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Chapter 6

EROSION PREVENTION AND SEDIMENT CONTROL

6.01 General Provisions

a. The requirements of this Chapter shall apply to all activities requiring an Erosion Control Permit. The applicant for the Erosion Control Permit shall be responsible for meeting these requirements.

b. Nothing in this section shall relieve any person of the obligation to comply with the regulations or permits of any federal, state, or local authority.

c. The use of erosion prevention techniques, including proper site planning and construction phasing, shall be emphasized, rather than sediment control measures.

d. These erosion control rules apply to all properties within the CWS boundary, regardless of whether that property is involved in a construction or development activity.

6.02 Erosion Prevention and Sediment Control (EPSC) Standards

6.02.1 Erosion Prohibited

a. Visible or measurable erosion as defined in Chapter 1, which enters, or is likely to enter, the public or private storm and surface water system or other properties, is hereby prohibited, and is a violation of these rules, unless authorized by a State or Federal permit or certification. The owner of the property, permittee under a Site Development Permit, together with any person or persons, including but not limited to the Contractor or the Engineer causing such erosion, shall be held responsible for violation of these rules.

b. Unless authorized by a State or Federal permit or certification, no person shall create physical erosion by dragging, dropping, tracking, or otherwise placing or depositing, or permitting to be deposited, mud, dirt, rock or other such debris upon a public street or into any part of the public storm and surface water system, or any part of a private storm and surface water system which drains or connects to the public storm and surface water system. Any such deposit of material shall be immediately removed using hand labor or mechanical means. No material shall be washed or flushed into any part of the storm and surface water system until all mechanical means to remove the debris have been exhausted and preventative sediment filtration is in place. The owner of the property, permittee, under a Site Development Permit, together with any person or persons, including but not limited to the Contractor or the Engineer who causes such erosion, shall be held responsible for violation of these rules.

6.02.2 EPSC Plans

An EPSC plan shall be prepared in accordance with the requirements of Chapter 2 for all sites where an Erosion Control Permit is required.

6.02.3 Approved BMPs

The best management practices (BMPs) prescribed in subsection 6.03 are the approved BMPs that shall be used to meet subsection 6.02.1. Use of other BMPs shall require approval from the District or City.

6.02.4 Minimum BMPs

The minimum BMPs required shall include all the Base Measures described in subsection 6.03.2. In addition, for sites requiring an EPSC plan, the additional BMPs described in the EPSC plan shall be required.

6.02.5 Additional BMPs Required

Depending on site-specific conditions, the required base measures may be inadequate to prevent erosion and control sediment discharges. In these cases, additional BMPs shall be applied to the site to meet the requirements of section 6.02.1.

6.02.6 Wet Weather Measures

a. On sites where vegetation and ground cover are removed, vegetative ground cover shall be planted and established by October 1 and continue to function through May 31 of the following year, or as approved by the District. If ground cover is not established by October 1, the open areas shall be protected through May 31 of the following year with straw mulch, erosion blankets, or other methods approved by the District or City.

b. On active sites ground cover is required at the end of each day between October 1 and May 31.

6.02.7 NPDES 1200-CN and 1200-C Permit

In addition to the District or City Erosion Control Permit, a NPDES 1200-CN or 1200-C permit is required for projects disturbing greater than one acre.

6.02.8 Maintenance and Removal of BMPs

a. The permittee shall maintain the BMPs contained in the approved EPSC plan to continue to be effective during the construction phase, post construction phase, establishment of permanent vegetation, or any other permitted activity. If the BMPs approved in an EPSC plan are not effective or sufficient as determined by the District or City site inspection,

the permittee shall submit a revised plan within three working days of written notification by the District or City. Upon approval of the revised plan by the District or City, the permittee shall immediately implement the additional BMPs included in the revised plan. In cases where erosion is likely to occur, the District or City may require the applicant to install interim control measures prior to submittal and/or approval of the revised EPSC plan.

b. Temporary BMPs, such as sediment fences, shall be removed after permanent vegetation is established.

6.02.9 Removal of Sediment

When erosion occurs and sediment is deposited in locations where it can enter the storm and surface water system, the sediment shall be immediately removed using hand labor or mechanical means. No material shall be washed or flushed into any part of the storm and surface water system until all mechanical means to remove the debris have been exhausted and preventative sediment filtration, e.g., inlet protection, is in place.

6.02.10 Contaminated Soils

In the event the construction process reveals soils contaminated with hazardous materials or chemicals, the Contractor shall stop work immediately, ensure no contaminated material is hauled from the site, remove the Contractor's work force from the immediate area of the contaminated area, leaving all machinery and equipment, and secure the area from access by the public until such time as a response team has relieved them of that responsibility. The Contractor shall immediately notify an emergency response team, the District or City, and Department of Environmental Quality of the situation.

6.02.11 Other Requirements

a. To the degree practicable, existing vegetation shall be protected and left in place, in accordance with the clearing limits on the approved EPSC plan.

b. Trees shall not be used as anchors for stabilizing working equipment.

6.03 Best Management Practices

6.03.1 General

This section provides a list of approved BMPs. Each BMP shall be implemented consistent with additional information in the Standard Details.

6.03.2 Base Measures

The following BMPs, as described in Table 6-3, shall be implemented on all sites requiring an Erosion Control Permit:

a. Gravel Construction Entrance/Exit

b. Linear Barrier or Perimeter Control

c. Storm Drain Inlet Protection

6.03.3 Erosion Prevention BMPs

Erosion prevention is the highest priority in the overall EPSC plan and shall be integrated into a project throughout the planning, design, scheduling, and construction phases. Erosion prevention BMPs shall be included in the approved EPSC plan. Table 6-1 is a list of approved erosion prevention BMPs.

TABLE 6-1
EROSION PREVENTION BMPs

BMP	Std. Detail	Description
Preserve Natural Vegetation		Maintain existing vegetation or place vegetative buffer strips. This BMP is especially effective for sites with sensitive resources like wetlands, stream corridors, lakes, and steep slopes.
Buffer Zone		An undisturbed area or strip of natural vegetation or an established suitable planting adjacent to a disturbed area that reduces erosion and runoff. A Vegetated Corridor shall not be used or considered a buffer zone under this chapter.
Temporary and Permanent Seeding		Vegetative cover established on disturbed areas to reduce erosion by seeding (applied by hand or hydroseeding) with appropriate and rapidly growing grasses. Permanent seeding can be used in conjunction with erosion control blankets and mats to provide both temporary and permanent erosion prevention control.
Ground Cover		A protective layer of straw or other suitable material applied to the soil surface. Various ground cover methods include straw mulch and compost blankets.

BMP	Std. Detail	Description
Hydraulic Application		A mechanical method of applying erosion control materials, other than simply hydro-seeding, to bare soil. This BMP is often called Bonded Fiber Matrix (BFM). BFM can be used without seed in upland areas to stabilize and prevent erosion. This BMP cannot be used in areas of concentrated flow or water quality facilities. This BMP may be used in place of straw, mulch, compost, or matting depending on site and weather conditions.
Sod		Permanent or temporary turf for immediate erosion protection and stabilization.
Matting	800 805	A class of products that includes manufactured mulch materials that are produced in a roll configuration that is placed on the ground and held in place by stakes, metal staples, geotextile pins, or other fastening system. Matting shall be 100% biodegradable fibers, or approved equal. Refer to the Floodplain, Wetland and Stream Construction Strategies Handbook for a comparison of matting types for work in sensitive areas.
Soil Binders		Materials that are applied to the soil surface for dust control and temporary erosion control. These are also known as hydraulic soil stabilizers.
Stockpile Management	810	Methods to reduce or eliminate loss of sediment from temporary stockpiles of soil.
Dust Control		Water applied over susceptible areas, typically due to dry soil conditions, during high wind periods. (Also see section 6.03.6).

6.03.4 Runoff Control BMPs

The purpose of runoff control BMPs is to control stormwater runoff and drainage patterns at construction sites. Runoff control BMPs shall be included in the EPSC plan. Table 6-2 is a list of approved runoff control BMPs.

TABLE 6-2
RUNOFF CONTROL BMPs FOR ALL SITES

BMP	Std. Detail	Description
Pipe Slope Drain	815	The pipe slope drain carries concentrated runoff down steep slopes without causing gullies, erosion, or saturation of slide-prone soils. It should be designed to intercept and direct surface runoff or groundwater into a stabilized watercourse, trapping device, or stabilized area.
Outlet Protection	820 825	Outlet protections are physical structures that reduce the velocity and energy of concentrated flow to prevent scour at conveyance outlets. Outlet protection includes riprap-lined basins, concrete aprons, and stilling basins.
Surface Roughening	830 835	Soil surface is roughened by mechanical methods. All slopes prepared by surface roughening shall meet engineering compaction requirements. This BMP is intended to only affect the surface of soils and is not intended to compromise slope stability or overall compaction.
Check Dams	840 845	Small, temporary dams placed across a natural or man-made channel or drainage ditch and designed to reduce drainage ditch erosion caused by stormwater runoff by reducing the velocity of flow in the ditch. Check dams are often used as a temporary measure while a channel is being permanently lined with vegetation or other materials to prevent erosion.
Diversion Swale or Dike	850	A ridge of compacted soil or a vegetated lined swale located at the top, base or somewhere along a sloping disturbed area.

6.03.5 Sediment Control BMPs

a. Sediment control BMPs include any practice that traps soil particles after they are dislodged and moved by wind, water, or mechanical means. These BMPs are usually passive systems that rely on filtering or settling particles out of the water or wind once they have become suspended. Soil that accumulates in or near sediment control BMPs is a waste product that must be removed and disposed of at an approved location. Uncontaminated sediment/soil can be placed back on site and protected with appropriate erosion control BMPs.

b. Sediment control BMPs are considered the last line of defense before stormwater runoff leaves a site and are not to be used as the primary methods for erosion prevention and sediment control.

c. These BMPs are to be applied prior to and during earthwork.

d. Sediment control BMPs shall be included in the approved EPSC plan.

e. The perimeter sediment barrier identified in Table 6-3 is not required where:

1. Flows are collected through the use of temporary or permanent grading or other means such that the flows are routed to an approved settling pond, filtering system, or sediment control BMP.

2. There are no concentrated flows, slopes are less than 10 percent, and runoff passes through a grass area which is either owned by the applicant or such use is allowed, through written agreement, by the Owner of the grass area. The grass area shall be at least equal in dimensions to the project area. The grass area shall not be located in a Vegetated Corridor or Sensitive Area.

3. The surface is protected by re-established permanent vegetation.

f. Table 6-3 is a list of approved sediment control BMPs.

TABLE 6-3
SEDIMENT CONTROL BMPs

BMP	Std. Detail	Description
Gravel Construction Entrance/Exit *	855	Gravel construction entrances/exits shall be required at each entrance/exit to and from the site. If a property contains or is adjacent to a stream, watercourse, stormwater facility, wetlands or other water quality sensitive area, BMPs in addition to a gravel construction entrance/exit shall be required to prevent physical erosion into the water quality sensitive area.
Tire Wash Facility	865 870	The wheel wash, which shall be incorporated with a stabilized construction entrance, shall be designed and constructed for anticipated traffic loads.
Linear Barrier or Perimeter Control *	875 880	Linear barrier shall be installed around the down-gradient perimeter of the site to control sheet flow from the site. Sediment fence shall not be placed in areas of concentrated flow or across stream channels.

BMP	Std. Detail	Description
Wattles	880 885	Wattles are small, cylindrical barriers composed of biodegradable fibers encased in photodegradable open-weave netting. Wattles are placed in shallow trenches and staked along the contour of newly constructed or disturbed slopes.
Storm Drain Inlet Protection *	900-925	Temporary inlet protection shall be provided for all active inlets for the duration of construction to keep sediment, trash, and other construction-related pollutants out of the storm drain system.
Rock or Compost Berm	890	Rock or compost filter berms are temporary barriers composed of compost or rock. These are designed for sheet flow, not concentrated flow, and shall not be placed across a stream or channel.
Sidewalk Subgrade Gravel Barrier	895	Undercut lots or sidewalk subgrades with rock base are linear drainage barriers that provide an effective sediment filtration and retention area behind the curb. If weep holes exist, they must be plugged when using this BMP.
Dewatering		Separation of sediment and water achieved through filtration, either by gravity or with pressure.
Sediment Trap	930	A sediment trap consists of a small, temporary ponding area with a rock weir or approved alternate BMP at the outlet. This BMP shall not be used for a drainage basin greater than 5 acres.
Sediment Basin	935	A temporary sediment basin has one or more inflow points and baffles to spread the flow for wet and dry storage. The outlet shall be a floating skimmer or approved alternate BMP. The sediment basin is effective for about one year with a drainage area less than 10 acres.
Turbidity Curtains		A turbidity curtain is a pre-manufactured floating geotextile structure which minimizes turbidity transport from a disturbed area adjacent to or within a body of water. This BMP can be used to minimize the mixing of turbid water with adjacent clean water and/or contain soil particles during construction and/or repair activities.
Sediment Entrapment Mats		This BMP is a flat layered pad that provides filtration and settling of sediment. This BMP may be incorporated into the permanent stabilization/re-vegetation process if used in conjunction with mulch and/or seed.

* *These measures are minimum requirements for all projects per Section 6.03.2.*

6.03.6 Dust Control BMPs

Dust shall be minimized to the extent practicable, utilizing all measures necessary, including, but not limited to the following BMPs.

a. Sprinkling haul and access roads and other exposed dust producing areas with water.

b. Application of dust palliatives on access and haul roads as approved by the District.

c. Establishing temporary vegetative cover.

d. Placing wood chips or other effective mulches on vehicle and pedestrian use areas.

e. Maintaining the proper moisture condition on all fill surfaces.

f. Pre-wetting cut and borrow area surfaces.

g. Use of covered haul equipment.

6.03.7 Non-Stormwater Pollution Control BMPs

a. For the purposes of this section, non-stormwater pollution includes, but is not limited to, concrete truck wastewater, paint, fuel, hydraulic fluid, solvents, glues, and other waste materials characteristic of construction sites. Non-stormwater pollutants are prohibited from entering a public or private street or storm system or surface waters.

b. Non-stormwater pollution controls consist of general site and materials management measures that directly or indirectly aid in minimizing the discharge of sediment and other construction related pollutants from the construction site.

c. Approved non-stormwater pollution control BMPs include:

1. Concrete truck washout areas
2. Written spill prevention and response procedures
3. Employee training on spill prevention and proper disposal procedures
4. Protected areas for equipment storage and maintenance where the risk of pollution is minimal

6.03.8 Supplemental Plan Requirements

a. Mass Grading and Runoff Control

A phased mass grading and runoff control plan is required for projects where clearing and mass grading activities are proposed during the wet weather period defined in Section 6.02.6. The runoff control plan shall identify BMPs from Chapter 6 Table 6-2, or approved alternatives, and be submitted with, or as a revision to, the EPSC plan. All BMPs specified on the runoff control plan shall be in place and functional prior to commencement of mass grading.

b. Dewatering

A dewatering plan is required for projects with anticipated excavation activities at or below the ground water table, or if ground water is encountered during construction. The supplemental plan shall be submitted with, or as a revision to, the EPSC plan and shall identify how dewatering discharges will be managed.

c. Cement Treatment

A cement treatment plan is required for projects where cement treatment is proposed as a soil amendment. The supplemental plan shall indicate an application rate, work schedule, and limits of work areas proposed for cement treatment. If cement treatment will occur during the wet weather period, the following conditions will also apply:

1. The project shall be phased in small manageable areas to minimize the risk for erosion.
2. Contractor shall have sufficient erosion prevention BMPs on site to cover all exposed soil.
3. Each phase must be stabilized with temporary or permanent erosion prevention BMPs before disturbing additional phases.
4. The plan shall indicate how runoff from areas treated with cement will not cause or accelerate erosion of soils not treated with cement.
5. If visible or measurable erosion is occurring, all cement treatment activities shall be suspended and approved erosion prevention BMPs shall be applied to all exposed soil.

d. Chitosan Treatment Systems

A chitosan treatment plan is required where chitosan is proposed as a BMP. The supplemental plan must include a statement of the intent to use chitosan, the reason for its use and the name, experience and training of the qualified operator who will be monitoring the use of chitosan. Additional requirements are dependent on the form of chitosan proposed, as detailed below:

1. Chitosan acetate

   If chitosan acetate is proposed, the system must be a Chitosan Enhanced Sand Filtration system. The supplemental plan must demonstrate that the system is consistent with the protocol outlined in Washington Department of Ecology's General Use Level Designation for Chitosan Enhanced Sand Filtration (CESF).

2. Chitosan lactate (cartridge)

   If chitosan lactate is proposed, the system shall be designed by a registered Professional Engineer to meet site specific conditions and comply with the manufacturer's recommendations. A supplemental plan must include the following:

   A) Location and design schematic of treatment system, location of inlet and location of discharge and dispersion device design.
   B) Method for ensuring filtration or settlement of treated stormwater to comply with the following discharge standards:

      i. Residual chitosan must not exceed 1 mg/L,
      ii. Turbidity must not exceed DEQ's Water Quality Standard
      iii. pH must remain within a range of 6.5-8.5

   C) Installation protocol, including at minimum:

      i. Qualified operator inspection and certification of consistency with the design, prior to system operation and use.

   D) Testing and monitoring protocol, including at minimum:

      i. Qualified operator must field test discharge using a Residual Chitosan Lactate Field Screening Test Kit, or District approved equal.
      ii. Field tests shall be performed during the first discharge of treated water and weekly thereafter for as long as chitosan is being used.
      iii. Response protocol, if field testing demonstrates exceedance of discharge standards, including immediate notification to the District or City, modification to the treatment system, and implementation of additional erosion control BMPs.

   E) Notification protocol to the District or City, if any modifications to the treatment system are made.
   F) Maintenance protocol of treatment system.

6.04 Inspection

6.04.1 Pre-Construction Conference

a. Prior to the initial EPSC inspection, the District or City may require, or the permittee, Owner or Contractor may request, a pre-construction conference to review and discuss the EPSC plan for the site.

b. A pre-construction conference shall be required when the risk of erosion is high due to one or more of the following factors:

1. Wet weather construction
2. Steep slopes with severe erosion potential
3. Construction adjacent to a sensitive area or vegetated corridor
4. Mass grading on a large site

6.04.2 District or City Initial EPSC Inspection

a. On all projects, except single family home construction sites, erosion prevention and sediment control base measures shall be installed by the permittee and then inspected and approved by the District or City inspector prior to the start of any permitted activity.

b. For single-family home construction sites, erosion prevention and sediment control measures for each property shall be installed by the permittee and then inspected and approved by the District or City inspector prior to the building foundation installation. Foundation approvals shall not be given until erosion prevention and sediment control measures are approved.

6.04.3 Permittee Inspections

The permittee or owner's authorized agent shall provide ongoing inspection of the site in accordance with approved plans to ensure compliance with the standards specified in Chapter 6. If the permittee or representative determines the BMPs approved in the EPSC plan are not effective or sufficient to ensure compliance, additional BMPs must be implemented and identified in a revised plan.

6.04.4 Final Inspection

a. A final erosion control inspection shall be required on all sites prior to the sale or conveyance to a new Property Owner(s) or prior to the removal of EPSC measures.

b. Unless otherwise approved, sites seeking final erosion control inspection require approved ground cover or established permanent vegetation before

the site can be deemed complete. A waiver to this requirement may be requested, and will be evaluated based on the timing of construction activities, and topography, soils, and other site conditions.