



## What to do about...

# Creating Bioswales

For our purposes, we will define bioswales as shallow drainage channels covered with taller (greater than 3”), dense vegetation. They are usually designed to trap particulate pollutants (suspended solids and trace metals), promote infiltration which reduces overall runoff volume, and reduce the flow velocity of storm water runoff. Depending on the plants selected, they can also provide habitat for birds, butterflies and wildlife. They are ideally situated to accept drainage from roadways or parking lots. Some homeowners who

have drainage swales which do not drain effectively and which cannot be re-graded to provide better drainage, may use a similar application which they would not have to mow. Treating for mosquitoes, naturally or chemically, may still be necessary, and if possible add an underdrain to allow for more water to be treated and conveyed downstream. Water should drain off within 24 hours after a storm event. Other native landscape plants and flowers can be planted along the higher edging of the swale to improve the aesthetics of the area with no more maintenance than a conventional, densely planted flowerbed. Plant a mixture of grasses, sedges and wildflowers in the bioswale and apply for a flora and fauna [permit](#) if planting within the road Right of Way.



Photo by Jodi Sulpizio

The design of a bioswale is dependent on a number of factors including soil type, groundwater table, size of the drainage area, imperviousness of the contributing watershed, and dimensions and slope of the swale. “Swale design should balance the infiltration and treatment requirements of small storms with needs for conveyance during large storms... Check the capacity of the swale system to perform during the 100 year regulatory event...” \* Swales should be sized to convey at least a 10 year storm.

Prepare the area by re-grading poorly drained swales to provide as much fall as possible. Where an adequate outlet with enough depth is available, add drainage tile along the side of the swale to improve the drainage if needed. (See [Subsurface Drainage Around Your Home](#) fact sheet.) If the area has been eroded, add topsoil and/or compost; lime and fertilize as indicated by your soil test and the plants’ needs. In steep areas the swale can be created to meander and/or weirs (check dams) can be added to help slow the water down. Create a parabolic or trapezoidal shape with no steeper than 3:1 side slopes. Biodegradable erosion control blankets can be installed to minimize erosion until the vegetation is well established. Where runoff velocities are high, temporarily

**For more information contact the Marion County Soil & Water Conservation District**

**(317) 786-1776**

**[www.marionswcd.org](http://www.marionswcd.org)**

divert surface drainage until the new vegetation is well established.

Plant species should be chosen with care to make sure they are well suited to your soil type, slope and available sunlight. Vegetative swales do not work well if the slopes are excessively steep and they are not traditionally used in areas too flat to drain or with very high seasonal groundwater tables unless an underdrain can be utilized. Choose native plants which will have a good root structure to help control erosion and also are well adapted to the amount of water available. Water loving plants including rhizomatous species that thrive in flowing water and bind the soil are usually chosen for the area along the bottom of the swale. Grasses and sedges develop dense fibrous root systems which will hold soil and form root channels which will increase infiltration. If the area is shaded be sure to choose shade tolerant species. A contractor familiar with bioswales will be invaluable in helping you design and choose plants for your bioswale. For planting examples and more information visit:

[http://www.spencenursery.com/Index/vegetated\\_swale.php](http://www.spencenursery.com/Index/vegetated_swale.php)

Regular monitoring and maintenance of the swale will be needed. Check for erosion, accumulation of sediment and debris, and the need for trimming and weeding. Be especially vigilant in controlling non-native weeds including many types of cattails. Once well-established native grasses and plants save money because they will not need fertilizer, require less water than sod and infrequent mowing. Don't mow below the design flow depth.

Information on maintenance responsibilities for drainage systems can be found at <https://www.indy.gov/activity/stormwater-resources>

Information on stormwater user fee credits and the city's Green Infrastructure guide can be found at

<https://www.indy.gov/activity/stormwater-user-rate-and-credit-manual>

Before beginning any project be sure to locate all utilities and check for any local permits which may be needed such as drainage or Right of Way permits. Permit applications can be found the on the department of Business and Neighborhood Services website:

<https://www.indy.gov/agency/department-of-business-and-neighborhood-services>

\* Bioswales - Natural Resources Conservation Service - USDA

[https://www.nrcs.usda.gov/wps/portal/nrcs/detail//?cid=nrcs142p2\\_008505](https://www.nrcs.usda.gov/wps/portal/nrcs/detail//?cid=nrcs142p2_008505)



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