

Erosion Prevention and Sediment BMP Basic Design Procedures

Control of sedimentation from construction sites is accomplished through the utilization of a variety of erosion and sediment control Best Management Practices (BMPs). The complexity of the erosion prevention and sediment control (EPSC) plan varies depending on the individual site conditions. The goal of implementing the erosion control plan is to limit the quantity of sediment being eroded from, and leaving a construction site. This is partially accomplished through the implementation of sediment control BMPs. However, these sediment trapping controls typically only remove a small portion of the clay particles eroded from the site. The best protection is provided by a combination of practices including temporary and permanent stabilization, flow diversions, and streambank protection, all which minimize the amount of soil that is eroded from the site.

Plan land development to control and limit erosion and sediment discharge from construction sites using, but not limited to, the BMPs listed in this Manual. The goal of these erosion and sediment control BMPs is to:

- Minimize the extent and duration of disturbed soil exposure.
- Protect off-site and downstream locations, drainage systems and natural waterways from the impacts of erosion and sedimentation.
- Limit the exit velocities of the flow leaving the site to non-erosive or pre-development conditions.
- Design and implement an ongoing inspection and maintenance plan.

SCDES regulations require that when runoff drains to a single outlet from land disturbing activities which disturb ten (10) acres or more then a sediment basin must be designed to meet a removal efficiency of 80 percent for suspended solids or 0.5 mL/L peak settleable concentration, whichever is less. The design storm event associated with this level of control is the **10-year 24-hour SCS Type II, or Type III (coastal zone) storm event**. Computer software packages and the Design Aids contained in this handbook may be used to calculate trapping efficiencies and peak settleable concentrations.

Land disturbance activities that are greater than five (5) acres require the development of EPSC plans to achieve an 80 percent design removal efficiency goal. Simply applied, when a site is completely denuded of vegetation, structural and nonstructural EPSC measures are designed to trap 80 percent of the total suspended solids (TSS) generated on the site.

Use SCS (Soil Conservation Service) procedures to determine runoff amounts. It is important to note that when a BMP is designed for the 10-year 24-hour storm event, the BMP will have a greater trapping efficiency for more frequent events such as the 2-year 24-hour storm event.

EPSC plans delineate the following elements:

- All sensitive features.
- Sources of sediment that may potentially leave the site.
- The location and depth of all structural and nonstructural BMPs necessary to achieve the 80 percent design removal efficiency goal to protect receiving water bodies, off-site areas and all sensitive features.

- Installation and maintenance of required BMPs.
- The sequencing of construction activities to be utilized on the project.

Utilize the following nonstructural site management practices on the design plans where applicable:

- Minimize site disturbance to preserve and maintain existing vegetative cover.
- Limit the number of temporary access points to the site for land disturbing activities.
- Phase and sequence construction activities to minimize the extent and duration of disturbed soil exposure.
- Locate temporary and permanent soil disposal areas, haul roads and construction staging areas to minimize erosion, sediment transport and disturbance to existing vegetation.

Detailed EPSC plans comply with the following specific standards and review criteria:

- Sediment Tracking Control. Locate and utilize stabilized construction entrances at all points of ingress and egress on the construction site to prevent the transfer of sediment onto public roads and right-of-ways by motor vehicles and runoff.
- Crossings. Minimize the crossing of waterways during construction. Crossings must be approved by the U.S. Army Corps of Engineers and SCDES . Avoid encroachment into stream buffers, riparian areas, and wetlands when possible.
- Topsoil. Stockpile and preserve topsoil from erosion or dispersal both during and after site grading operations when applicable.
- Temporary Stabilization Measures. Temporary stabilization is required within 14 days after construction activity is complete **unless construction activity is going to resume within 21 days**.
- Final Stabilization. Prevent soil from eroding after the construction is complete. Final Stabilization of the site is required within 14 calendar days of construction completion.
- Temporary Structural Controls. Design to accomplish maximum stabilization, prevent erosion and control sedimentation. Design temporary structural controls to control the peak runoff resulting from the design storm event. Install, maintain, and remove temporary controls according to the specifications set forth in this BMP Manual.
- Permanent Structural Controls. Design all permanent controls including channels, storm sewer inlets, detention basins, and water quality structures according to State Regulations and to the standards set forth in the BMP Manual.