Construction Storm Water Training for Management
1-Hour Module
General Overview of Storm Water Requirements
Introduction

Course Highlights

- General Overview of Storm Water Requirements
- Consequences of Non-Compliance
- Causes of Erosion
- Categories of BMPs to Prevent Erosion and Water Pollution
- Dewatering Requirements
- Sampling and Analysis
Why is Clean Water Important

Plants and Smaller Organisms

Fish

Waterfowl

Wildlife

Livestock

People

All of these life forms depend on clean water for their existence.
Construction Site Pollutants

Erosion and Sedimentation

Construction Wastes
Construction Site Pollutants

- One gallon of oil has the potential to contaminate up to one million gallons of water

StormWater/CleanWater protection program
Regulations/Permits

- **1972 Federal Clean Water Act (CWA)**
  - Amend to Prohibit Any Discharge of Pollutants from a Point Source

- **1987 Amendments to the CWA**
  - Added Section 402(p) Establishing the Framework for Regulations Regarding Municipal and Industrial Discharges

- **1990 EPA Published Final Regulations**
  - Established Permit Requirements for Storm Water Discharges Associated with Industrial (Including Construction) Activities

- **1992 California’s General Permit was Adopted**
  - Established Requirements for Discharges Associated with Construction Activities
  - Revised in 1999; Modified in 2001 to Include Monitoring – 02 Permit
  - Modified in 2002; Effective March 10, 2003 Construction Activity with Soil Disturbance = 1 acre

- **1999 Caltrans NPDES Permit was issued – 03 Permit and Storm Water Management Plan (SWMP)**
Who Enforces These Laws/Permits?

- EPA
- SWRCB / RWQCB
- Other Agencies
- Private Citizens
  - NRDC
  - Baykeepers
  - Other Watchdog Groups

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EPA

SWRCB / RWQCB

Other Agencies

Private Citizens
  - NRDC
  - Baykeepers
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NATURAL RESOURCES DEFENSE COUNCIL

SANTA MONICA BAYKEEPER
Notification of Construction (NOC)

- Submitted to RWQCB at least 30 days prior to construction
- Equivalent to Notice Of Intent (NOI)
- Included information:
  - Tentative start date and duration
  - Estimate of affected acres and vicinity map
  - RE in charge and telephone number
  - Field office information and location map
SWPPP Requirements

- SWPPP should be a dynamic, defensible, living document
- Identify pollutant sources or potential pollutant sources that may impact storm water discharges
- Implement BMPs to reduce pollutants in storm water discharges from the construction site.
- Monitor the site and perform inspections of control practices implemented as part of the SWPPP
- Document the inspections and the results, as well as corrective action which is to be taken as a result
- Evaluate and revise controls, and amend the SWPPP
NCC Requirements

- The Notice of Completion of Construction (NCC) equivalent to the NOT
- Meet Final Stabilization Requirements
  - Special Provision requirements
  - NPDES permit requirements
- Insert into SWPPP Attachment P at end of project
- Only required for SWPPP projects

Caltrans Guidance Manuals

- Caltrans Storm Water Quality Handbooks and Manuals
  - Project Planning and Design Guide
  - SWPPP/WPCP Preparation Manual
  - Construction Site BMPs Manual
  - Guidance for Temporary Soil Stabilization
  - Field Guide to Construction Dewatering

- Get Manuals online at [http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm](http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm) or hard copies are available from Caltrans Publications
Consequences of Non-Compliance
Summary of Fines and Penalties

- Federal – fines of up to $32,500 PER DAY can be imposed for UNINTENTIONAL violation, up to $55,000 per day for an INTENTIONAL violation, in addition to criminal liability and responsibility for cleanup costs.

- State – Penalties of up to an additional $10,000 per day plus $10/gallon of sediment-laden or polluted water discharged for each violation.

- Failure to Submit a Notice of Intent for Coverage under the appropriate storm water NPDES permit. Minimum $5,000 plus recovery of staff costs.

- Failure to submit an annual report of construction certification when required by the Regional Board. Minimum $1,000 plus recovery of staff costs.

- Violation of Permit Terms or Basin Plan Prohibitions. Minimum amount is the economic savings of the violation.

Current Regulatory Atmosphere
- “The Learning Curve is Over”
Violation and Order for Compliance
1998 District 11

“..sloppy runoff-control practices at Caltrans construction sites, drainage facilities and maintenance yards”
San Diego Baykeeper
Causes of Erosion
Definition of Erosion

 Soil erosion is the **process** by which soil particles become detached by water, wind, or gravity and are transported from their original location.
Types of Erosion

- Splash Erosion
- Sheet Erosion (Overland Flow)
- Rill Erosion
- Gully Erosion
- Channel Erosion
Turbidity/Sedimentation

- Turbidity is solid particulate matter, that is in suspension and is being transported.
- Sedimentation is the deposition of the eroded material.
Categories of BMPs to Prevent Erosion and Water Pollution
BMP Installation

BMP Categories

- Temporary Soil Stabilization
- Temporary Sediment Control
- Wind Erosion Control
- Tracking Control
- Non-Storm Water Management
- Waste Management and Materials
- Pollution Control
# Temporary Soil Stabilization

<table>
<thead>
<tr>
<th>ID</th>
<th>BMP Name</th>
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<tbody>
<tr>
<td>SS-1</td>
<td>Scheduling</td>
</tr>
<tr>
<td>SS-2</td>
<td>Preservation of Existing Vegetation</td>
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<tr>
<td>SS-3</td>
<td>Hydraulic Mulch</td>
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<tr>
<td>SS-4</td>
<td>Hydroseeding</td>
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<tr>
<td>SS-5</td>
<td>Soil Binders</td>
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<tr>
<td>SS-6</td>
<td>Straw Mulch</td>
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<tr>
<td>SS-7</td>
<td>Geotextiles, Plastic Covers, &amp; Erosion Control Blankets/Mats</td>
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<tr>
<td>SS-8</td>
<td>Wood Mulching</td>
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<tr>
<td>SS-9</td>
<td>Earth Dikes/Drainage Swales &amp; Lined Ditches</td>
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<tr>
<td>SS-10</td>
<td>Outlet Protection/Velocity Dissipation Devices</td>
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<tr>
<td>SS-11</td>
<td>Slope Drains</td>
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<tr>
<td>SS-12</td>
<td>Streambank Stabilization</td>
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Inadequate Soil Stabilization
# Temporary Sediment Control

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<tr>
<th>ID</th>
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<tbody>
<tr>
<td>SC-1</td>
<td>Silt Fence</td>
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<tr>
<td>SC-2</td>
<td>Sediment / Desilting Basin</td>
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<tr>
<td>SC-3</td>
<td>Sediment Trap</td>
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<tr>
<td>SC-4</td>
<td>Check Dam</td>
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<tr>
<td>SC-5</td>
<td>Fiber Rolls</td>
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<tr>
<td>SC-6</td>
<td>Gravel Bag Berm</td>
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<tr>
<td>SC-7</td>
<td>Street Sweeping and Vacuuming</td>
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<tr>
<td>SC-8</td>
<td>Sandbag Barrier</td>
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<tr>
<td>SC-9</td>
<td>Straw Bale Barrier</td>
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<tr>
<td>SC-10</td>
<td>Storm Drain Inlet Protection</td>
</tr>
</tbody>
</table>
Inadequate Sediment Control

Improperly installed hay bales
Adequate Sediment Control

Proper silt fence and fiber roll installation
## Tracking Control

<table>
<thead>
<tr>
<th>ID</th>
<th>BMP Name</th>
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<tbody>
<tr>
<td>TC-1</td>
<td>Stabilized Construction Entrance/Exit</td>
</tr>
<tr>
<td>TC-2</td>
<td>Stabilized Construction Roadway</td>
</tr>
<tr>
<td>TC-3</td>
<td>Entrance/Outlet Tire Wash</td>
</tr>
</tbody>
</table>
Inadequate Tracking Control

Stabilized entrance/exit on right gets little use vs. unstabilized area on left
Adequate Tracking Control

Possible solution: Block other entrance/exit
Wind Erosion Control

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<thead>
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<th>ID</th>
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</thead>
<tbody>
<tr>
<td>WE-1</td>
<td>Wind Erosion Control</td>
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</table>

Lack of wind erosion controls

Adequate dust control
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<th>ID</th>
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<tbody>
<tr>
<td>NS-1</td>
<td>Water Conservation Practices</td>
</tr>
<tr>
<td>NS-2</td>
<td>Dewatering Operations</td>
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<tr>
<td>NS-3</td>
<td>Paving and Grinding Operations</td>
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<td>NS-4</td>
<td>Temporary Stream Crossing</td>
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<td>NS-5</td>
<td>Clear Water Diversion</td>
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<td>NS-6</td>
<td>Illicit Connection / Illegal Discharge Detection and Reporting</td>
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<td>NS-7</td>
<td>Potable Water / Irrigation</td>
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<tr>
<td>NS-8</td>
<td>Vehicle and Equipment Cleaning</td>
</tr>
<tr>
<td>NS-9</td>
<td>Vehicle and Equipment Fueling</td>
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<td>NS-10</td>
<td>Vehicle and Equipment Maintenance</td>
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<td>NS-11</td>
<td>Pile Driving Operations</td>
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<td>NS-12</td>
<td>Concrete Curing</td>
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<tr>
<td>NS-13</td>
<td>Material and Equipment Use over Water</td>
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<tr>
<td>NS-14</td>
<td>Concrete Finishing</td>
</tr>
<tr>
<td>NS-15</td>
<td>Structure Demolition/Removal Over or Adjacent</td>
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</table>
Adequate and Inadequate Non-Storm Water BMP Implementation

Mobile fueling operations require BMPs
Inadequate Non-Storm Water BMP Implementation

Prevent non-storm water discharges
### Waste Management and Material Pollution Control BMPs

<table>
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<tr>
<th>ID</th>
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<tbody>
<tr>
<td>WM-1</td>
<td>Material Delivery and Storage</td>
</tr>
<tr>
<td>WM-2</td>
<td>Material Use</td>
</tr>
<tr>
<td>WM-3</td>
<td>Stockpile Management</td>
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<td>WM-4</td>
<td>Spill Prevention and Control</td>
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<tr>
<td>WM-5</td>
<td>Solid Waste Management</td>
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<td>WM-6</td>
<td>Hazardous Waste Management</td>
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<td>WM-7</td>
<td>Contaminated Soil Management</td>
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<tr>
<td>WM-8</td>
<td>Concrete Waste Management</td>
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<tr>
<td>WM-9</td>
<td>Sanitary / Septic Waste Management</td>
</tr>
<tr>
<td>WM-10</td>
<td>Liquid Waste Management</td>
</tr>
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Adequate and Inadequate Waste Management and Materials Pollution BMP Implementation

Substances that require storage in a containment facility

Well maintained temporary containment facility
Inadequate Waste Management and Materials Pollution BMP Implementation

Concrete washout

Uncontrolled concrete washouts
Dewatering Requirements
Dewatering Operations
Management Flow Chart

Contact CSWC for assistance with managing the dewatering discharge.
Assess water quality and estimate discharge flow rate and volume.
Does water have an odor, discoloration other than sediment, or an oily sheen or foam on the surface?
Contact CSWC regarding further testing and consideration.
No
Is it feasible to manage water without discharge to a storm drain or water body?
Yes
Retain water on site: Infiltrate/Evaporate/Flush
Refer to Section 3.2
No
Does the project have a dewatering permit?
Yes
Follow permit requirements
No
Refer to Section 3.7 & Figure 4
Refer to Section 3.6 & Figure 3
Discharge by agreement to a sanitary sewer.
Refer to Section 3.4
Discharge by agreement to an off-site to: Transport off site for disposal.
Refer to Section 2.3 & Figure 3

Is the site located outside of RWQCB Regions 1 and 2, and does the discharge solely consist of accumulated precipitation?
Yes
Accumulated precipitation in RWQCB Regions 3 - 9 (Refer to Section 2.6 & Figure 4.3)
Refer to Section 3.5 & Figure 3
No
No
Refer to Section 2.3 & Figure 3
Refer to Section 3.5 & Figure 3

 Abbreviations:
RMP: Rain Management Practice
CSWC: Construction Storm Water Coordinator
MGP: Million gallons per day
NPS: National Pollutant Discharge Elimination System
RWQCB: Regional Water Quality Control Board
SPPP: Storm Water Pollution Prevention Plan
NAPCP: Water Pollution Control Program

Notes:
This flowchart applies to discharging of non-storm water (groundwater, water from infiltrations, cisterns, etc.) and accumulated precipitation. Contact CSWC for guidance on all other discharges.
General Dewatering and Discharge Process
Sampling and Analysis
Modification to the General Construction Permit – adopted April 2001

- Implement specific sampling and analytical procedures to determine whether BMPs implemented are:
  - Preventing further impairment, from storm water discharge, of 303(d) listed water bodies for sedimentation/siltation or turbidity.
  - Preventing other non-visible pollutants from causing or contributing to exceedances of water quality objectives.
- The Modification is Now included in the “02” Permit
The requirements are intended to determine if BMPs implemented on the construction site are effective for preventing sediment/silt and other non-visible pollutants from impacting water quality objectives.
Types of Pollutants

Sediment/Silt and Turbidity

Non Visible Pollutants - Construction Materials