


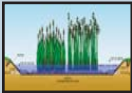








Examples of Industrial BMPs

Problem	Solution	Effectiveness	Picture
Storing liquids outside where rain or snow could transport material into stormwater runoff	Have secondary container that eliminates contact with stormwater	Reduced risk of contaminants such as oil and petroleum being exposed to stormwater	
Pressure washing equipment or vehicles outside can wash contaminants into stormwater runoff	Wash on a well constructed impervious surfaces with drains piped to sanitary sewers	Degreasers, soap, heavy metals, oil and grease are treated rather than contaminating stormwater	
Any site with potential for oily stormwater discharges	Installation of oil/water separator	Oil, grease and suspended solids can virtually be eliminated with these systems	
Surface water runoff contamination	Constructed wetlands, rain gardens or bioswales	Wetlands are highly effective at removing Sediment, Metals, BOD, nutrients, and hydrocarbons	
Employees may not be aware of the adverse impacts the company's business may have	Employee environmental education training	Training will make employees aware of potential impacts and offer ideas and suggestions to decrease pollution	

Examples of Construction BMPs

Problem	Solution	Description / Effectiveness	Picture
Forest clearing for development	Take measures to preserve existing vegetation during construction	Steep, unstable slopes should be left vegetated whenever possible. Mature trees with root systems and canopy provide excellent erosion control	
Bare soils left after construction is complete	Erosion control blankets & geotextiles (native vegetation and erosion control grasses)	Available in a variety of materials, many are biodegradable. Helps stabilize slope and reduce erosion.	
Outlet pipes where exit velocities exceed the ability of the soil to infiltrate	Outlet protection	An energy-dissipating device to prevent erosion from discharge runoff. Effective at allowing runoff to infiltrate rather than creating scour erosion.	
Surface water runoff contamination	Constructed wetlands, rain gardens or bioswales	Shallow areas with grass or other vegetation that act as filters for runoff. Do not use on steep, unstable slopes. Highly efficient at removing suspended solids, metals, nutrients, and oils.	
If wetlands or minor in-stream impacts are part of a project that will result in impervious surfaces	Develop post-construction Stormwater Management Plan	These plans help manage stormwater on site after construction. Important when forests or wetlands are being converted to impervious surfaces.	

Resources:

-Clean Water Services: **Erosion Prevention & Sediment Control Manual.** www.cleanwaterservices.org

-EPA's NPDES Stormwater Program: http://cfpub.epa.gov/npdes/home.cfm?program_id=6

-Oregon Association of Clean Water Agencies: **Fats, Oil & Grease BMPs Manual.** <http://www.oracwa.org/downloads/FOG-manual-english.pdf>

-Oregon DEQ Biofilters For Stormwater Discharge Pollution Removal. <http://www.deq.state.or.us/wq/stormwater/docs/nwr/biofilters.pdf>

-Oregon DEQ BMPs for Construction and Industrial Activities. www.deq.state.or.us/wq/stormwater/stormwater.htm

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Turning Rain Back Into a Resource!

A Guide to Stormwater Management

Oregon Stormwater Discharge Permits



Sand bags around drain inlets to prevent sediment from reaching storm drains



Constructed wetland to treat pollutants in stormwater runoff



Sediment fence to prevent erosion from impacting near-by waterways



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Oregon DEQ Stormwater Discharge Permits:

Municipal

Municipal stormwater permits are classified as either "NPDES Phase I" or "NPDES Phase II" municipal separate storm sewer systems (MS4s). Oregon DEQ is the EPA's delegate to oversee this program in Oregon. Currently there are 21 communities that have received these permits.

Total Maximum Daily Load (TMDL)

TMDL is a detailed evaluation that determines the amount of pollution a water body can assimilate while maintaining compliance with water quality standards.

Where a TMDL is established for a water body, and waste load allocations are assigned to urban stormwater, the permits will require the contributing communities to develop benchmarks and performance measures for the pollutants identified in the TMDL. Under these circumstances, smaller communities may be required to manage stormwater via an MS4 permit.

Industrial 1200-A & 1200-Z

Industrial sites can be large contributors of heavy metals, oil waste, and other substances that can impair waterbodies. Applying BMPs to the site can drastically reduce the ability of these contaminants to reach waterbodies. Some can be as simple as educating employees about where stormwater goes. Others can be more involved such as constructing detention ponds to control the quantity of stormwater leaving the site.

Who needs a Permit?:

The 1200-A and 1200-Z permits apply to specific Industrial facilities (*as defined in permitting application*) that may discharge stormwater from a point source to surface waters or to storm drains that discharge to surface waters. These permits focus on point source discharges. A Stormwater Pollution Control Plan (SWPCP) will be required for these permits.

Construction 1200-C

Soil erosion may be the largest water quality issue associated with construction activities. Erosion causes an increase in sedimentation which leads to water quality and habitat problems in our rivers, lakes, and estuaries. Erosion is significantly increased when ground cover is disturbed during construction activities. Sediment also carries pollutants such as nitrogen, phosphorous and heavy metals into our waterways.

Who needs a Permit?:

The 1200-C permit applies to construction activities that disrupt one or more acres of land. This includes clearing, grading and excavating. The 1200-C permit focuses on erosion control at construction sites. In-water and riparian work are not covered by this permit (*These are regulated by the Oregon Department of State Lands and local jurisdictions. A post-construction Stormwater Management Plan (SWMP) may also be required.*)

Best Management Practices (BMP's)

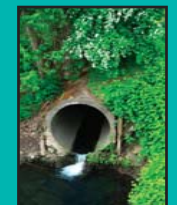
BMPs are methods of managing stormwater to reduce volume and velocity. BMPs and Low Impact Development (LID) can be a more efficient treatment method than traditional engineered approaches. LID management practices can also be more cost efficient and require less maintenance.

Structural BMPs require construction of physical structures that manage stormwater. Examples include: detention ponds, check dams, and outlet protection.

Non-structural BMPs are the planning and prevention methods of managing stormwater. These include: erosion and sediment control plans, early detection practices such as monitoring vehicles for leaks, pollution removal standards, and education about stormwater.



Local county/city governments may have additional permit requirements for stormwater and erosion control.



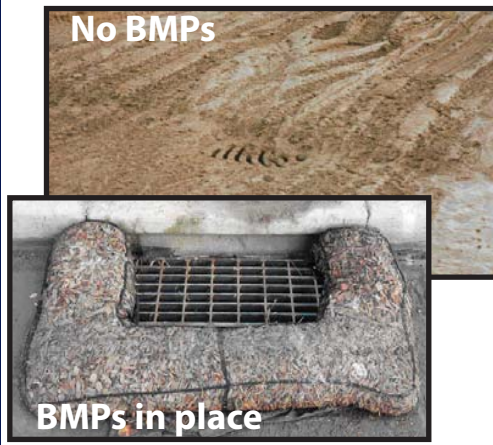
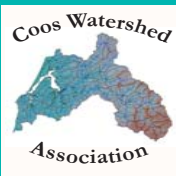
Point-Source:

A natural or human-made conveyance of water. This can include pipes, culverts, ditches, or another type of channel.

NPDES Stormwater Discharge Permits:

National Pollution Discharge Elimination System (NPDES) requires permits for any municipal, construction or industrial activity where stormwater from rain or snow-melt leaves your site through a "point source" and enters surface waters either directly or through storm drainage.

Supporting environmental integrity and economic stability within the Coos watershed.



How can Construction and Industrial Activities Impact our Waterways?

Nearby waterbodies are adversely affected by construction activities, ie. grading, when erosion is not controlled and stormwater (precipitation that doesn't percolate into the ground) carries sediment to the nearest stream. Water contamination, including, bacteria and fine sediment also occurs when unmanaged stormwater flows through an industrial site and to the nearest stream.

National Pollutant Discharge Elimination System (NPDES) permits are required for stormwater discharges to surface waters from construction and industrial activities and municipalities. Site operators are required to develop a Stormwater Pollution Control Plan identifying appropriate prevention, planning and structural Best Management Practices (BMPs) to control and treat stormwater on-site.