



Vegetated Swales

Ensuring clean runoff

Lake friendly living
means using lakeshore
BEST MANAGEMENT
PRACTICES

BMP

Vegetated Swales

STANDARDS

Structures/Septic

- Less than 20% of property contains impervious surfaces
- No erosion caused from impervious surface run-off

LAKE BENEFITS

The plants in a swale filter and slow stormwater runoff while sediments and other pollutants settle out. Swales are cost effective, attractive and can provide wildlife habitat and visual enhancements to lakeshore homes, camps and recreation areas.

MATERIALS

Native plants, mulch, amended soil, and stones and pipe for drainage if needed.

Vegetated Swales

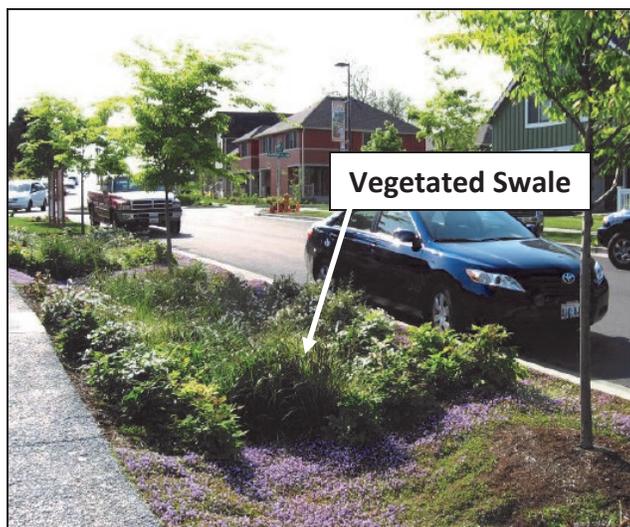
Description: Vegetated swales are shallow open channels lined with dense vegetation designed to treat, attenuate, and convey excess runoff. Vegetated swales can replace curb or gutter systems and although they require more space, they manage runoff better.

Purpose: As the runoff flows along the length of the swale, the vegetation slows and filters the water allowing it to infiltrate into the ground. Where soils do not drain well, swales are typically lined and convey runoff to a drywell or infiltration trench. A swale can look like a typical landscaped area. Vegetated swales can be designed to provide infiltration, but are primarily used to convey water.

How to:

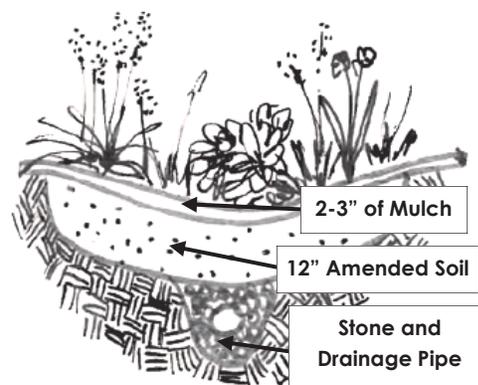
- The recommended slope for vegetative swales is 1-4%. For steeper slopes (up to 5%), check dams are recommended to reduce flow velocity and erosion potential. In areas of steep slopes, swales should run parallel to contours of the landscape. Swales may not be appropriate for highly sloped areas.
- Grasses or sedges are typically used in vegetated swales, but other native plants can be used as well. Please refer to the Planting and Maintaining Vegetation Areas BMP for a list of recommended native species.
- The bottom of a swale should be 2-4 feet above the seasonal high water table.
- Outlet protection should be provided at the swale's discharge point to prevent scour or erosion.

Sizing: The width of the swale can be calculated using complex equations. However, this methodology can be simplified



Source: www.vtwaterquality.org

Vegetated Swale Cross-Section

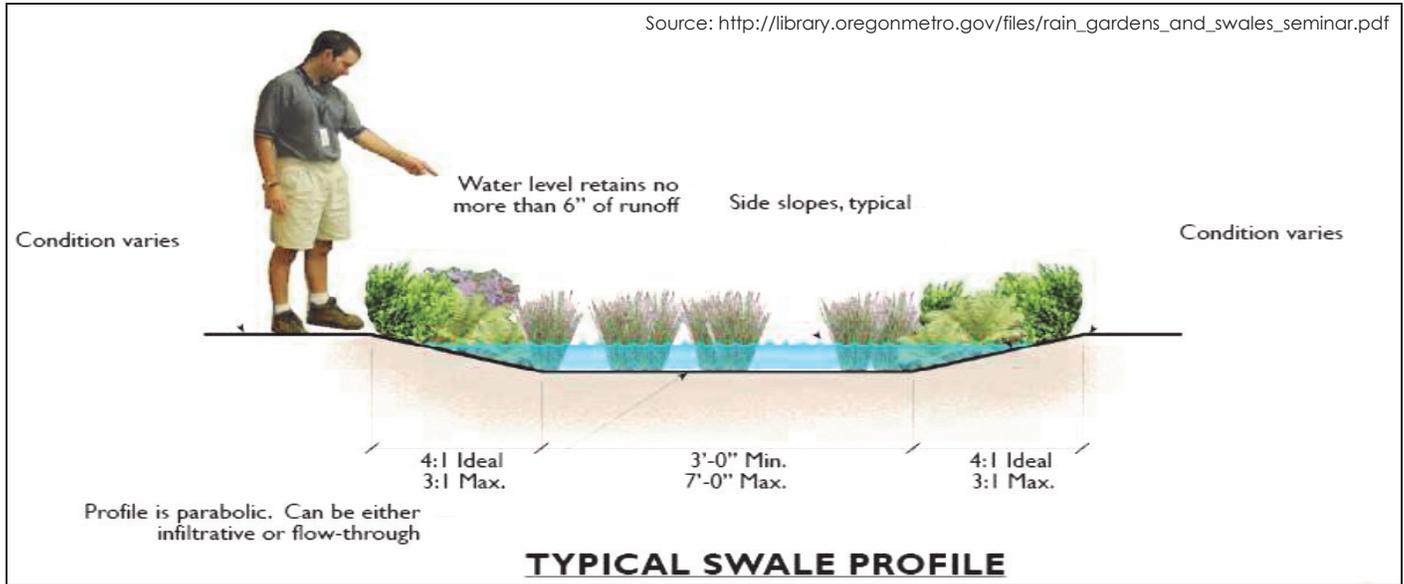


Source: Vermont Low Impact Development

Vegetated Swales

Ensuring clean runoff

to the following rule of thumb: the total surface area of the swale should be one percent of the area (500 square feet for each acre) that drains to the swale.



Vegetation: Swales can be planted with a variety of trees, shrubs, grasses, and ground covers. Plants that can tolerate both wet and dry soil conditions are best. Plant grassy swales with native broadleaf, dense-rooted grass varieties. Avoid trees in areas that require enhanced structural stability, such as bermed side slopes.

Check Dams: Check dams can be installed in swales to promote additional infiltration, to increase storage, and to reduce flow velocities. Earthen check dams are not recommended because of their potential to erode. Check dams should be installed every 17 meters (50 feet) if the longitudinal slope exceeds 4 percent.

Maintenance:  Inspect swales periodically, especially after major storm events. Remove sediment and trash, clean and repair inlets and outlets as needed. Maintain side slopes to prevent erosion and ensure proper drainage. Summer irrigation and weed pulling may be required in the first one to three years. With proper construction and maintenance, swales can last indefinitely.



Vegetated swale on roadside with check dams installed.



Vegetated swale planted with native flowers and vegetation.