

# CHAPTER 1

## BACKGROUND

### 1.1 Introduction

When land is disturbed at a construction site, the erosion rate accelerates dramatically. Since ground cover on an undisturbed site protects the surface, removal of that cover increases the site's susceptibility to erosion. Disturbed land may have an erosion rate 1,000 times greater than the pre-construction rate. Even though construction requires that land be disturbed and be left bare for periods of time, proper planning and use of erosion prevention measures can reduce the impact of human-induced, accelerated erosion.

The major problem associated with erosion on a construction site is the movement of soil off the site and its impact on water quality. Millions of tons of sediment are generated annually by the construction industry in the United States. The rate of erosion on a construction site varies with site conditions, climate, and soil types, but is typically 100 to 200 tons per acre and may be as high as 500 tons per acre.

Sediment in streams is a contributing factor in the decline of Salmonid populations in our region. Sediment fills in clean gravel which spawning fish need. The increased turbidity impairs the feeding ability of fish and can also clog gill passages. Sediment laden waters leaving construction sites and entering streams, constitutes a "take" under the Endangered Species Act. This harming and harassing of the salmon leaves the permittee prone to third party lawsuits by special interest groups, not to mention fines from, DEQ, NMFS, and ODFW.

Erosion prevention measures are more effective than the reactive control of sediment. Once soil particles become dislodged, it requires greater efforts and costs to contain the sediment on the site. Sediment leaving the site may damage neighboring properties, block drainage systems, and enter roadways. Local government budgets must pay for removing the sediment from these streets, sewers, ditches, and culverts.

Identifying erosion problems at the planning stage and noting highly erodible areas helps in selecting cost effective, environmentally sensitive erosion control measures. This manual focuses primarily on the prevention of sedimentation associated with water and wind generated soil erosion.

An important concept to keep in mind when developing erosion control plans: ***construction practices, which minimize the amount of disturbed land area and avoid or minimize work on steep slopes, are encouraged.*** Such practices can provide the following positive results:

- Less chance of soil washing off the site onto streets, drainage systems, and adjacent properties.
- The number and size of erosion control measures required will be minimized.
- The overall cost of maintaining erosion and sediment control facilities are minimized.
- As much top soil as possible is retained on the site, making revegetation and landscaping easier to establish.

Water pollution in the United States is regulated under the Clean Water Act (CWA) of 1972. In 1987, Congress amended the CWA to include nonpoint sources of pollution. Nonpoint pollution occurs when runoff from land carries pollutants to receiving waters. Section 402 of the CWA provides the legal basis for the National Pollution Discharge Elimination System (NPDES) permit program, which regulates point and nonpoint discharges.

The U.S. Environmental Protection Agency (EPA) has delegated the implementation of the National Pollution Discharge Elimination System (NPDES) program to the state of Oregon. The Oregon Department of Environmental Quality (DEQ) administers the NPDES program through Oregon Revised Statute (ORS) 468B and associated Oregon Administrative Rules (OAR). ORS 468B.025 explicitly prohibits the discharge or placement of wastes into waters of the state, prohibits the discharge of waste that causes violations of water quality standards, and prohibits violations of permit conditions.

### **1.2 Background and Policies**

It is the local jurisdiction's goal to comply with all conditions of the NPDES permit and other Federal, State, County, and City regulations or requirements. This permit addresses sediment discharge in storm water runoff from construction projects, which disturb one acre or more as part of a statewide mandate. Most jurisdictions require a local permit on projects that disturb 500 square feet or more (threshold varies by jurisdiction). In addition, erosion and sediment control measures must be installed prior to any disturbance.

In general, the Department of Environmental Quality (DEQ) issues the NPDES 1200-C permit, but through a Memo of Agreement (MOA), some local jurisdictions serve as Agents of DEQ and/or issue a joint permit for projects within their jurisdiction.

Under existing planning and permitting requirements, the owner/permittee must assure its actions do not harm, jeopardize, threaten, or endanger species. In addition, owner/permittee shall implement conservation measures, or reasonable and prudent measures identified by the U.S. Fish and Wildlife Services and the National Marine Fisheries Services, to avoid and minimize potential adverse effects to such species.

The owner/permittee shall be aware of, and adhere to, any limitations in the work area imposed by environmental permits such as the Division of State Lands (DSL), and U.S. Army Corps of Engineers (USACE) removal/fill permit.

As a general rule of thumb, the owner/permittee should submit a work schedule and plan that indicates planned implementation of temporary and permanent erosion control measures, including shutdown procedures for winter and other work interruptions.

General design and construction considerations are as follows.

- Plan, site, and develop in a manner that minimizes impacts and protects areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss.
- Minimizing land disturbance such as clearing and grading and cut and fill to reduce erosion and sediment loss.

- Where applicable and appropriate, locate construction pollutant sources (including sediment) away from drainage swales, wetlands, or water bodies.
- Cut and fill slopes will be as flat as practicable and consistent with soil stability. Slopes of 2:1 or steeper may require special design.
- Sediment removed from sediment control facilities should be placed in non-critical flat areas of the site. In no instances should the removed sediment be placed in a position where subsequent rainfall could return it to the sediment control devices.

*Approval of a construction erosion and sediment control plan by the permitting authority does not relieve the applicant's responsibility to ensure that erosion control measures are constructed and maintained to contain sediment on the construction site.*

### **1.3 National Pollution Discharge Elimination System (NPDES) Permit Requirements**

As the administrator of the NPDES permit, DEQ or its designee has the authority to grant permits for construction activities clearing, grading, excavation, and stockpiling.

Potential pollutant sources covered by this permit include those released through construction activities performed under the authority or jurisdiction of the public agency. Until the permit expires or is modified or revoked, the permittee or the permittee's contractor is authorized to construct, install, modify, or operate erosion and sediment control measures and storm water treatment and control facilities, and to discharge storm water to public waters in conformance with all the requirements, limitations, and conditions set forth within the NPDES permit. Measures used to conform to the 1200-C permit are called Best Management Practices (BMP's). Unless authorized by another NPDES permit, all other direct and indirect discharges to public waters are prohibited. The primary NPDES mandated controls, limitations and plan requirements are as follows.

1. The permittee shall ensure that an adequate Erosion and Sediment Control Plan (ESCP) is prepared and implemented for each construction activity regulated by this permit and under the authority or jurisdiction of the permittee.
2. A copy of the ESCP for each construction activity shall be retained on-site and made available to the DEQ, or its designee. During inactive periods of greater than seven consecutive calendar days, the ESCP shall be retained by the permittee.
3. The ESCP shall be developed and implemented to prevent the discharge of significant amounts of sediment to surface waters. Under the NPDES 1200-C permit, the following observations are considered significant.
  - a. Earth slides or mud flows that leave the construction site and are likely to discharge to surface waters.
  - b. Evidence of concentrated flows of water causing erosion when such flows are not filtered or settled to remove sediment prior to leaving the construction site and are likely to discharge to surface waters. Evidence includes the presence of rills, gullies, or channels. Flow to storm water inlets or catch basins located on the site will be considered "leaving the site" if there are no sediment control structures downstream of the inlets or catch basins that are under the permittee's control.

- c. Turbid flows of water that are not filtered or settled to remove sediment prior to leaving the construction site and are likely to discharge to surface waters. Flow to storm water inlets or catch basins located on the site will be considered “leaving the site” if there are no sediment control structures downstream of the inlets or catch basins that are under the permittee’s control.
  - d. Deposits of sediment at the construction site in areas that drain to unprotected storm water inlets or catch basins that discharge to surface waters. Inlets and catch basins with failing sediment controls due to lack of maintenance or inadequate design will be considered unprotected.
  - e. Deposits of sediment from the construction site on public or private streets outside of the permitted construction activity that are likely to discharge to surface waters.
  - f. Deposits of sediment from the construction site on any adjacent property outside of the permitted construction activity that are likely to discharge to surface waters.
4. DEQ or its designee may require modifications to the ESCP at any time if the ESCP is ineffective at preventing the discharge of significant amounts of sediment to surface waters.
  5. Significant amounts of sediment that leave the site shall be cleaned up within 24 hours and placed back on the site or disposed of properly. Any in-stream clean up shall be coordinated with the DSL.
  6. Under no conditions shall sediment from the construction site be washed into storm drain sewers or drainage ways.
  7. Each ESCP shall include any procedures necessary to meet local erosion and sediment control requirements or storm water management requirements.
  8. Each ESCP shall also include, at a minimum, a site description, site map, required controls and practices, additional controls and practices, inspection requirements, inspection requirements for inactive or inaccessible sites, and written records.

The penalties for water pollution and permit condition violations are as follows.

- Oregon Law (ORS 468.140) allows the Director (DEQ) to impose civil penalties up to \$10,000 per day for violation of a term, condition, or requirement of a permit.
- Under ORS 468.943, unlawful water pollution, if committed by a person with criminal negligence, is punishable by a fine of up to \$25,000 or by imprisonment for not more than one year, or by both. Each day on which a violation occurs or continues is a separately punishable offense.
- Under ORS 468.946, a person who knowingly discharges, places or causes to be placed any waste into the waters of the State or in location where the waste is likely to escape into the waters of the State, is subject to a class B felony punishable by a fine not to exceed \$200,000 and up to 10 years in prison.

A detailed report of the 1200-C regulations can be obtained on the DEQ web site.

### **1.4 Additional Water Quality Requirements**

Statewide, additional water quality requirements are in place or are being developed for:

- Total Maximum Daily Loads (TMDLS) – set the amount of certain pollutants a waterway can receive without violating water quality standards. A plan is then developed and put in to place to reduce the levels of these pollutants.
- Turbidity Standards – Turbidity is a measure of cloudiness in water. It can be caused by soil erosion, water discharge and runoff. High turbidity levels mean that water bodies contain a denser amount of particles. Turbidity may adversely affect a wide range of aquatic species, including endangered fish.
- Underground Injection Control (UIC) – rules for subsurface drainage systems that are designed to distribute storm and surface water below the ground surface (e.g. drywells/sumps, certain types of “French drains”, etc.). These rules are associated with the Safe Drinking Water Act and are designed to help protect aquifers from contamination.

These requirements are likely to have a significant impact on erosion prevention and sediment control requirements. More information is available on the DEQ website and through your local jurisdiction.

### **1.5 Other Agencies and Acts**

During the planning process, designer should coordinate meetings with other private groups and public agencies or jurisdictions that may either have an interest in, or control of the impacts of proposed development. This process provides a means for other interested parties to supply input regarding erosion and sediment controls, environmentally sensitive areas, and other regulated activities.

The development of an ESCP spans the entire planning, design, and construction stages of a project. To be successful, it is imperative that communication among the interested parties be established and maintained throughout each stage of development and in accordance with Federal, State, and local agencies and acts. Some of the principle agencies and acts are described in the following sections.

#### **1.5.1 Endangered Species Act**

In March of 1999, winter steelhead and spring Chinook were listed as threatened in the Tualatin Basin. Previously listed aquatic species include the northwestern pond turtle and the red-legged frog. Erosion of soil from an unstable landscape can dramatically impact the habitat and survival of these species. Under ESA, the “take” of a species is prohibited. The term “take” includes: to harass, harm, kill, or injure the listed species. Any act that modifies or degrades their habitat in a manner that significantly impairs essential behavioral patterns such a breeding, spawning, rearing, migrating, feeding or sheltering and results in death or injury to a protected species is considered harmful.

Permitting or participating in construction that occurs in such a way and at such a time that sedimentation significantly impairs salmon survival might be construed as a “take.” The more direct connection between what the government entity authorizes (or fails to enforce) the

contractors actions (or failure to act) and the injury to the species, the more likely that the parties could be held responsible for a “take.”

### **1.5.2 Title 3**

The goal of the Stream and Floodplain Protection Plan (Title 3) is to protect the region's health and public safety by reducing flood and landslide hazards, controlling soil erosion, and reducing pollution of the region's waterways.

Title 3 specifically implements the Oregon Statewide Land Use Goals 6 and 7 by protecting streams, rivers, wetlands, and floodplains by avoiding, limiting or mitigating the impact on these areas from development.

Title 3 contains performance standards to protect against flooding. The standards limit development in a manner that requires balanced cut and fill and floor elevations at least one foot above the flood hazard standard. The areas subject to these requirements have been mapped and adopted by Metro Council. The areas are the FEMA 100-year floodplain and the area of inundation for the February 1996 flood.

The purpose of these standards is to protect and allow enhancement of water quality. The water quality areas are rivers and streams with a protected vegetated corridor width depending on the slope of the stream and the number of acres drained by the stream. The performance standards require erosion and sediment control, planting of native vegetation on the stream banks when new development occurs, and prohibition of the storage and uses of hazardous material in water quality areas.

Finally, the functional plan directs Metro to establish performance standards to protect regionally significant fish and wildlife habitat areas. Those seeking to develop sites within these sensitive areas must contact their local jurisdictions to determine buffer width.

### **1.5.3 Other Interest Groups & Citizens**

Citizen advisory committees, friends groups and neighborhood associations are taking a more active role with growth of their communities. Civic and environmental values have become an integral part of the land use process. This partnering with local governments has created a more responsive method for planning urbanization and protecting the natural features that add to the livability of our watersheds.

Watershed restoration is an excellent way to enhance community volunteerism in our rapidly urbanizing areas. Local municipalities have developed an advantageous working relationship with civic-minded groups.

The US EPA has identified erosion as the single largest cause of impaired water quality in rivers. The need for increased erosion control measures, and the enforcement thereof, has been

established. Communities taking ownership of their local watersheds, has proven advantageous to the environment.

### **1.5.4 Department of State Lands (DSL)**

Division of State Lands (DSL) was first established in 1878 as the Office of the Clerk of the Land Board and is one of Oregon's oldest state agencies. It was renamed and elevated to Executive Agency status by the 1967 State Legislature. DSL manages the state's submerged and submersible lands under navigable rivers, lakes, estuaries, and the territorial sea to maintain fisheries, commerce, recreation, and navigation.

DSL is a regulatory agency, responsible for administration of Oregon's Removal-Fill Law. That law, enacted in 1967, is intended to protect, conserve and allow the best use of the state's water resources. A permit is required from DSL to remove, fill or alter more than 50 cubic yards of material within the bed or banks of waters of the state.

Exceptions are in State Scenic Waterways and areas designated essential salmon habitat, where a permit is required for all in-stream activity, regardless of size.

DSL also is responsible for Oregon's wetlands program. This includes maintenance of a statewide wetland inventory, providing public information and technical assistance about wetlands to local governments and landowners, and providing wetland conservation grants to local governments conducting detailed wetland inventories.

### **1.5.5 United States Army Corps of Engineers (USACOE)**

Army Corps of Engineers (ACOE), principal engineering component of the United States Army, dates from June 16, 1775, when the Continental Congress authorized a chief engineer and two assistants for the army. They prepared the fortifications for the Battle of Bunker Hill. The engineers were permanently organized into a corps in 1802.

The present work of the corps is divided between military and civil projects. The program currently includes construction for the army and air force and environmental restoration of areas contaminated by toxic wastes. The civil program centers on development of water resources, including navigation improvement, hydroelectric power, flood control, recreation, and conservation of fish and wildlife. When requested, the corps provides engineering expertise to other agencies, state and local governments. The work ranges from constructing wastewater treatment plants and space launch facilities to other complex engineering tasks. Engineering professionals help remove toxic wastes and help other nations with the damage caused by disasters and wars.

DSL and ACOE have developed a joint permit application process. Although the regulatory authorities of DSL and ACOE are different, their roles, when considered together, include protecting navigable waters (and the ocean), ensuring wise and beneficial water use, maintaining and enhancing water quality, protecting fish and wildlife habitat and recreation resources, and in general, protecting the public interest.

Joint permit applications, after receipt, are forwarded to the DEQ, or its designee for review to ensure that it does not endanger Oregon's streams and wetlands and to confirm that the plans meet water quality laws and standards. Frequently, applicants are required to incorporate protective measures into their construction and operational plans, such as bank stabilization, treatment of storm water runoff, spill protection, and fish and wildlife protection.

### **1.5.6 United States Department of Agriculture (USDA)**

The U.S. Department of Agriculture (USDA) offers landowners financial, technical, and educational assistance to implement conservation practices on privately owned land. Using this help, farmers, ranchers, and forest landowners apply practices that reduce soil erosion, improve water quality, and enhance cropland, forest land, wetlands, grazing lands, and wildlife habitat. Incentives offered by USDA promote sustainable agricultural and forestry practices, which protect and conserve valuable farm and forest land for future generations. USDA assistance also helps individuals and communities restore natural resources after floods, fires, or other natural disasters.

### **1.5.7 Natural Resources Conservation Service (NRCS)**

The Natural Resources Conservation Service (NRCS), formerly called the Soil Conservation Service, was born of adversity, a national response to the Dust Bowl catastrophe of the mid-1930's. The agency's first chief, Hugh Hammond Bennett, spoke eloquently for the land when he convinced Congress that soil erosion was a national menace, that a permanent agency was needed within the Department of Agriculture to call landowners' attention to their land stewardship opportunities and responsibilities, that a nationwide partnership of Federal agencies with local communities was needed to help farmers and ranchers conserve their land.

NRCS is the U.S. Department of Agriculture's lead conservation agency. Its partners include conservation districts, state and federal agencies, NRCS Earth Team volunteers, agriculture and environmental groups, and professional societies. The strength of NRCS is in its workforce. They are based out of county, state, regional, and national offices and specialize in soil science, soil conservation, agronomy, biology, agroecology, range conservation, forestry, engineering, geology, hydrology, cultural resources, and economics.

### **1.5.8 Soil & Water Conservation District (SWCD)**

The first SWCD in Oregon was established in Tillamook County in 1941. Presently there are forty-five conservation districts in Oregon, providing services to private landowners and managers statewide. There is at least one conservation district in each Oregon County. Soil and Water Conservation Districts are political subdivisions of state government and are under the administrative oversight authority of the Oregon Department of Agriculture. When the first conservation districts were formed, their focus was on soil erosion control in rural areas. Once considered primarily agriculturally oriented, many conservation districts are now actively

involved in urban water quality and quantity issues, such as land uses and run off from construction sites, and in providing assistance to landowners with just a few acres.

Perhaps the most important responsibility of the Soil and Water Conservation District is to conduct research relating to the character of soil erosion, the character of flood water and sediment damage. They also develop comprehensive plans and specifications for the conservation of soil resources and for the continued control and prevention of soil erosion.

### **1.5.9 Oregon Department of Fish and Wildlife (ODFW)**

The Oregon Department of Fish & Wildlife is made up of predominately fish and wildlife biologists. Their main responsibility is to protect all fish and wildlife as well as their habitat throughout the entire State of Oregon. Their key audiences are fishing & hunting license holders, unorganized wildlife enthusiasts organized conservation groups, legislators and the media. ODFW has the authority to seek damages in a court of competent jurisdiction for the value of fish and wildlife injured or killed as the result of pollution or violation of the condition of any permit. The damages could include all costs for restoring the production of fish and wildlife in the affected areas

ODFW will also works cooperatively with other state and federal agencies to eliminate sources of pollution or other environmental damage, to prevent natural resource losses through educational efforts and through enforcement of anti-pollution and other environmental laws, and to ensure that violations of anti-pollution and other environmental laws are pursued to the fullest extent of the law.

### **1.5.10 National Marine Fisheries Service (NMFS)**

The National Marine Fisheries Service (NMFS) is a part of the National Oceanic and Atmospheric Administration (NOAA). NMFS administers NOAA's programs to conserve, protect and manage living marine resources. The Protected Resources Division (PRD), located in Portland, Oregon, provides program oversight, and regional policy guidance on the conservation of at-risk anadromous, estuarine, and marine fishes in the NMFS Northwest Region. The PRD staff includes biologists, natural resource specialists, and policy analysts who work in conjunction with other NMFS programs to help administer provisions of the Endangered Species Act (ESA).

NMFS is dedicated to the protection of marine resources including salmon and trout that live at least part of their lives at sea. Due to declining numbers, certain populations have been listed as endangered or threatened under the Endangered Species Act. The ESA protects these fish and the habitats they depend on as they migrate to and from the Pacific Ocean. Along with federal protection under the ESA, state laws apply additional safeguards for the fish and their habitats.

Protection of water quality sensitive areas and restoration of vegetated corridors are important because once protective regulations enacted through the ESA are issued, NMFS requires that all

parties must avoid killing or harming a listed species, and avoid adverse affects to the habitat that supports listed species.

### **1.5.11 Oregon Department of Forestry (ODF)**

The ODF manages several programs which protect the States forest lands and ensure a plentiful natural resource. The Department's largest program protects the 28,289,000 acres of forest land from wild fire. The Forest Practices program assures the growing and harvesting of forest tree species and maintenance of forest land for forest purposes are the primary uses of privately owned forest lands. The program also assures that forest practices are consistent with the sound management of soil, air, water, fish, and wildlife resources. Like many of the other environmental agencies, the ODF provides technical and financial assistance. By providing this service, it helps to mitigate Oregon's future timber supply shortage while it promotes forest health. It also enhances and protects critical natural resource values such as fish and wildlife habitat, soils, air, water, recreation, and aesthetics on non-federal forest land.