



HOW TO MAINTAIN PRIVATE ROADSIDE SWALES SUSSEX COUNTY, DELAWARE

Purpose of Swales

What are swales?

Swales convey stormwater from one place to another. Swales can convey stormwater from your yard to the stormwater facility, or from the stormwater facility to a nearby stream.

Purpose

Swales convey water to prevent flooding. They also result in less runoff due to infiltration.

Environmental Benefit

The use of swales is the preferred and more modern method of conveying water because they allow the water to infiltrate into the ground. Swales also provide the added benefit of pollutant removal. Vegetation (like grass) has been proven to significantly remove pollutants from the water.



Traditional Curb and Gutter



What is curb and gutter?

The "curb and gutter" approach is the conventional method to managing stormwater. This is where stormwater is conveyed using a system of underground pipes and culverts. Although this method is effective at conveying water from one place to another, it is no longer preferred because it doesn't allow water to infiltrate into the ground. In addition, the water does not run through vegetation which has been proven to effectively remove pollutants from stormwater. The more modern and preferred approach is to convey stormwater using swales.

Proper Swale Maintenance

1. Mow to desired height.
2. Keep driveway culverts completely free of debris, rocks, grass, and sediment.
3. Do not alter the swale system in any way.
4. Keep bottom of swale open to permit flow of water after heavy rains.
5. If ponding is observed or the swale does not drain within 48 hours, contact your local conservation district for technical assistance.
6. For minor erosion problems, plant perennial grass in the spring or fall, cover with straw mulch, and water frequently to establish a stand of healthy vegetation.
7. If severe erosion is observed, contact a professional to stabilize the area using a reinforcement erosion control product (RECP) or turf reinforcement matting (TRM).

Properly Maintained Swale



Free of trash or debris
Good grass height
No alterations to original design
No obstructions to water flow

What Not To Do



Do not alter the channel in any way
(This includes the creation of driveway culverts when the original design was intended as a swale)

You should never convert a swale system to a curb and gutter system; it could be against the law. If you have concerns, please contact your local conservation district for technical guidance. Altering the swale system can affect the functionality of the overall stormwater system, possibly even resulting in flooding. When your housing development was originally designed, an engineering consultant actually calculated the amount of water that will run to the stormwater pond because stormwater ponds are required by the State of Delaware Sediment and Stormwater Regulations to hold a specified amount of water. In this calculation, they even accounted for infiltration from the swale system. Engineers also calculated pollutant removal rates for the swales because the developer is required, by federal law, to meet specified pollutant removal rates for stormwater.

Check Dams

Check dams are sometimes installed in swales to slow water velocity. Typically, they are constructed out of large stone, such as in the picture below. In order to be effective, they must be constructed to be convex, so that the water goes overtop of them, not around. If improperly constructed, the swale may scour and erode.



A Different Kind of Swale: The Biofiltration Swale

What are bioswales?

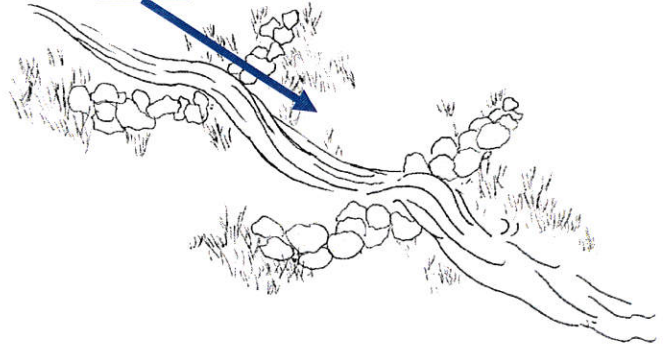
Bioswales are flat bottomed swales specially designed to infiltrate water and remove pollutants. Many bioswales have wetland plants intentionally planted in them in order to remove pollutants in the water at a higher rate. Certain species of plants are known to have a higher pollutant removal rate than others, so plants are specially selected for the bioswale.

Special Maintenance Considerations for Bioswales:

Mow to no lower than 8 inches. Remove debris and litter on a regular basis. If ponding is observed or the swale does not drain within 48 hours, contact your local conservation district for technical assistance. Stabilize eroded areas with grass. If erosion is severe, contact a professional to stabilize the area using a reinforcing erosion control product (RECP) or turf reinforcement matting (TRM).

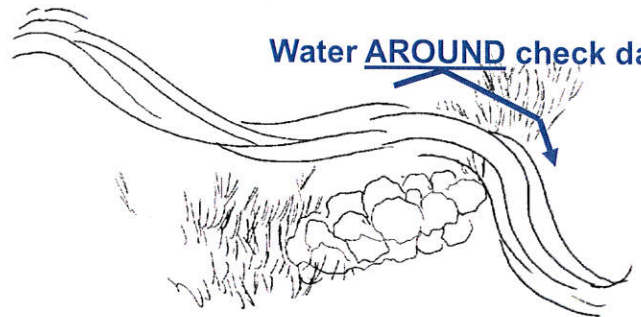
Properly Constructed Check Dam

Water OVER check dam



Poorly Constructed Check Dam

Water AROUND check dam



Biofiltration Swale



Properly Maintained Biofiltration Swale



Good grass height
No trash or debris present
No alterations to original design
No obstructions to water flow

Poorly Maintained Biofiltration Swale



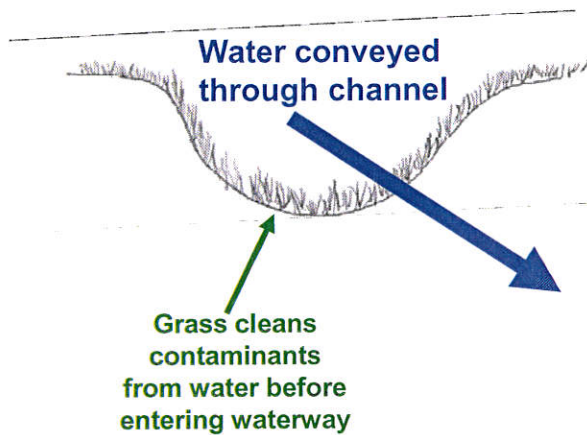
In this photo, the wetland plants are cut too short. Mow no shorter than 8" in height.

Vegetation (like grass) in swales has been proven to significantly remove pollutants from the water.

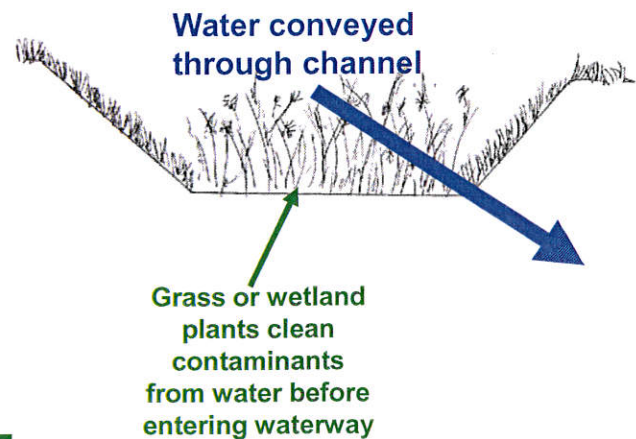


Swale Design

Swale Cross Section



Biofiltration Swale Cross Section



For More Information

For more information, please contact your local conservation district or the Delaware Department of Natural Resources and Environmental Control, Sediment and Stormwater Program at (302) 739-9921.