Module 4 CONSTRUCTION SITE BMPS



Construction BMP Categories

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

EC-5 Soil Binders



- Generally temporary and may require reapplication
- Soil type dictates kind of soil binder to use
- Must be environmentally benign, and should not stain paved or painted surfaces

New Uses for PAM

- Research completed at NC State
- Dramatic reduction in turbidity with PAM application
- No toxicity found at the suggested application rates
- Passive PAM application currently not allowed in CA





EC-3 Hydraulic Mulch



- Most types need 24 hours to dry before rainfall occurs
- Generally good for one wet season (may need re-application)



EC-3 Bonded Fiber Matrix (BFM)



 Last longer than mulch (may get several wet seasons)





EC-6 Straw Mulch





- A tackifier (glue) is the preferred method of anchoring straw
- May not be allowed near structures (Fire Regs)
- Generally short lived (one wet season or less)

Stormwate

• Excellent performance

EC-7 Geotextiles & Mats





- Used when disturbed soil may be difficult to stabilize or drying time an issue
- Blankets and mats may need to be removed and disposed of prior to application of permanent soil stabilization

Stormwate

• Natural & synthetic

EC-4 Hydroseeding





- Seed mix must comply with local standards
- Steep slopes are difficult to protect with temporary seeding

Stormwate

• Must be established to qualify as a BMP

How Hydraulic Soil Stabilizers Rank

Material	Cost/acre	Sediment Reduction (%)
Guar	\$410	80
Psyllium, starch	\$410	60
Acrylic polymers and co- polymers	\$1232	40
polyacrylamide	\$410	55



How Mulches Rank

Mulch	Cost/Acre	Sediment Reduction (%)
Straw	\$2100	90
Cellulose Fiber	\$900	55
Recycled Paper	\$900	50
BFM	\$5400	90



How RECPs Rank

Blanket Type	Cost/Acre	Sediment Reduction (%)
Woven Jute Mesh	\$6,500	70
Excelsior	\$10,600	85
Straw Blanket	\$9,000	87
Coir	\$13,000	80
Plastic Mesh Woven	\$2,000	80



Use of Sediment Controls

Control	Application	Flow	Area	Longevity
		Туре		
Silt Fence	Perimeter Protection	Sheet flow	<0.5 Ac	12-36 mo
Reinf S.F	Sediment Trap	Shallow conc.	0.5 – 1.0ac	12-36 mo
Wattle	Perimeter, inlet	Sheet	<0.5 ac	12-36 mo
Sed. Basin	Online/offline	Concentrated	>10.0 ac	Indefinite
Inlet Filter	Inlet protection	Concentrated	0.5 – 2.0	12-24 mo
Veg. Strip	Perimeter/offisite	Concentrated	0.5 –2.0	Indefinite
Rock Entrance	Tracking prevention	N/a	N/a	1-2 rain events
Rumble Plate Ent.	Tracking Prevention	N/a	N/a	indefinite



SE-1 Silt Fence





- Located level on contours, not perpendicular
- Not for concentrated flow areas

Stormwate

• Must be keyed in

SE-2 Sediment Basin





- Tributary area 5 to 75 acres
- Use with erosion control, <u>not</u> instead of
- Always have spillway
- Drain in 7 days max
- Protect outlet from erosion

- Use anti-seep collars
- Size per permit criteria

Sediment Basins

- Calculations must be in SWPPP and performed by a registered engineer
- Always have spillway
- Use anti-seep collars



SE-5 Fiber Rolls





- Locate on level contours
- Use at top and on face of slopes
- Good for perimeter control

Stormwate

Space 30 - 60 feet on slopes

SE-6 Gravel Bag Berm







Use for small check damsUse for perimeter control

SE-10 Inlet Protection



Protect active inlets year-round
Use where ponding won't encroach into traffic





• Maintain Entrances







TC-1: Temporary Construction Entrance / Exit



- A VERY visible indicator of compliance effort (or lack of)
- Minimize number of access points
- Use coarse aggregate over fabric – can add plates

Stormwate

Year-round

NS-2 Dewatering

- Likely requires a separate discharge permit from RWQCB
- Addresses sediment and other permit-specified pollutants



Dewatering Discharge Options

- Direct to sanitary sewer (with permission from sewer agency)
- Retain on site (e.g. use for dust control)
- Off-site transport & disposal via licensed contractor)



Dewatering Treatment Options

- Desilting basin or sediment trap
- Weir (Baker) tank
- Dewatering tank
- Gravity (dewatering) bag
- Filtration



Stormwate

• Effectiveness depends on target sediment particle size

WM-1 Material Storage



- Cover and contain
 - Keeps site clean
 - Avoids potential sampling



WM-8 Concrete Waste

- Provide proper wash-out area
- Locate away from storm drain/street gutter
- Empty or provide new wash out when ³/₄ full



Common Site Implementation Problems



Soil Stabilization Potential Violations



Soil Stabilization Better Practice



Inactive area with erosion control BMPs



Slope Stabilization Potential Violations



Inactive slope with no slope stabilization



Slope Stabilization

Better Practice



Application of soil stabilization BMPs



Site Perimeter
 Potential Violations



No protection
Damaged / ineffective protection



Site Perimeter Better Practice



Proper controls & placement Well-maintained



Dirt Tracking Potential Violations


Dirt Tracking

Better Practice



Stabilized lot & site entrances
Gravel & plates free of excessive dirt
Do not avoid stabilization measures – use then



Dust Control Potential Violations



No dust control



Dust Control Better Practice



Use water to control dust



Stockpile Management Potential Violations



Improper placement

No measures to prevent material discharges



Stockpile Management

Better Practice



Provide perimeter protection
Cover for long periods or before rain events



Inlet Protection Potential Violations



Improper installation

Lack of maintenance



Inlet Protection Better Practice



Use products properly
Actively maintain BMPs
Prevent damage to devices
vent pollutants from entering inlets

Streets and Sidewalks Potential Violation





Stormwater

Clean regularly – dry sweep or vacuum
No water unless runoff directed away from drain
inlets to pervious areas

Streets and Sidewalks

Better Practice



Well maintained Streets/sidewalks are free of sedimentation

45

Stormwater

Washout Pits Potential Violation



Not using washout at all

eaking / ineffective washout



Washout Pits Better Practice

47



Contractors must use a designated concrete washout
Do not overfill
Washout must be water tight



Stormwate

STUCCO/CONCRETE BAGS

Potential Violations



•When exposed to rain, runoff with high pH can enter storm drain



STUCCO/CONCRETE BAGS

Better Practice



Protect soil Prevent contact



MATERIAL BUCKETS Potential Violations



•No contact with soil se secondary containment or store in a bin, not on soil Stormwater R

MATERIAL BUCKETS Better Practice





Prevent contact with rain



LEAKING EQUIPMENT Potential Violations



Leaks onto ground & no clean up

- lat oil tra



Damaged drip pans





LEAKING EQUIPMENT Better Practice



CONSTRUCTION WASTE Potential Violations





Good housekeeping is critical



REQUIREMENT

- Cover trash cans/bins when storm is predicted
- Empty at least every week



DIRT TRACKING Potential Violations



Dirt tracked onto streets Inadequate/missing

stabilized entrances



DIRT TRACKING

Better Practice



• Stabilized lot & site entrances Gravel & plates free of excessive dirt Do not avoid stabilization measures use them! Stormwater

REQUIREMENT

If dirt is tracked out, contractor must clean up immediately







Tire Wash

If stabilized entrance and sweeping don't work...:

- Must be effective
- Tire wash is the next level





Images from Tirewash.com



SAWCUTTING

Potential Violation

Better Practice





Discharge to gutter/storm drain

Vacuum saw cut slurry
Away from
concentrated flow paths
Dispose based on local



SECONDARY CONTAINMENT Potential Violations

Storage of fuel/oils
Improper storage

•No containment



SECONDARY CONTAINMENT Better Practice



Do not store fuel on site, OR Use proper secondary containment



SITE PERIMETER

Potential Violations





•Damaged / ineffective protection Stormwater



SITE PERIMETER Better Practice





Proper controls & placement Well-maintained Storm



SLOPES & PADS

Potential Violations



Inactive/completed areas with no EC

applied



SLOPES & PADS Better Practice



Completed / inactive areas protected with EC



SILT FENCE Potential Violations



Poor installation ack of maintenance



Abuse of Silt Fence



SILT FENCE Better Practice





Stormwate



Proper installationMaintained

PORTABLE TOILETS

Potential Violation



flow areas



PORTABLE TOILETS

Better Practice



Placed out of gutters and flow paths



Heavy Equipment Washing

• Designate an area for equipment washing




Are these BMPs?







OK?









CONSULTING

Problems?



What are the Issues?









CONSULTING

Spot the Problem...









Work in Creek



BMP in Creek



Sediment Basin?



Rain Next Day



What is Wrong?









The Next Day



The Next Day



Stranded Water



Pop Quiz! Not following NPDES rules could cost the LRP:

- a. \$5,00 per day, per violation
- b. \$20,500 per day, per violation
- c. \$37,500 per day, per violation
- d. \$50,000 per day, per violation

ANSWER:

c. \$32,500 per day, per violation

