Ten (10) Elements of an Effective Stormwater Site Plan

The following ten elements of an effective stormwater site plan present a comprehensive approach to addressing construction site runoff. (Source: USEPA and adapted from Brown and Caraco, 1997) These elements include:

1. Minimize Clearing and Grading

Construction site operators shall take all measures possible to avoid clearing/grading stream buffers; forest conservation areas; wetlands, springs and seeps; highly erodible soils; steep slopes; environmental features; and stormwater infiltration areas. In addition, site fingerprinting shall be employed and limits of disturbance (LOD) shall be mapped, clearly delineated on site with flags and conveyed to personnel.

2. Protect Waterways

Construction site operators shall identify water bodies on site and adjacent to the site. If construction activities occur near a waterbody, clearing/grading activities shall be minimal and silt fencing and/or and earthen dikes shall be installed.

3. Phase Construction to Limit Soil Exposure

Prior to construction initiation, activities shall be broken into phases. Grading activities shall be limited to the phase immediately under construction to decrease the time that soil is exposed, which, in turn, decreases the potential for erosion. Additional phases shall begin only when the last phase is near completion and preferably exposed soil has been stabilized. Construction scheduling shall facilitate installation of erosion and sediment control measures prior to construction start, detail time limits for soil stabilization after grading occurs, and schedule BMP maintenance.

4. Immediately Stabilize Exposed Soils

Exposed soils shall be stabilized within two weeks of the onset of exposure. The long-term goal is to establish permanent vegetation after each phase of construction; however, mulch, hydroseeding, or other means of soil coverage may protect exposed soil while facilitating vegetation growth. The stormwater site plan shall detail appropriate plant species to be seeded, as well as weather and climactic conditions necessary for germination and successful vegetation establishment.

5. Protect Steep Slopes and Cuts

Cutting and grading of steep slopes (>15 percent) shall be avoided wherever possible. If a steep slope exists, all water flowing onto the slope shall be redirected with diversions or a slope drain. Silt fence at top and toe of the slope must be anchored well, although this measure may not provide adequate protection by itself. On steep slopes, jute netting and erosion control blankets (geotextiles) shall be used in conjunction with seeding or mulching, as seeding alone may not be effective.

6. Install Perimeter Controls to Filter Sediments

Silt fence shall be properly installed around the perimeter of the construction site. A fiber roll on the inside (site-facing) of the silt fence works to provide additional filtration. In areas of heavy flows or breech concern, a properly sized earthen dike with a stabilized outlet shall be created. In addition, catch basin inlets receiving stormwater flows from the construction site must be protected with adequate inlet controls.

7. Employ Advanced Sediment Settling Controls

Sediment Basins shall be created where space is available; however, discharge from basins must be non-turbid. The use of skimmers and multiple cell construction of basins assist in sediment drop-out.

8. Certify and Train Contractors on Stormwater Site Plan Implementation

Contractors and/or construction staff shall be trained in erosion and sediment control practices and procedures to effectively install and manage erosion and sediment control features. Meetings and site inspections by municipal staff provide opportunities for discussion of effective BMPs with site staff. Inspectors shall make a strong commitment to contractor education to develop a constructive and responsive relationship.

9. Control Waste at the Construction Site

The site plan shall describe the type of construction site waste found at the site (such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste) and how that waste will be controlled to minimize adverse impacts to water quality. For example, concrete washout and trash storage areas shall be clearly labeled on the plan and shall be located away from water bodies and catch basin inlets.

10. Inspect and Maintain BMPs

Each stormwater site plan shall clearly describe the construction site operator's BMP inspection and maintenance, including who will inspect the site and how often. Ideally, an example inspection form shall be included with the plan. Inspections shall occur at a regular interval and shall also occur immediately before and after rain events. The plan shall also describe how BMPs will be maintained.

References

USEPA: Brown and Caraco, 1997, *Muddy Water In, Muddy Water Out?* From: Watershed Protection Techniques. 2(3): 393-403.