



Bioswales

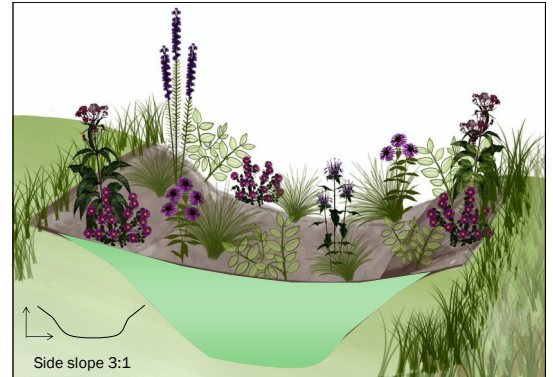
What are bioswales?

Swales are shallow, excavated channels meant to collect and move storm-water away from your home and toward drainage inlets. They are often found between or behind homes. *Bioswales* are swales that are planted with native, beneficial vegetation.

Over time, swales often start to hold water instead of draining it away. This is often because the initial grading of the property has changed, barriers have been erected (fences, sheds, etc.) or the swale has filled in over time. Re-grading is a great option to get the water moving again toward surface inlets but this can be complicated when multiple property owners are involved along the length of the swale.

Benefits of bioswales:

- Increase the amount of water that filters into the ground, which recharges local and regional aquifers.
- Help protect communities from flooding and drainage problems.
- Help protect streams, rivers, and lakes from pollutants carried by urban stormwater (lawn fertilizers and pesticides, oil and other fluids that leak from cars, and harmful substances that wash off roofs and paved areas).
- Enhance the beauty of yards and neighborhoods.
- Provide valuable habitat for birds, butterflies and many beneficial insects.
- Reduce maintenance burdens.

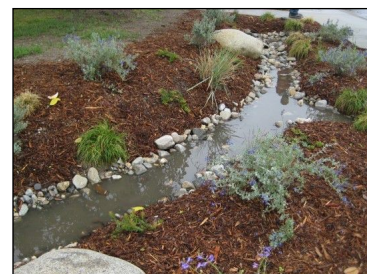


Why create a bioswale?

When swales with turfgrass start to hold water it can be a challenge to maintain the area—weekly mowing attempts might result in ruts or tall grass. Planting native plants in these areas is often a great way to reduce maintenance and help manage water. While the native plants are unlikely to soak up *all* of the water, over time their dense roots can help excess water infiltrate into the ground. Additionally, once the planting is established, you won't have to worry about weekly mowing of these wet areas. Plus, bioswales are not only beautiful and great pollinator habitat, they absorb water and pollutants, reduce runoff, protect water quality, and prevent flooding.

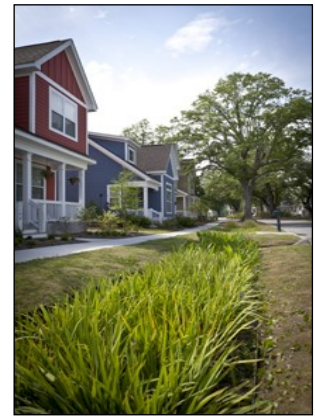
Considerations

- Before beginning any project, check homeowner association covenants as well as local and county ordinances. Do not work in a drainage, utility, or other easement without the proper permits. Call 811 to identify any buried utilities.
- Plan your swale—measure the area and determine the number of plants you need. Plan for erosion control until your planting is established. Will your swale be 100% plants or do you plan to incorporate stone as a dry creek bed or mulch (note—moving water can wash mulch away). Do you want a uniform look with just a few species or a more natural, diverse look?
- If you are creating a new swale or regrading an existing swale, take note of how water moves on your property. Utilize existing natural drainage paths when possible. A parabolic or trapezoidal shape is recommended with side slopes no steeper than 3:1 (5% or less sloped sides). Meandering or curving paths slow water down better than straight paths. Rock weirs (small rock dams) can also be used to slow water down and create small pooling areas.
- To keep water moving, bioswales should have a 1-6% longitudinal slope. This downward slope will keep water moving toward surface inlets or to outlet points in nearby surface waters. It is possible to install perforated drain pipe under a bioswale to aid in drainage if necessary.
- You can create a 'dry creek bed' component in your swale with river rock or small stones. A rock channel in your bioswale can be helpful if you have fast moving or high volumes of water moving through the swale.



Choose native plants

- Native plants are part of the balance of nature that has developed over hundreds or thousands of years in a particular region or ecosystem. Our native species are tolerant of Indiana’s climate, benefit our native wildlife, and are less maintenance than their exotic counterparts.
- There are dozens of native choices for bioswales- the species you choose should be based on your site conditions for light, moisture, and soils. Use your personal preference for plant structure, height, flower characteristics, and attracted wildlife. The webpage below also provides great links to online tools that help you find the perfect plant based on your site.
- Where to buy plants—visit the Where to Buy Native Plants page on our website for “helpful tips on sourcing native plants locally or via mail. www.hamiltonswcd.org/where-to-buy-native-plants
- Eliminate existing vegetation—to plant the natives you will need to eliminate what is currently growing. This can be done via herbicide, smothering/solarization, etc. Remember that this area moves water so it is potentially susceptible to erosion. Water moving through this area may pick up exposed soil or excess herbicide and carry it away as pollution. Follow label instructions for herbicide applications and cover exposed soil areas (erosion control fabric, quick growing cover crops (oats), straw etc.).
- Once the swale is prepped, plants can be installed from late April to mid September. However, summer plantings may need frequent watering. Seedlings/plugs should be planted 12 to 18 inches apart with flood tolerant species toward the bottom and drought tolerant species towards the edge.
- Make sure your plantings receive at least one inch of water a week for the first two months until they show that they are growing and well established. Once the plants are established, they’ll thrive without additional watering.



- It is possible to use seed in bioswale areas but you will have a less structured, meadow type look. You will need to take precautions to be sure seed is not washed away during rains (erosion control fabric). Native plantings from seed can take 2-3 growing seasons to establish fully.
- Ongoing maintenance includes weeding, debris removal, and supplementing areas over time with new plants. You can cut the planting down in late winter each year to clean things up for spring growth.

Bioswale species ideas:

Wet soil- sun

- Spring bloom Sweet Flag
- Spring bloom Blue false indigo (m)
- Blue flag iris
- Hairy beardtounge
- Golden alexanders (m)
- Summer Palm sedge
- Fox sedge
- Buttonbush (S)
- Turtlehead
- Red osier dogwood (s)
- Purple coneflower (m)
- Rattlesnake master
- Marsh blazing star
- Cardinal flower
- Switchgrass
- Bergamot
- Mountain mint (m)
- Orange coneflower
- Swamp rose
- Fall Sneezeweed
- Great blue lobelia (m)
- Stiff goldenrod (m)
- Sweet black-eyed susan
- New England aster (m)

Sedges, grasses, ferns, and gc listed make great groundcovers or single species plantings.

S= shrub/small tree, m= also works in medium soil moisture

Medium soil- sun

- Spring bloom Downy serviceberry (S)
- Allegheny serviceberry (S)
- Columbine
- Wood sedge
- Lanceleaf coreopsis
- Ohio spiderwort
- Summer Anise hyssop
- Blue indigo
- Side oats gramma
- New Jersey Tea (S)
- Silky dogwood (S)
- Red osier dogwood (S)
- Foxglove beardtounge
- Fall Dwarf blazing star

Dry soil- sun

- Spring Pennsylvania sedge (m)
- Prairie phlox
- Wild lupine
- Summer Common milkweed (m)
- Butterflyweed (m)
- Whorled milkweed (m)
- Sideoats gramma
- Purple prairie clover
- Stiff goldenrod
- Little bluestem (m)
- Indiangrass
- Hoary vervain
- Fall Blazing star
- Showy goldenrod (m)
- Aromatic aster (m)
- Sky Blue Aster
- Prairie dropseed (m)

Dry soil-shade

- Pennsylvania sedge
- Columbine (m)
- Hairy beardtounge
- Solomon's plume
- Wild garlic
- Downy serviceberry

Medium soil-shade

- Maidenhair fern
- Wild leek
- Wild ginger (gc)
- Lady fern
- Palm sedge
- Pennsylvania sedge
- Long beaked sedge
- Pagoda dogwood (s)
- Bottlebrush grass
- Big leaved aster
- Sweet joe pye weed
- Spicebush (s)
- Blue bells
- Mayapple
- Solomon's seal
- Bloodroot (gc)
- Zigzag goldenrod
- Celandine poppy
- Trillium spp.

Wet soil-shade

- Red baneberry
- Common wood sedge (m)
- Hop sedge
- Fox sedge
- Forked aster
- Ostrich fern (m)
- Sensitive fern

This info brought to you by the Hamilton County Soil and Water Conservation District

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