Source Controls Protect Stormwater Quality

The Need For Source Controls

Stormwater runoff from developed land transports pollutants to receiving waters. Runoff picks up contaminants such as oil that leaks from vehicles and the pesticides or fertilizers used in lawns and gardens. Construction site erosion, and the resulting sedimentation, is another source of pollution.

Source controls are the most effective means of preventing stormwater pollution and protecting water quality. *Source control* best management practices (BMPs) keep pollutants from entering stormwater in the first place. Source control BMPs are aimed at preventing or minimizing pollutants through performing routine work in a way that eliminates, or greatly reduces, the likelihood of contaminants getting into stormwater.

Stormwater *treatment* BMPs, such as infiltration and detention basins, remove pollutants from stormwater. Source control BMPs are preferred to treatment BMPs because:

- Source control BMPs can eliminate certain pollutants without taking up precious space, and without construction or maintenance projects.
- Costs for implementing source controls are borne directly by those who are most responsible for pollution (rather than using public money to clean up streams and lakes after the fact).
- Treatment facilities are costly to construct and require considerable space on the landscape.
- Treatment BMPs are limited in their pollution removal effectiveness and typically require a considerable amount of maintenance to keep working over the long term.

An innovative source control: this forklift carries a garbage can containing absorbent materials that could soak up spills.

What Are the Requirements for Source Control?

In an effort to improve water quality in the region, the Puget Sound Water Quality Management Plan (Puget Sound Plan) was adopted in 1987. One goal of the Puget Sound Plan, in conjunction with local and federal programs, is to reduce pollutant discharges from stormwater caused by development and construction activities.

The way owners/developers show compliance with minimum requirements is to put together a stormwater site plan, get it approved, and then carry it out.

The stormwater element of the Puget Sound Plan directed the Washington State Department of Ecology (Ecology) to establish minimum requirements for controlling stormwater discharges. Ecology's *Stormwater Management Manual for the Puget Sound Basin* (Technical Manual), lays out a series of minimum requirements including source control of pollution. In addition, Ecology requires control of pollutants such as sediment, oil, and other wastes during construction.

Compliance with the minimum requirements is demonstrated by putting together a stormwater site plan, getting it approved by the local authority, and then carrying it out on the site.

Source Controls for Use During Construction

Minimize areas of exposed soil. Preventing erosion is the most significant source control practice during construction. Areas of exposed soil should be minimized and covered with mulch, seeding, or plastic covering within two days if you are doing construction during the rainiest season (October 1 to April 30). Exposed soil should be covered within seven days when doing construction between May 1 and September 30.

In addition to sediment, all other pollutants that occur on the site during construction should be handled in a manner that does not cause contamination of stormwater. The most economical and effective controls for pollutants on construction sites include the exercise of good housekeeping practices, and an awareness by construction workers, engineers, and developers of how important it is to actively carry out source controls.

Pollutant control BMPs are designed to control pollutants other than sediment such as pesticides and insecticides, petroleum products, fertilizers, scrap metals, packaging materials, concrete products, chemicals (paints, acids, cleaning solvents), and contaminated soils.

Develop a spill control plan and keep it on the site. The plan should address whom to notify in the event of a spill, specific clean-up instructions for different materials, and the chain of command for implementing the plan and notifying the appropriate authorities. See the Technical Manual for details on these items and other BMPs that may apply to your specific project.

Overall, source controls must be selected based upon the type of activities occurring on the site, and the types of pollutants being handled or stored.

Source Controls For Public and Private Activities

Many effective stormwater BMPs have been developed for use by public agencies and private businesses on a permanent basis. Some permanent source controls that are routinely carried out by public agencies include integrated pest management programs, maintenance of storm drainage facilities, and regular street sweeping.

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Following are four types of source control practices to keep in mind, and carry out as needed.

Alter the operations.

Alter the operations. The preferred option for preventing stormwater pollution from business activities is to alter the practices that may contaminate surface or ground waters. This may include stopping production and/or use of the product, or controlling it through other means - for example recycling used oil rather than dumping it down a storm drain.

Enclose the activity. If the practice cannot be altered, the next best solution is to enclose the activity. This keeps rain from coming in contact with the pollutant. If the activity cannot be enclosed in a building, a less expensive roof or overhang structure may be used. Drains inside buildings or under roofs should be connected to the sanitary sewer.

Divert discharges. Runoff from areas of significant pollution sources should be diverted away from other stormwater runoff and discharged into a treatment facility. These facilities can include:

- A stormwater treatment facility
- Individual process wastewater treatment systems
- Public sanitary sewers
- Dead-end sumps

Discharging into a sanitary sewer requires the appropriate approvals and permits from the local sewer authority. Discharges to sewers should be limited to those frequent, low flow storms that contain the highest concentrations of pollutants. Larger runoff events should bypass treatment and discharge into the storm sewer.

Emergency Spill Cleanup Plans. Owners of facilities engaged in storing, processing, or refining oil and/or oil products, or businesses that produce Dangerous Wastes are required by federal and state law to have an Emergency Spill Cleanup Plan. In general, the plan should contain:

- Description of the facility, nature of activities, and types of chemicals used
- Site plan showing location of storage areas, storm drains, slopes, and spill control devices
- Notification procedures in case of a spill
- Cleanup procedure instructions

The plan must include employee training, describe immediate spill response, and on-site equipment for cleanup.

In Summary…

Source control BMPs are designed to prevent pollutants from entering stormwater by eliminating the source of pollution or by preventing contact of pollutants with rainfall and runoff. Source control BMPs are generally the most cost-effective because they reduce the need for treatment BMPs, and they are usually less elaborate and less expensive to implement. They are specific to the type of land use and types of pollutants being controlled.

Source control BMPs include erosion control (e.g. covering disturbed soil), covering storage or work areas, directing wash water and similar discharges to the sanitary sewer or a dead-end sump, eliminating illicit discharges, and other good operation and maintenance practices.

In addition to protecting water quality, implementing source controls can save the owner/developer money by avoiding maintenance costs for more costly treatment BMPs and avoiding potential liability and cleanup costs for contaminated sediments.

For more information on municipal stormwater requirements, please call the Stormwater Management Unit of Ecology's Water Quality Program at (360) 407-6437.

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