Erosion Prevention & Sediment Control for Small Scale/Homeonwer Projects



Sustainability for all the places between the buildings.

About Me



About You



Today, we will discuss

Best management practices (BMPs) for: Preventing erosion & Controlling sediment



Brief Activity Shake the Soil Jars!



The Water Balance Model Water Quantity Before



Water Balance BEFORE Development Simplified



50%

50%





Water Balance AFTER Development **Example: EVERYWHERE**



"Before" & "After" Runoff Compared



Runoff Volumes: A Watershed Perspective



The Water Balance Model Water Quality Before



The Water Balance Model Water Quality After



Water Quality & Soil: A Watershed Perspective



Soil is a Precious Resource (but very mobile)



Soil disturbance water quality approaches

Prevent impacts/Source control Protect resources Mitigate impacts Restore resources



An Ounce of Prevention...



Source Control Materials Handling

Place stockpiles so they don't drain towards the street or a catch basin inlet



Protect the soil from spills





Source Control Keep dirty stuff covered



Source Control Sweep your pavement





Erosion Prevention Retain Natural Vegetation



Tree Health During Construction

http://tinyurl.com/TreeProt





on Construction and Development Sites

A Best Management Practices Guidebook for the Pacific Northwest



Soil Quality Protection Limit Compaction

Rent track-hoe or flotation tire equipment to do the heavy lifting.



The fencing below is great for protecting the tree, but its purpose is defeated when you move the fence to store materials inside it.





Erosion Prevention

Erosion prevention is any practice that protects the soil surface and prevents the soil particles from being detached by rainfall or wind.



Erosion Prevention Keep soils covered

Rills have formed as a result of impervious soils concentrating runoff





A generous covering of straw is one way to protect soil. Compost works, too!

Courtesy of Paul Keiran

Erosion Prevention Cover Soils with Hydroseeding

Hydroseeding is more expensive than straw and isn't as reliable, but has the benefit of future vegeation growth.



Erosion Prevention Cover Soils with Fabrics



Erosion Prevention Limit Disturbance



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Soil Quality Protection Time of Year Matters - Erosion

Dry weather is the best time to avoid impacts





Habitat Value Time of Year Matters



Graphics from BES Terrestial Ecology Publication "Avoiding Impacts on Nesting Birds During Construction & Revegetation Projects"

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Sediment Control

"Sediment Control is any practice that traps the soil particles after they have been detached and moved by wind or water"...



Sediment Control

...to prevent this!



Photo excerpted from "ODEQ Erosion and Sediment Control Manual", DEQ, Apr 2005



Different strategies for two kinds of flow



Sediment Control - Overland Flow Sediment Fence Use & Maintenance



Sediment Control - Overland Flow Silt Fence Effectiveness

If you MUST use a sediment fence, use it only in sandy soils, never in clayey soils!

Efficiency:

This data indicates that sediment fencing can reduce TSS from 8 to 76% compared with no erosion control.

According to research conducted by Muson, 1991; Fisher et al, 1984; and Minnesota Pollution Control Agency, 1989, the following ranges of control can be obtained for TSS by using sediment fencing:

Sand	80% - 99%
Silt-Loam	50% - 80%
Silt-Clay-Loam	0% - 20%

Photos and study and text excerpted from "BMPs for Stormwater Discharges Associated with Construction Activities", DEQ, Feb 2006



Sediment Control for Overland Flow Compost Berm

May be vegetated (foreground) or non-vegetated (background)





Sediment Control for All Flows Compost Sock

Heavy & expensive, but there's really no substitute for controlling sediment on pavement, as shown





Sediment Control for All Flows Wattle



Sediment Control for Concentrated Flows at Inlets Inlet Filters





Sediment Control: Concentrated Flows Protecting Catch Basin Inlets



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Restore Soil Quality Compost Amendment





UW Stormwater Trials - till soil, no compost



With Compost - less runoff, better turf



All photos from Soils for Salmon website



Restore Soil Quality Amend Disturbed Soils with Compost



Building the Soil for Cleaner Water, Healthier Streams, Successful Landscapes, and Healthy Communities

:: Soils for Salmon Home

Why build healthy soil?

How To: Soil Best Practices

Case Studies

Other Resources

a project of the



Soils for Salmon

Builders, developers, and landscapers are adopting practices that preserve and improve the soil on building sites, and protect waterways, and local governments are beginning to require it.

The simple soil "best management practices" (BMPs) described here include preserving site topsoil and vegetation where possible, reducing compaction, and amending disturbed soils with compost to restore healthy soil functions.

Advantages to builders, consumers, and the environment include:

- More marketable buildings
- Better erosion control
- Easier planting
- Healthy, attractive landscapes
- Essier maintenance with less water and chemical needs

Case Studies



Port Blakely Communities uses compost-amended soil for healthy, attractive landscapes, erosion control, and satisfied customers. more case studies...

News

- Building Soil website

Restore Soil Quality Mycoryhzal Treatment

TESTIMONIAL FROM THE WEBMASTER



These poppies were planted by my wife at the same time, in identical commercial potting soil, and exposed to identical amounts of water, sunlight, etc. The pot on the right was inoculated with **Plant Success™ Tabs**, the one on the left was not. What a difference!

from www.fungi.com



Confirm Establishment Before Removing Controls



Take Home Messages

- A little bit of dirt can muddy a lot of water
- Your best, best management practices for protecting water resources from excess soils on a variety of projects are:
 - Sweeping
 - Soil cover strategies (fabrics, compost, straw)
 - Biobags
 - Compost berms
 - Wattles
- Like everything, how you install and maintain determines how well they work



For much more detailed (but easy to understand) info...

Oregon DEQ Publication: Construction Stormwater Erosion and Sediment Control Manual http://www.deq.state.or.us/wq/wqpermit/docs/general/npd es1200c/ErosionSedimentControl.pdf

Water Quality Division

Construction Stormwater Erosion and Sediment Control Manual

1200-C NPDES General Permit

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State of Oregon Department of Environmental Quality

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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.



Have fun







Sustainability for all the places between the buildings.

Erosion Control Gravel Construction Entrance

Existing Pavement or approved access point

> 4-6" Crushed Aggregate (ie. Big, angular rocks)

> > Geotextile fabric (aka Filter fabric) underneath









Reduce Excavation



Salvage Materials



Recycle Construction Materials

