

Land development changes the natural landscape and drainage patterns in watersheds throughout North Dakota. Activities such as new home construction typically involve clearing the vegetation that once slowed runoff and allowed rain and snowmelt to soak into the soil. New home construction may also involve grading to direct storm water from the home lot to a storm sewer or drainage ditch. Storm water runoff is not directed to a wastewater treatment plant, but runs directly into rivers, streams, lakes and wetlands. Although the runoff from one lot may not be enough to cause pollution problems, runoff from hundreds of sites throughout a watershed is a different story.



SEDIMENT– Problems and Solutions

Lots with bare soil are highly susceptible to water erosion. As the rainfall and snowmelt runoff travels over the bare soil, it picks up sediment that may be carried to local water bodies. Some sediment, like clay, may take hours to settle out of storm water runoff. Suspended in the water, sediment can reduce the amount of sunlight that reaches aquatic plants and may damage the gills of fish. When sediment settles out, it fills in the spaces where fish lay their eggs and suffocates the eggs and aquatic insect larvae that inhabit the bottom of the waterbody. Sediment-laden water can also interfere with recreation, make the waterbody unappealing and cause problems for downstream water treatment plants treating the water.

The owners of newly constructed homes are responsible for controlling the amount of sediment and other pollutants leaving their properties. During home construction, the contractor(s) may have used one or more of the following erosion and sediment control measures:

- **Sediment logs or silt fences** pond and filter storm water, allowing sediment to settle out.
- **Inlet protection devices** prevent sediment from entering the storm sewer by ponding water.
- **Rain gutter extensions** and energy dissipaters reduce the force of the flow from the downspout. These devices should be allowed to drain to a densely vegetated area such as a lawn or garden. They may also drain to the storm sewer system, **if** allowed by local regulations.
- **Detention/retention areas** pond water to allow sediment to settle out, usually to a sediment trap.

All erosion and sediment control structures should be installed so they will not cause property damage from flooding. Periodic cleaning and maintenance is necessary for sediment control structures to function properly, and they should be inspected at least once every two weeks and within 24 hours of a 1/2-inch rainfall. However, these measures are only temporary. Homeowners must permanently stabilize the soil on their properties by planting grass seed, spreading mulch and/or laying sod.

Soil stabilization should be done as soon as practical. Conditions such as ongoing construction may hamper stabilization of the entire lot all at once. A homeowner may stabilize one area at a time or leave the temporary measures in place until the entire lot can be stabilized. If the site cannot be permanently stabilized before winter, then all temporary measures must remain in place. The temporary measures may be removed once vegetative coverage is 70 percent of pre-construction coverage.

In most cases, the contractor will have completed his work before soil stabilization has been achieved. After the contractor has left, it becomes the responsibility of the homeowner to maintain all temporary control devices. The homeowner must also clean up any sediment that has been carried off the property to roadways or drainage ditches. Sediment cannot be washed into storm sewer systems.

FERTILIZER – Problems and Solutions

Fertilizers carried in runoff from home lots to waterbodies may also cause pollution. Fertilizer nutrients, such as phosphorus and nitrogen, promote rapid algae growth in a waterbody. Large algal blooms

are unattractive and can interfere with recreation. Even worse is the impact of excessive algae growth on aquatic life. As algae dies, its decomposition depletes the oxygen in the water that fish and other aquatic life need for survival.

The following recommendations can help homeowners protect the environment when using fertilizer:

- Test the soil in the yard to determine if fertilizer is needed or not.
- When fertilizing the new lawn, it is important to apply the product according to the manufacturer's directions. Over-application may harm lawns.
- Fertilizer should not be applied over any hard surface such as sidewalks, driveways or streets. Any granular fertilizer that has landed in these areas should be swept up and spread on the lawn or garden.

RUNOFF CONTROL - Landscaping

Proper landscaping can also help control storm water runoff. Included below are a few common landscaping practices:

- Maintaining a vegetative buffer zone between a homeowner's property and a nearby waterbody.
- Creating rain gardens, which are bowl-shaped gardens designed to absorb storm water runoff.
- Using rain barrels to catch and store rainfall from the roof and then applying the water to lawn or gardens.
- Planting native plants, shrubs or trees in areas of the property that are rarely disturbed.
- Using xeric landscaping with plants having low water requirements to minimize the amount of water used.



Homeowners should check local ordinances before implementing any landscaping measures that may affect the local drainage system.

All landscaping features used to retain or store storm water should be properly designed and installed so they do not become breeding grounds for mosquitoes. Retention measures, such as rain gardens, should allow water to soak into the soil within 24 hours of a light rainfall event. Rain barrels should have lids and spigots, along with screening to cover all overflow openings.

MORE WAYS TO REDUCE STORM WATER POLLUTION

The following practices can help homeowners further reduce the potential for stormwater pollution:

- Keeping trash, including leaves and grass clippings, off streets and out of storm drains and waterbodies.
- Repairing automotive leaks.
- Properly disposing of hazardous wastes.
- Preventing oil, pesticides, paint or other material from being poured down the storm drain.
- Minimizing the use of pesticides, fertilizers and de-icing materials.
- Testing the soil and using zero-phosphate fertilizer if possible.
- Picking up and burying or flushing pet wastes.
- Washing cars on the lawn or in commercial washes.

For more information about stabilization practices or additional ways to reduce storm water pollution, contact the local public works department or the North Dakota Department of Health at (701) 328-5210 or www.health.state.nd.us/wq. For more information about lawn care and plant selection, contact the local county extension office.

The best way to solve the problem of storm water pollution is to prevent it in the first place.



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