

Construction Activities & Land Disturbance

Soil erosion and the resulting sedimentation caused by land disturbances impacts the environment, damaging aquatic and recreational resources as well as aesthetic qualities. Employees can help reduce water pollution by making sure dirt and debris aren't washed into the storm drain system near infrastructure repairs – including: water and sanitary sewer lines, storm drain systems, street repairs, sidewalk construction and repairs, landscaping, and power pole installation.

This video will show how to protect storm water quality by using Best Management Practices, or BMP's. We'll start out with General Principals, then go over specific BMPs for Erosion Control, Sediment Control, and Waste Management.

Projects that disturb one acre or more must comply with the state's Construction General Permit for storm water discharges from construction activities. If a permit is required, supervisors or environmental coordinators will provide specific instructions. The permittee is ultimately responsible for ensuring that proper stormwater controls are planned for and implemented. All projects must be managed to prevent or reduce soil and pollutants from being washed into storm drains, creeks, or lakes. In addition to preventing soil erosion, all materials used on the construction site must be kept out of the runoff: trash and debris, oil and grease, lime and concrete wash water can all damage the environment. A couple of terms that we will use when talking about storm water might need explanation: Erosion is the removal or wearing away of soil due to the action of water or wind. Sediment is the soil particles that settle out of flowing water. Best Management Practices also known as Best Practices, include scheduling of activities, prohibitions of poor practices, maintenance procedures, structural controls, local ordinances, and other management practices that prevent or reduce the discharge of pollutants. BMPs/BPs also include treatment requirements, operating procedures, and practices to control runoff, spills or leaks, waste disposal, or drainage from staging and raw material storage areas.

General Principals: Preventing soil erosion is more effective than trying to remove sediment from runoff. Some good ways to minimize erosion are to:

- Minimize the amount of disturbed area
- Divert runoff or flow of water away from disturbed areas
- Place dirt stockpiles out of the street and away from runoff or flowing water
- Cover stockpiles with plastic or provide a barrier such as a silt fence or filter sock around the pile to keep the materials contained

Erosion Control BMPs: Best Practices for erosion control are tools used to prevent disturbed soils from being washed off by rainfall creating water pollution. Vegetation is the natural form of erosion control. Grasses or other plants can provide permanent erosion protection. Mulching is another form of erosion control. Laying down a layer of straw or wood mulch over exposed soil will help reduce erosion. Using erosion control blankets made of mesh matting, wood fiber, or plastic is also an acceptable method. Plastic sheeting may be used for short term protection of disturbed areas or dirt stockpiles.

Sediment Control BMPs: Even effective erosion control will not keep all fine sediments out of storm water. No matter the size of the project, measures should be taken to control sediment and prevent it from entering the storm drain system. An organic filter berm is a natural way to prevent sediment runoff; it is a one to three foot high berm of mulch and compost placed around a disturbed area. An organic filter tube, also known as a waddle or erosion control log, is a flexible tube filled with organic material that can be staked around areas or features prone to erosion. When installed properly, the tube pools water and slowly releases it while the organic material filters out sediment. A silt fence is a filter fabric trenched into the soil and attached to supporting posts. The filter fabric must be buried at least six inches into the soil, or else the water may flow right under the fabric. All of these methods use the same principal- they prevent silt runoff by slowly releasing the water after the sediment falls out. Additional sediment control can be achieved by placing wire reinforced filter fabric and/or stones directly in front of storm drain inlets. This method must always be used in

conjunction with other onsite methods – otherwise, there will be too much sediment in the water and the storm drain will clog.

Waste Management Best Practices: Debris and trash are also a concern for storm water quality. Use covered trash cans, bins and roll-off boxes for disposing trash and debris. Follow proper material storage and spill cleanup procedures for chemicals used on construction sites. Use designated facilities to capture wash water from concrete truck cleaning.

Quiz

1. Which is a long term method of erosion control for exposed soil?

- A. Placing plastic sheeting over exposed soil
- B. Placing erosion control blankets over exposed soil
- C. Placing mulch over exposed soil
- D. Seeding and growing vegetation

The answer is... D. Seeding and growing vegetation. The other options may be used for the duration of the project, but growing vegetation is the preferred method of long term erosion.

2. Every project must be managed to prevent storm water pollution.

- A. True
- B. False

The answer is... True. Every project must be managed to prevent storm water pollution, but projects that disturb one or more acres of land also require a storm water permit.

3. On a construction site, sediment in storm water runoff should be controlled by...

- A. Installing temporary controls on site such as silt fences and organic filter tubes
- B. Maintaining vegetation and ground cover
- C. Protecting storm drain inlets that receive runoff from the site
- D. All of the above

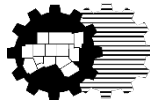
The answer is... D. All of the above. Sediment control is most effective when a combination of appropriate control mechanisms are applied.

4. Concrete trucks should be washed out...

- A. At the construction site
- B. Down a storm drain
- C. In designated areas only
- D. Once a week

The answer is... C. In designated areas only, where wash water can be contained and is not allowed to enter the storm drain system untreated.

Review: Soil erosion and the resulting sedimentation caused by land disturbances damages the environment. Every project should be managed to control soil erosion and sedimentation. Employees can help prevent storm water pollution by mulching, or seeding vegetation on exposed soil, and utilizing organic filter berms, soil erosion blankets, organic filter tubes, silt fencing, and inlet protection to prevent sediment from entering the storm drain system. Washing out concrete trucks only in designated areas, storing chemicals properly and promptly cleaning spills on construction sites prevents water pollution. By using the best practices, you will be keeping our communities and water ways clean and healthy for future generations to enjoy.



Parks and Grounds Maintenance

Many on the job activities can allow oils, paint thinner, pesticides and other pollutants to flow from surfaces through the storm drain right into the water ways. Employees who maintain our parks and landscaped areas can help reduce water pollution by following precautions in their daily activities. This video will show how to protect storm water quality by using best practices for: plant selection, watering, debris management, soil management, and pesticide and herbicide practices.

Plant Selection: Many perennial plants that are native or adapted to the area are naturally drought tolerant, appropriate for area soils pH and nutrient levels, and have developed resistance to common pests. As a result, native and adapted perennials use less water and require the use of less fertilizer, pesticides, and herbicides. This reduces the possibility of water pollution resulting from chemical use. Well-selected and properly maintained plants also provide increased soil stabilization, promote infiltration of water, and reduce runoff from storm events.

Watering: Avoid over-watering to prevent excess runoff. Avoid runoff by adjusting the watering time, as well as the direction and volume of spray heads. Nothing will grow in the street, so don't water it! Be sure to check the soil moisture, and water only when the top four to five inches of soil is dry. Thorough but infrequent watering promotes deep root growth and more resilient plants. Drip irrigation or bubblers are more efficient alternatives to spray heads and can save water by watering at the plant's roots. It also reduces vegetation loss and soil erosion. Avoid watering more than the soil can absorb. Using an automated control system can help reduce water usage and runoff when properly programmed. Monitor rainfall and turn off watering systems during rainy weather or install rain and freeze sensors where possible.

Mowing and Debris Management: Many maintenance activities generate debris and wastes that must be handled properly. Mow grass as high as possible and leave the clippings on the lawn rather than bagging them. Compost leaves and clippings for use as a soil amendment or shred it and add to flower beds as mulch. Sweep paved surfaces or blow clippings onto grass, rather than hosing down. Never dispose of grass clippings, leaves, or other debris by blowing them into the street or putting them down the storm drain. Large quantities of leaves, grass clippings, and plant trimmings will alter the oxygen levels in the water as they decompose in lakes and streams, harming wildlife. Remove any accumulated litter and debris from storm drain inlets to prevent it from being washed into our waterways. Do not mow all the way to the edge of water features, as this increases erosion potential along the banks. For safety reasons, and to prevent vegetation from entering the water, do not mow on excessively steep banks. If a mower is in need of repair or fuel refill, take care of it in a manner that does not dispense chemicals onto vegetated areas.

Floatable Controls: Floatables are defined as litter that floats on the water surface. Public parks are often litter hotspots, and public trash bins quickly overflow if they are not emptied often enough. Ensure that there are an adequate number of trash and recycle bins in public areas and that they are emptied regularly. Educate the public about the effects of littering on the environment and the hazards of floatable debris.

Soil Management: Aerate and add compost to the soil to reduce fertilizer needs, improve drainage, and promote root growth. Have the soil composition tested well before the application season to determine the fertilizer needs. This will help reduce the unnecessary use of fertilizer that could be washed into our waterways. Limit soil erosion by planting vegetation on bare areas and using mulch or matting for landscape areas.

Pesticide and Herbicide Practices: The toxins found in pesticides and herbicides can be washed from grass and flower beds into storm drains and streams by storm water runoff. Use landscaping pesticides and herbicides only as needed. Apply the treatments to the problem area only, rather than a widespread area. Don't apply chemicals near sensitive areas such as streams, lakes, wetlands, or drainage ways. Avoid stray product from being deposited on streets or other

paved surfaces where it will be washed into the storm drain system. Don't apply during windy conditions or when rain is predicted within 24 hours.

Carefully select the most appropriate product for the problem to be treated, using non-toxic substitutes rather than chemicals when possible. Keep chemical preparation and application away from areas where they can easily wash into the water. Mix pesticides and herbicides where spills will not soak into the ground or runoff into the storm drainage system. If a spill does occur, follow proper procedures to clean it up. Never hose down a chemical spill and report any suspected problems regarding pesticide or herbicide applications. Always follow safety, storage, and disposal procedures for pesticides and herbicides. Be sure to store chemicals in segregated areas that are designed to contain potential spills. Follow label directions precisely when mixing or applying pesticides or herbicides. Know where your Safety Data Sheets (SDS) information is located and refer to them for more information about specific chemicals.

Quiz

1. What is a benefit of using native or adapted plants?

- A. They reduce the need for chemicals, including pesticides and fertilizers
- B. Reduce runoff erosion through soil stabilization
- C. Require less water
- D. All of the above

The answer is... D. All of the above. Native or adapted plants, especially perennials, require less maintenance than many traditional landscaping options.

2. What is one way to prevent runoff when watering?

- A. Water when it is raining
- B. Water at the hottest part of the day
- C. Adjust sprayer volume and time
- D. Runoff is not preventable

The answer is... C. Adjust Sprayer volume and time. This will help save and reduce the chance of the runoff being polluted by chemicals

3. What is the preferred way to dispose of grass clippings?

- A. Blow them back onto the grass
- B. Bag them and throw them in the trash
- C. Hose the pavement down
- D. Blow them into a storm drain

The answer is...A. Blowing grass clippings onto the grass helps return nutrients to the soil

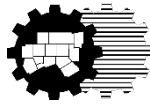
4. Pesticides and herbicides should be applied....

- A. Everywhere
- B. Nowhere
- C. Once a month
- D. Only where needed

The Answer is...D. By reducing the amount of chemicals used, you are reducing the chance of the chemicals washing into our waterways.

Recap: Many on the job activities can pollute storm water which runs into our waterways. Help prevent storm water pollution by... Using native and adapted plants that require less watering and fertilizer; avoiding over-watering and watering during or shortly after a rain storm; blowing grass clippings back onto the grass and never into storm drains;

properly maintaining landscaping equipment; testing soil before applying fertilizer; applying chemical treatments only where needed; and applying chemicals away from areas that may wash into storm drain, creeks, or lakes. Also, report any storm water pollution violations you may see while on the job. By using these best practices, you will be helping keep our community and waterways clean and healthy for future generations to enjoy.



Solid Waste Management

Many on the job activities can add harmful pollutants to stormwater that then flow right into our water ways. By taking precautions in their daily activities, Solid Waste employees can help reduce water pollution. This video will show how to protect storm water quality by using best practices for: trash collection, transfer station and drop off operations, mulching operations, and landfill composite operations.

Trash Collection Activities: Try to identify and do not pick up hazardous wastes. Examples include: used batteries, pesticides, herbicides, fireworks, ammunition, pool chemicals, and fluorescent bulbs. Also try to identify and do not pick up liquid wastes. Examples include: used motor oil, solvents, fuels, paint, antifreeze, cleaning liquids, and cooking oil. Notify residents of household hazardous waste collection and disposal opportunities and follow your municipality's protocols for notifying residents who attempt to dispose these with regular trash. This notification protocol may involve placing a note on the door or attached to the garbage bin handle. Pick up spilled trash and floatables from around cans or bags and notify residents of persistent problems with scattered trash. Watch the area around the hopper to avoid leaving litter behind, and be sure to pick up any material that falls from the truck during compaction. Be especially vigilant in collection from open-top recycle bins, as items are prone to fall out or be blown away. Include spill kits on trash collection trucks and vehicles. Spill kits may include: a broom, a shovel, absorbents, or pop-up containment pools. Make certain that hopper drain plugs are always sealed during collection. Check vehicles frequently for leaking fluids and notify a supervisor of leaks. Immediately clean up spills to minimize safety hazards and prevent spreading. Contain spills and leaks using absorbents and take steps to stop the leak if possible. Once the spill is contained, promptly dispose of the absorbents following established procedures. Wash collection trucks only in facilities where the wash water drains into the sanitary sewer or is collected and recycled. Do not allow wash water to enter the storm drain system.

Transfer Station/Drop Off Operations: Be on the lookout for hazardous or liquid wastes. When possible require the customer to take materials with them and provide them proper disposal information. If found after the fact, remove any of these materials and store them in designated locations for proper disposal. Pick up all windblown litter and rubbish. Dry sweep the area periodically, especially before expected rain or windy conditions. Use litter screens to catch windblown trash. Litter screens can be made from chain link fencing, welded wire mesh fencing, or orange construction fencing. If a spill occurs, locate the source of the spill and take the necessary steps to stop it. Retain the spill and prevent it from entering the environment. Immediately clean any liquid spills using absorbents and remove the absorbent materials promptly, disposing of in accordance with established procedures. Conduct facility wash down activities as directed by the supervisor. Do not hose down work areas that drain into storm sewers or drainage ways. Do not overfill collection receptacles. Make sure lids on bins and receptacles are closed, especially during rain events. Notify citizens and haulers of requirements to cover loads during transport.

Mulching Operations: Remove trash and foreign materials from brush prior to grinding, and place the trash in covered containers. When needed use a water mist to prevent windblown materials from leaving the area. Mulch berms can be used to filter runoff from the work area.

Landfill and Composting Operations: These operations will have specific SWPPP requirements governed by either a multisector general permit or the facility's individual registration or permit. Follow all record keeping, training, monitoring and reporting requirements detailed in the facility's permit.

Quiz

1. Which item is NOT a household hazardous waste?

- A. Used cooking oil
- B. Used batteries

- C. Rusty bicycle
- D. Fluorescent bulbs

The answer is... C. Rusty bicycle. Keep an eye out for these other household hazardous wastes, and do not pick them up with regular trash collection.

2. What is a way to prevent litter from blowing away in the wind?

- A. Use trash containers with lids
- B. A chain link fence border
- C. Do not over fill collection receptacles
- D. All of the above

The answer is... D. All of the above. These practices will keep trash from blowing away and entering the storm drain system.

3. Trucks and equipment should be washed....

- A. During a rain storm
- B. In a designated wash area
- C. Near a storm drain inlet
- D. In the equipment storage yard

The answer is... B. In a designated wash area; where the wash water can be contained and is not allowed to enter the storm drain system.

4. If a liquid spill occurs, it should be cleaned up with...

- A. A wet mop
- B. A water hose
- C. Absorbents
- D. It should be allowed to dry

The answer is... C. Absorbents. Once the absorbents have soaked up the liquid, immediately dispose of them in the proper container.

Review: Solid waste employees can prevent pollution by... not picking up liquid or hazardous waste during trash collection; checking the vehicles frequently for leaks and containing any leaks that occur using the established procedures; using wind screens and trash receptacles with closed lids to prevent litter from blowing away; washing trucks only in designated wash facilities; and following all state and federal guidelines provided in your facilities permit. By using these best practices, you will be helping keep our communities and waterways clean and healthy for future generations to enjoy.