Resources”.
- Hover over “Permittees”, select “New Development” committee and log in.

The Program operates by appointment only. [Click here](#) to learn more.

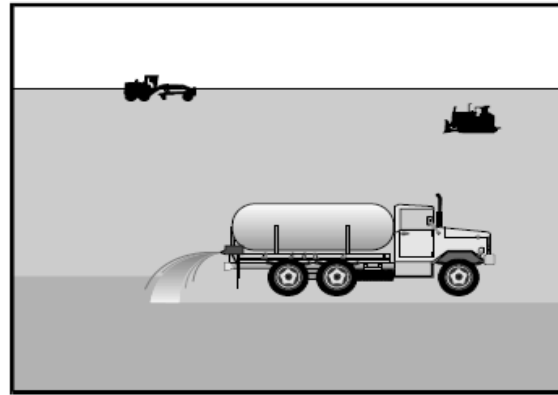
Additional Resources

- [Architectural Copper Requirements](#)
- [Best Management Practices to Prevent Stormwater Pollution from Construction-Related Activities](#)
- [Building Demolition and Mercury Hazards](#)
- [C.6 Construction Site Inspection Report in PDF - Form version](#)
- [Concrete & Mortar Application](#)
- [Construction BMP Plan Sheet: \[PDF\]\(#\) | \[CAD\]\(#\) \(will auto download\)](#)
- [Creek & Wetland Permitting](#)
- [Earth-Moving and Dewatering Activities](#)
- [General Construction and Site Supervision](#)
- [Heavy Equipment Operation](#)
- [Landscaping, Gardening, and Pool Maintenance](#)
- [Painting and Application of Solvents and Adhesives](#)
- [Riparian Erosion and Sediment Control](#)
- [Roadwork and Paving](#)
- [Stormwater & Construction Poster: \[Front\]\(#\) | \[Back\]\(#\)](#)

CASQA BMP Fact Sheets

Soil Binders

EC-5



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.

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



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