



SWPPP: Stormwater Pollution Prevention Plan

Creating/Implementing a Plan for Compliance

A yellow dump truck is shown from a side-rear perspective, parked on a dirt and gravel surface. The truck's bed is raised, and it is covered in mud. The background shows a line of bare trees under an overcast sky. The text is overlaid on the truck and the background.

Managing Construction Site Runoff is Not an Easy Task

- Budgets are Tight
- Environmental Protection is Often Underestimated along with Other Unaccounted for Variables
- The market is looking for a one-step solution – but it does not exist
- Enforcement is Perceived as Random & Often Unevenly Distributed Regionally



Hummmnn....

What is an Adequate Stormwater Pollution Prevention Plan?

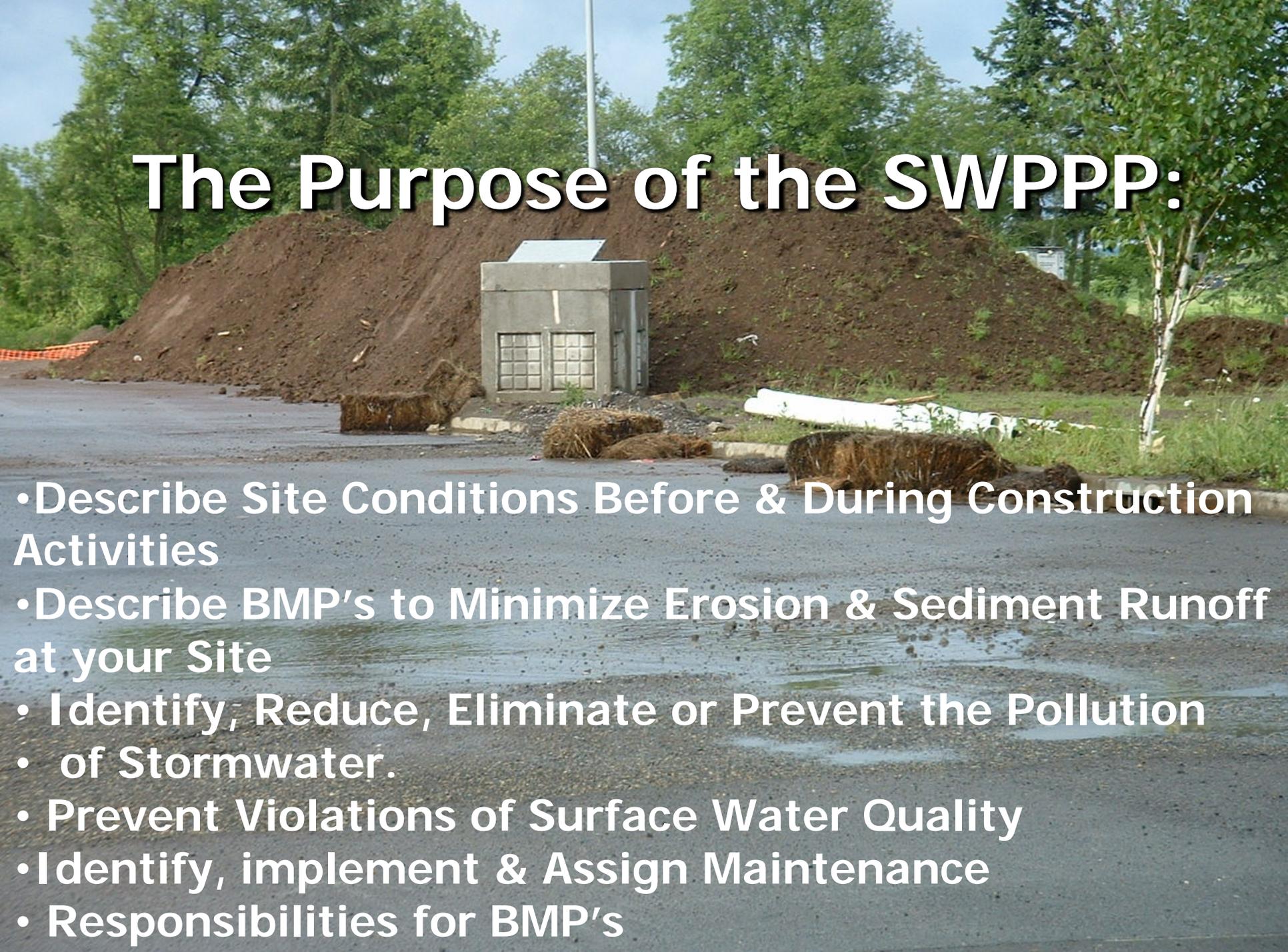
Site Conditions

Design

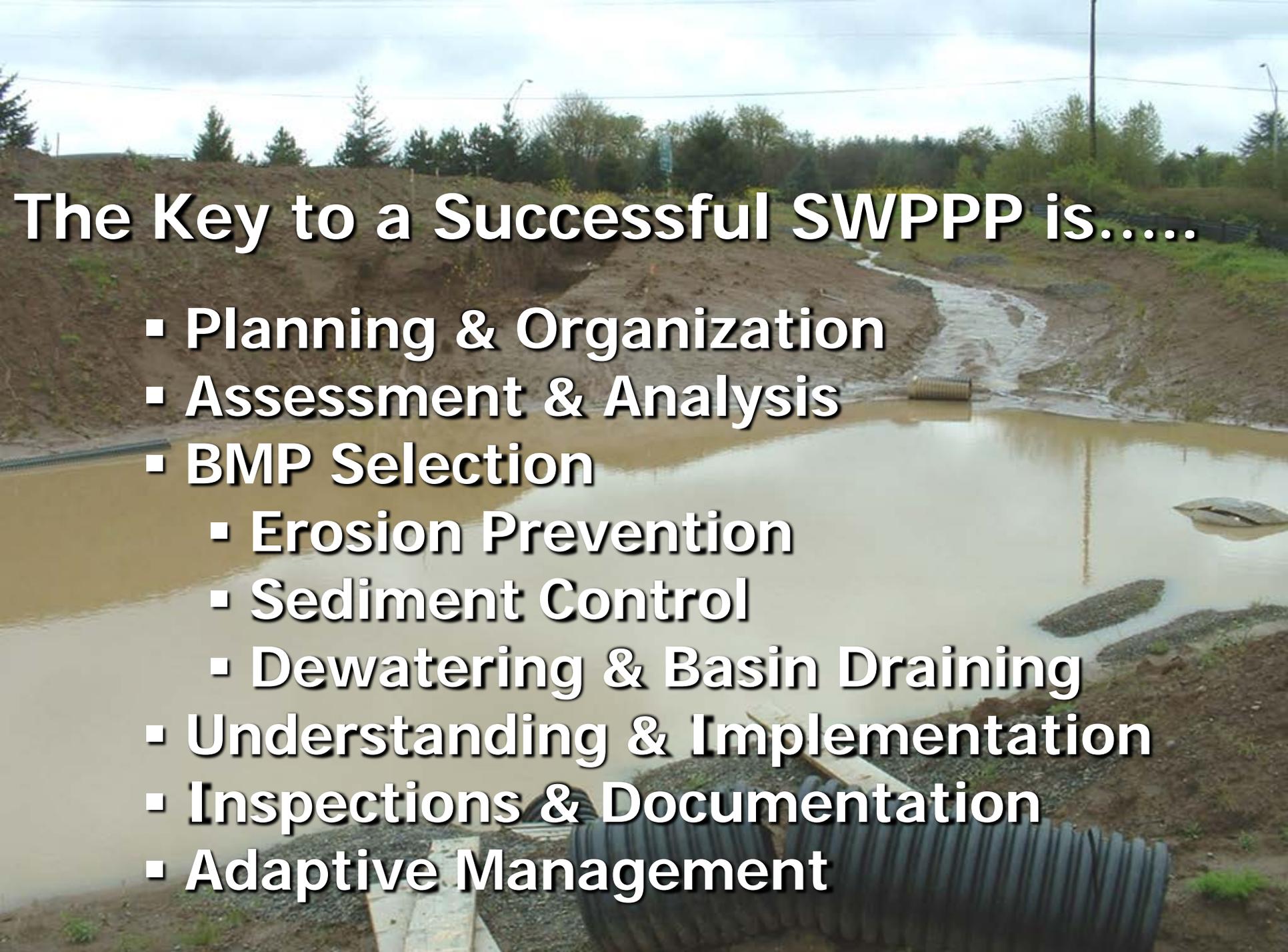
Schedule

Protects Water Quality

The Purpose of the SWPPP:

A photograph of a construction site. In the center, there is a concrete structure with a metal door and a window. To the left and right of the structure are several hay bales. Behind the structure is a large pile of dark brown soil. In the foreground, there is a paved area with some water puddles. The background shows green trees and a clear sky.

- Describe Site Conditions Before & During Construction Activities
- Describe BMP's to Minimize Erosion & Sediment Runoff at your Site
- Identify, Reduce, Eliminate or Prevent the Pollution of Stormwater.
- Prevent Violations of Surface Water Quality
- Identify, implement & Assign Maintenance Responsibilities for BMP's



The Key to a Successful SWPPP is.....

- Planning & Organization
- Assessment & Analysis
- BMP Selection
 - Erosion Prevention
 - Sediment Control
 - Dewatering & Basin Draining
- Understanding & Implementation
- Inspections & Documentation
- Adaptive Management

Basics of a SWPPP

- Narrative
 - Site Map & Existing Site Conditions
 - Construction Schedule & Reports
 - Rainfall Data
 - Pollution Prevention Strategies & Responses
 - Drawings and Notes
 - Where & When BMPs Installed
 - BMP Maintenance Procedures & Standards
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Pierce County

**Works
Public
Benefit**

Stormwater Management and Site Development Manual

2005



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**Guidance
Differs from
Place to
Place:**

**Check With
Your Local
Regulator**

Use These Reports to Help you Schedule & Plan Your SWPPP

- Grading Plans
- Geotechnical Reports
- Construction Plans
- Site Drainage Notes
- Excavation Plans for Water, Sewer & Utilities
- Septic Designs
- Other Potential Engineered Plans
- Landscape Plan Designs

SWPPP Site Map Very Complex Site



Remember that:

- All stormwater facilities must be constructed and made functional as one of first orders of work and stabilized per SWPPP Element # 5 (Stabilize Soils)
- Local permitting agency may require additional or different flow control than Ecology
- Infiltration systems must be protected from sediment

What is a BMP?

- Practices Like Preserving Natural Vegetation & Buffer Zones, Establishing Construction Entrances, Track Walking, Mulching, Seeding, Sodding, Topsoiling, etc.
- Physical Devices Like Silt Fences, Triangular Silt Dikes, etc.
- The Construction of Sediment Ponds/Traps, Check Dams, etc.
- Installation of Erosion Blankets, Pipe Slope Drains, Straw Wattles, Erosion Blankets/Nets
- Protecting Chemicals, Paints, Fuels, Hazardous Wastes, etc. from Stormwater Contamination
- A Schedule of Activities Anticipating Stormwater Counter Measures

2 Categories of BMPs in SWM:

- **Source Control BMPs Prevent the Problem**
- **Runoff Conveyance & Treatment BMPs**
 - **Control Water On & Around Your Site**
 - **Treat the Problem**

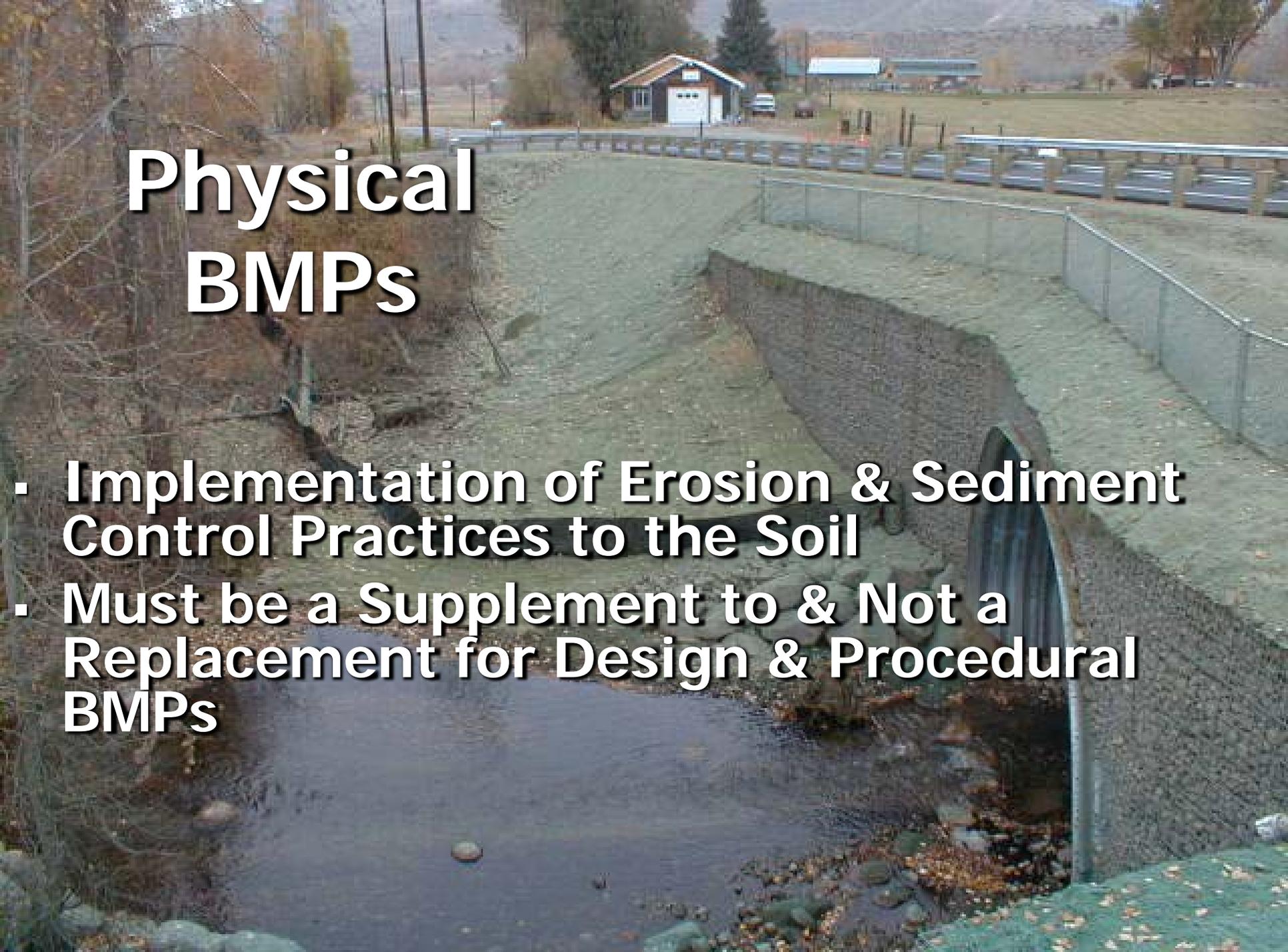
Design BMPs

- Minimize Disturbance (foot print) of Project
- Maximize integration of existing Land Contours
- Minimize Length & Slope Gradients
- Account for Both Onsite & Offsite Stormwater During Construction

Procedural BMPs

- Time major soil disturbance for dry season
 - Complete project in phases
 - Integrate erosion control and construction schedules (they don't have to conflict)
- 
- A photograph of a construction site under a clear blue sky. In the foreground, a large orange Hitachi excavator is positioned on a dirt surface. The excavator's arm is raised, and its bucket is partially visible. The side of the excavator's body is marked with 'HITACHI' and 'EX300LC'. In the background, another excavator is visible, along with a tall metal structure and some construction materials. The overall scene depicts an active construction project.

Physical BMPs



- **Implementation of Erosion & Sediment Control Practices to the Soil**
- **Must be a Supplement to & Not a Replacement for Design & Procedural BMPs**



**Proper BMP Specification,
Application, Installation &
Maintenance are Critical**



**Identify Problems &
Suggest Remedies**

General Principles

- Retain Duff Layer, Native Topsoil & Natural Vegetation
- Source Control: preventing erosion is easier and cheaper than managing sediment
- Divert Runoff
- Creativity is a BMP





BMP's should meet & exceed designed performance goals or outlast the strongest, longest storm

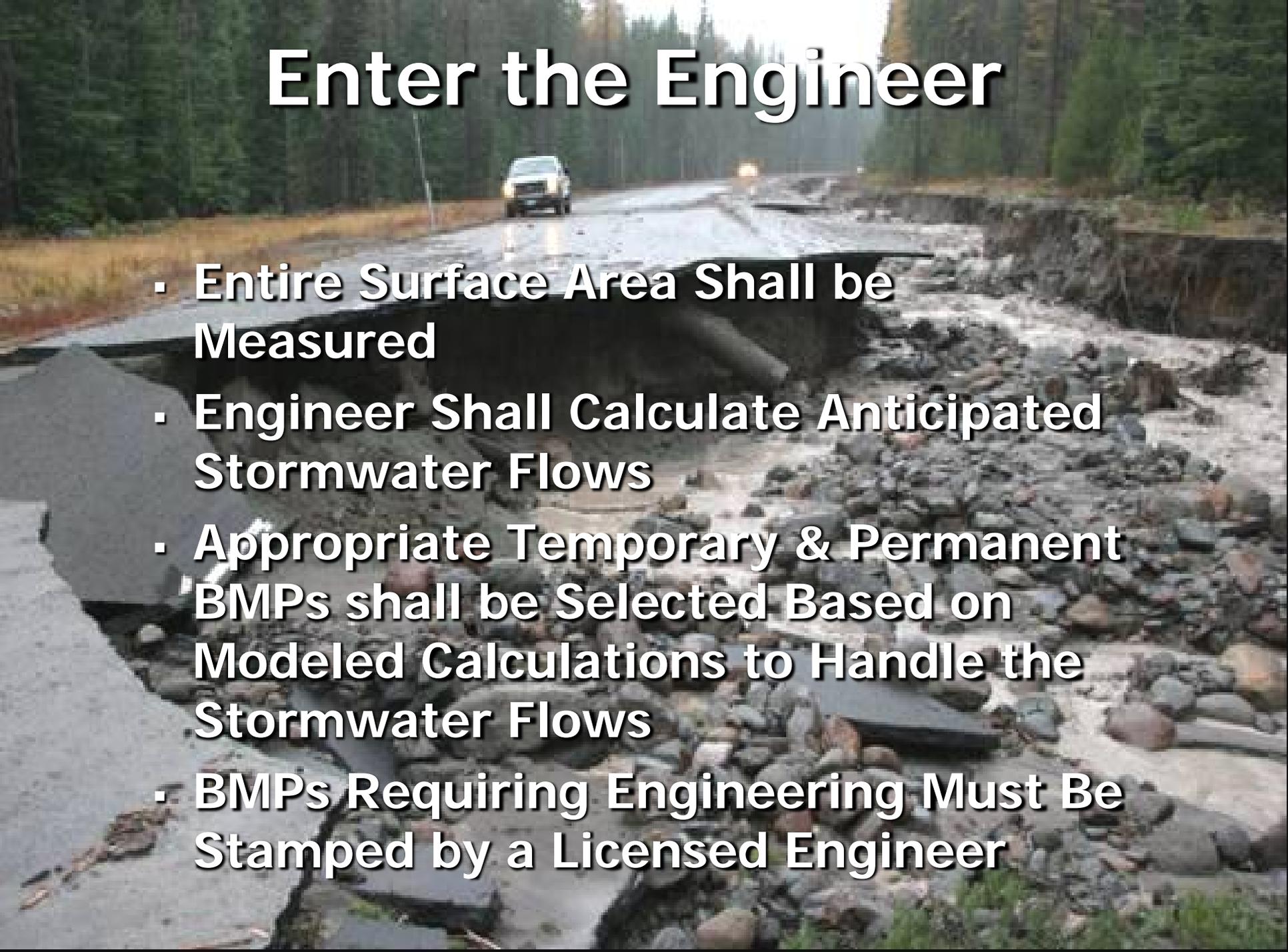
Most Used BMPs for Smaller Construction Sites

- Minimize Soil Disturbance
- Preserve Natural Vegetation
- Good Housekeeping
- Mulch/Seeding
- Stockpile Covers
- Silt Fence
- Inlet Protection
- Check Dams
- Stabilized Rock Construction Entrances
- Sediment Traps

Most Important BMP = CESCL

- Keeps Daily Logs & Inspection Reports**
- Samples Stormwater Discharges**
- Maintains SWPPP**
- Adapts & Updates SWPPP**
- Ensures Regulatory Compliance**
- On-Call 24 Hours a Day**

Enter the Engineer

A photograph of a road construction site. In the background, a car is driving on a road that appears to be under construction or repair. The foreground is dominated by a large, dark pile of rocks and debris, likely from a road cut or a stormwater management structure. The scene is set in a wooded area with tall trees in the background.

- Entire Surface Area Shall be Measured
- Engineer Shall Calculate Anticipated Stormwater Flows
- Appropriate Temporary & Permanent BMPs shall be Selected Based on Modeled Calculations to Handle the Stormwater Flows
- BMPs Requiring Engineering Must Be Stamped by a Licensed Engineer

BMPs Requiring an Engineer

- Gradient Terraces
- Interceptor Swales or Dikes
- Orafices/Dams
- Grass Lined Channel
- Pipe Slope Drains
- Subsurface Drains
- Level Spreaders
- Outlet Protection
- Gravel Filter Berm
- Sediment Traps & Ponds
- Chemical Treatment
- Filtration



Stormwater Design Engineering Considerations

- **Identify Areas for Stormwater Infiltration**
- **Identify Area for Stormwater Collection**
- **Identify Construction Access**
- **Identify Lay-Down Areas for Materials**
- **Plan Contours to Eliminate Long and/or Steep Slopes**

Green Building = Good Erosion Prevention & Sediment Control

- Fit Development to Existing Terrain**
- Utilize Natural Drainage Patterns**
- Minimize Soil Disturbance**
- Critical Areas Should be Avoided**
- Choose Permeable Areas to Build on**
- Limit Impervious Surfaces**
- Place Buildings Together**
- Fill with Free-Draining, Clean Soils**

Prepare SWPPP

- SWPPP shall be a “living document”
- Contents of SWPPP are the Following 12 Elements:

1. Mark Clearing Limits
2. Establish Construction Access
3. Control Flow Rates
4. Install Sediment Controls
5. Stabilize Soils
6. Protect Slopes
7. Protect Drain Inlets
8. Stabilize Channels & Outlets
9. Control Pollutants
10. Control De-Watering
11. Maintain BMP's
12. Manage the Project



All Sites Require Multiple BMP's

Compost Sock

Creek

Coir Blanket

Silt Fence

Coir Logs

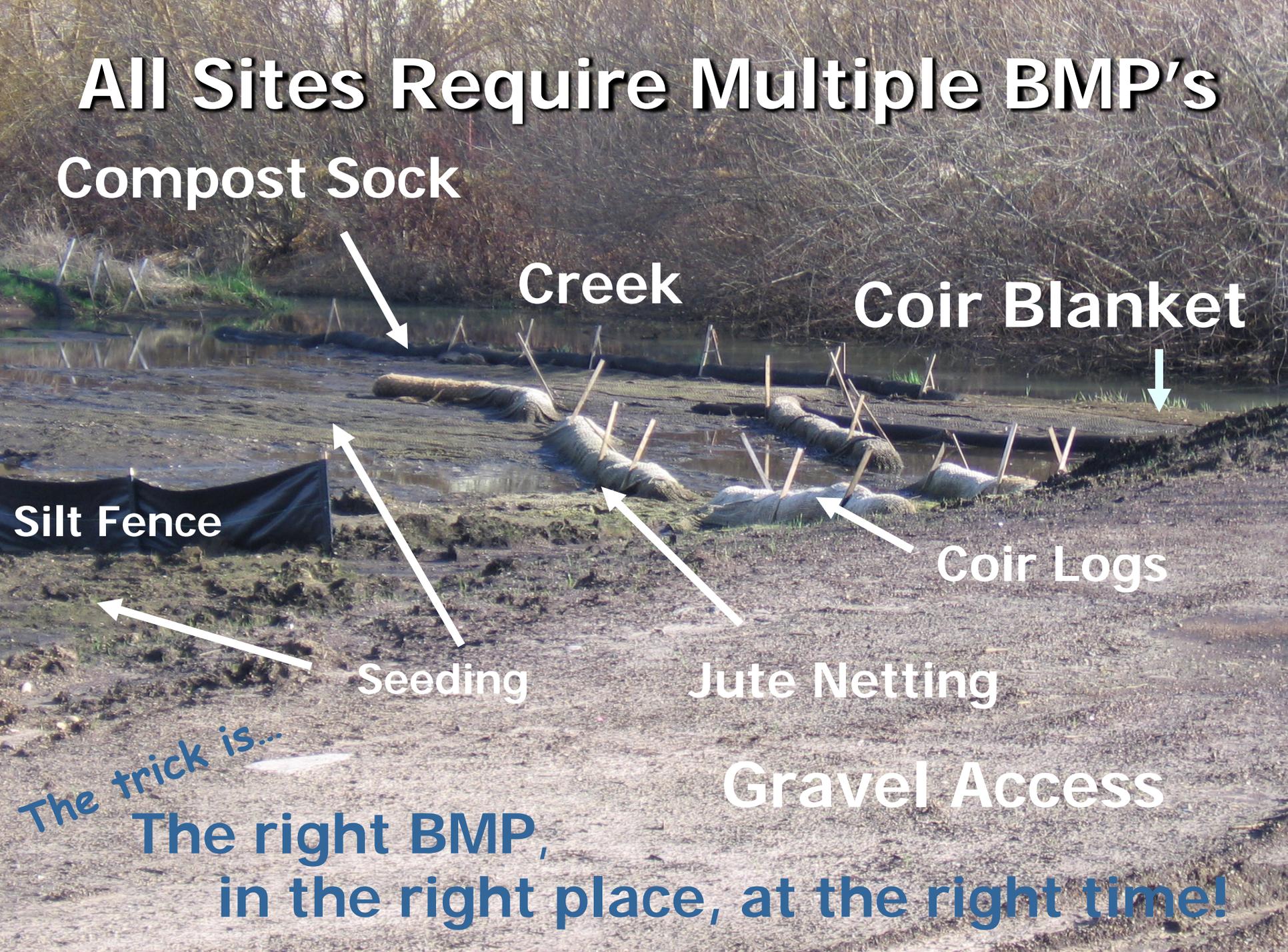
Seeding

Jute Netting

Gravel Access

The trick is...

**The right BMP,
in the right place, at the right time!**



USACE Bonneville Dam Fish Bypass BMPs During Construction



Stockpile

BFM Spray Truck

Silt Fence

Rip Rap

Columbia River

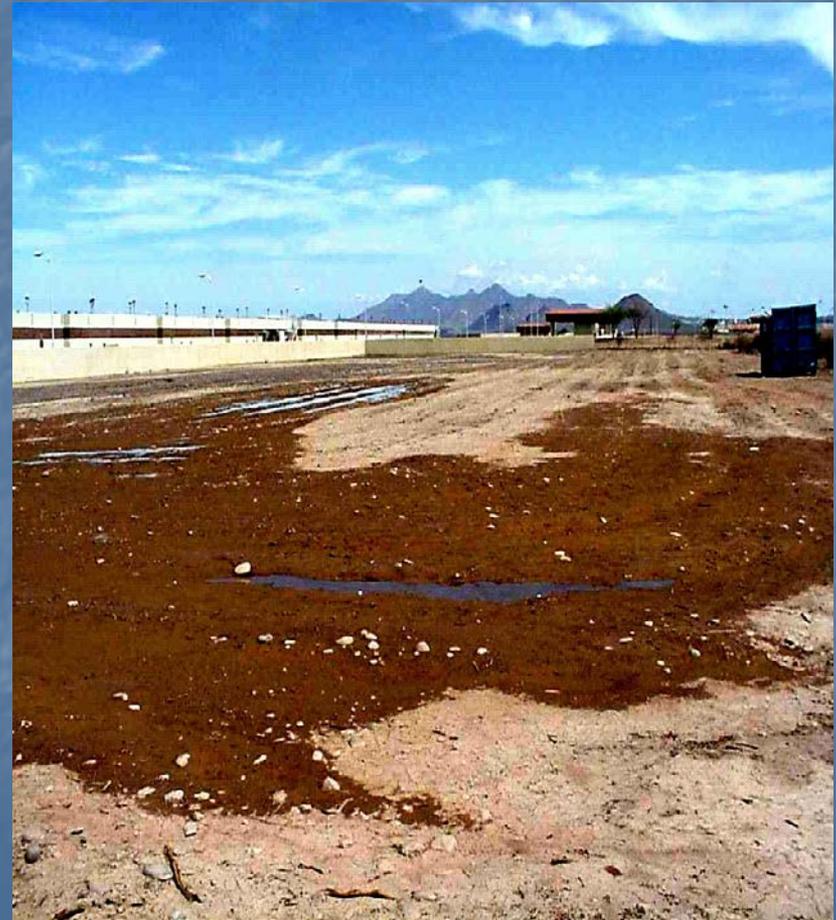


Gravel Road
Wattles
Seeding
Stockpiles Covered
Tree Protection

The Right BMP in the Right Place at the Right Time Takes Planning

the Clean Air Act Requires Dust Control Measures Too!

- Many BMP Practices Work Well for Dust Control during the dry summers.



A photograph of a construction site. In the foreground, a wide, shallow river flows with muddy, brown water. The riverbanks are composed of large, greyish-brown piles of sand and gravel. A yellow CAT excavator is positioned on the gravel bank in the middle ground. Another excavator is visible on the right side of the river. In the background, there are dense evergreen trees and mountains under a blue sky with some clouds. A person in an orange safety vest is standing on the left bank.

When Your Site Discharges to Surface Waters

- SWPPP & BMP's are designed to comply with State Water Quality Standards.
- 12 SWPPP Elements must be addressed as appropriate.

If Your Site Infiltrates all Stormwater

- SWPPP protects infiltration facilities from sediment contamination
- Groundwater is protected from pollutants other than sediment.
- UIC



**"There are only two BMPs
that always, always work -
leave the site vegetated and
undisturbed or pave it"**

Anonymous Soil Erosion Professional

