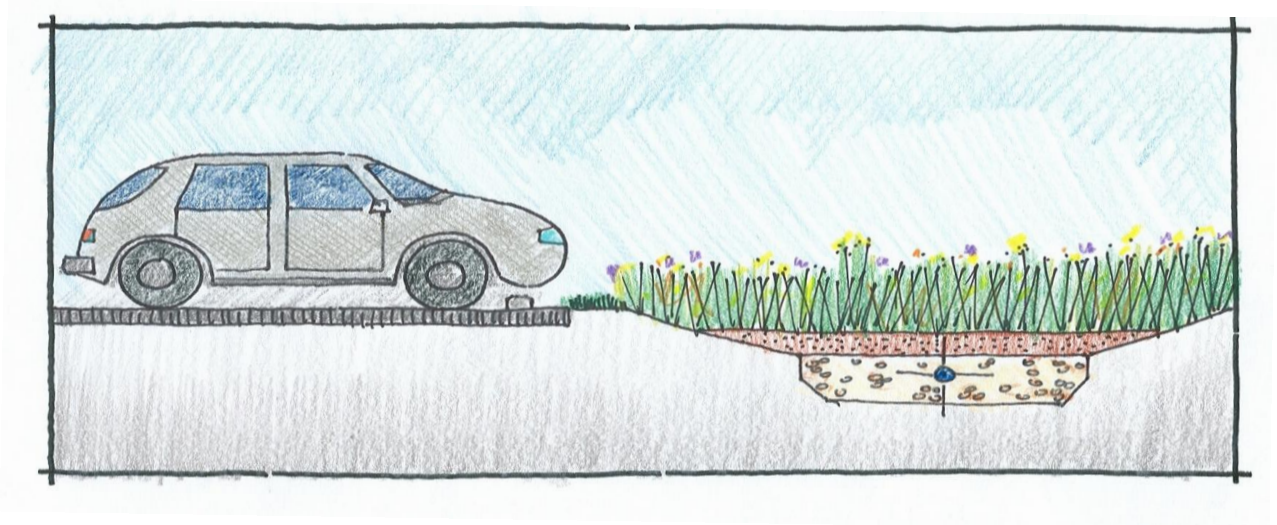
Bioswales

How do Bioswales help manage stormwater?

Bioswales are stormwater runoff conveyance systems that provide an alternative to traditional curb-and-gutter and storm sewers. Bioswales are broad, vegetated channels that reduce the rate and volume of runoff from a site. They are commonly planted with wet-tolerant species and will remain wet for a few days following a storm.

Bioswales differ from traditional vegetated swales in that the bioswales are primarily used for storage of stormwater while vegetated swale is utilized for conveying water. In order to increase the storage capacity of the bioswale, the bioswale can be constructed with an underdrain and infiltration trench comprised of engineered soil and gravel, while a traditional vegetated swale is constructed on native soils. The infiltration trench provides additional stormwater storage and facilitates infiltration of water into the surrounding soils and groundwater. Once the storage capacity of the infiltration trench has been reached, the underdrain will convey the water into the storm sewer system.

Bioswales remove suspended solids through settling and filtration. Dissolved pollutants such as nutrients and metals are removed and/or transformed as runoff infiltrates into the soil. Utilizing the Illinois EPA's Estimating Pollutant Load Reductions for Nonpoint Source Pollution Control BMPs worksheets, bioswales can remove approximately 100% of the total phosphorous, 94% of total suspended solids, and 83% of biochemical oxygen demand (the degree of organic pollution in water leading to the depletion of oxygen).



Where and how can Bioswales be located?

Scale ☐ Watershed/County ☐ Town/Village ☒ Neighborhood ☒ Lot

Applications	☒ Retrofit	☒ New	
	☒ Preventative	☒ Remedial	☒ Ongoing/Maintenance
	☒ Parking lots	☒ Streets	☒ Driveways
	☐ Roofs	☐ Lawns	☐ Sensitive Areas
Effectiveness	☒ Runoff Rate Control	☒ Runoff Volume Control	☐ Habitat Preservation/ Restoration
	☒ Sediment Control	☒ Nutrient Control	☒ BOD/COD Control
	☒ Other Pollutant Control		

Design Considerations

- Bioswales must be sized and designed to account for drainage area and soils.
- Infiltration storage should be designed to drain in 24 hours.
- Filtration benefits can be improved by planting native-deep rooted vegetation.
- Topsoil should be amended with compost and/or sand as a means of improving organic content for filtering and to achieve adequate infiltration.

Additional Benefits of Bioswales

Bioswales provide more than just stormwater management. They also:

- Enhance the aesthetics of the local landscape
- Provide habitat for wildlife
- Can be used for snow storage during winter months

Maintenance

The maintenance requirements for bioswales are minimal. The bioswales should be inspected periodically to remove litter and blockages. Sparse areas should also be reseeded as necessary.

The Bioswales Fact Sheet was prepared by the Winnebago County Highway Department using funding provided in part through the USEPA Section 319 of the Clean Water Act and administrated through Illinois Environmental Protection Agency.