



# Drainage Program Guide

## Green Stormwater Infrastructure (GSI)

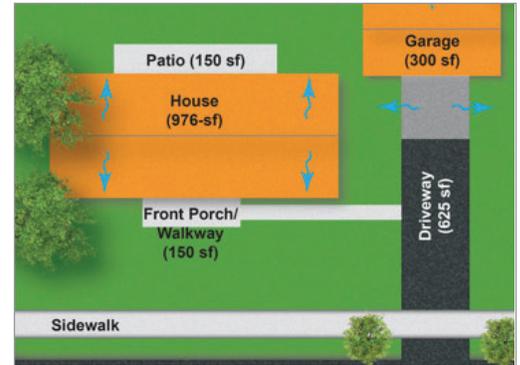
### Best Management Practice: Rain Garden

Rain gardens are small, landscaped depressions that are filled with a mix of soil and compost, and are planted with flowers and perennials, shrubs and trees. They are designed to temporarily store stormwater runoff from rooftops, driveways, patios, and other areas around your property while reducing runoff rates. A rain garden can be a beautiful and functional addition to your landscape.

Rain gardens can be customized to your preference and can easily fit into your existing landscape. For example, vegetation can be selected to specifically attract butterflies and hummingbirds. Or if you prefer a more manicured appearance, short stature plants can be selected and the edges can be well defined.

#### What credits am I eligible for?

Properties can qualify to have charges reduced up to 80 percent through implementation and proper operation of a stormwater management practice depending on the available storage and site conditions. Of the maximum 80 percent credit available, up to 40 percent can be obtained for controlling how fast water is leaving the property and up to 40 percent can be attained based on permanently removing water from the sewer system through infiltration, plant uptake, and/or reuse.



*Typical Single Family Residential Property (SFR)  
According to a DWSD study, the average Detroit house has 1,750 square feet of impervious area*



*Rain gardens can be planted with lower stature plants to help create a more manicured look and feel*



*Not only do rain gardens help improve local water quality, they can be designed to attract butterflies. Milkweed and Queen of the Prairie are two types of plants that attract butterflies*

**NOTE:** Residential customers receive an automatic 25 percent credit. If practice does not exceed the 25 percent automatic credit, no additional credit will be applied.

#### What is the typical cost of a Rain Garden?

The cost of the rain garden is dependent on the soil type, the size of roof, driveway, and patio draining into a rain garden, and the types of plants selected. Rain gardens typically cost between \$7 to \$12 per square foot for plants and materials.

#### Can I design a Rain Garden myself?

To earn credit, the practice needs to be designed by a registered Professional Engineer or Landscape Architect.

#### What type of maintenance is required?

Rain gardens require the typical maintenance of a perennial garden. This includes periodic weed removal and during the first few years after the installation of a rain garden, occasional watering will need to occur during periods of little rain fall.



*Rain gardens are easy to create, attractive, and provide environmental benefits to the community*

## What are the benefits of a Rain Garden?

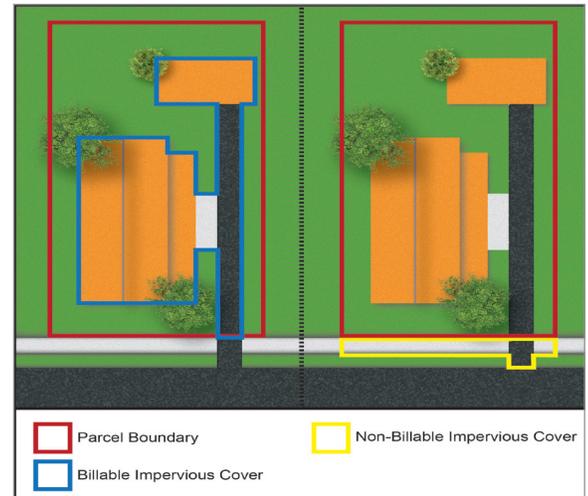
Rain gardens help manage runoff. In addition, rain gardens help improve water quality and can attract butterflies and hummingbirds. Rain gardens can beautify and add value to your property.

## Where should Rain Gardens be located on my property? (Siting Requirements)

- ◆ Rain gardens should be located on your property to receive the maximum amount of stormwater runoff from impervious surfaces and where downspouts or driveway runoff can enter the garden flowing away from the building.
- ◆ Swales, berms or pipe extensions may be helpful to route runoff to the rain garden.
- ◆ Locate rain gardens at least 10 feet from foundations, not within the public right of way, and away from utility lines.
- ◆ Rain Gardens on steep sloped areas (greater-than 10 percent) may require an alternative design with terracing.

## Design Considerations

1. The size of the rain garden will vary depending on the impervious surface draining to it and the depth of the amended soils.
2. Rain gardens must drain within 24 hours so as to not create a mosquito nuisance.
3. It is suggested to test your soil characteristics as you would for any garden. See resources on page 4 of this brochure.
4. Soils for rain gardens should be amended native soils: 2/3 soils and 1/3 compost.
5. A mulch layer consisting of 2 to 3 inches double shredded mulch should be included on the surface of the rain garden. Pine bark and wood chips should not be used. General rule of thumb: 1/2 yard of mulch will cover 100 square feet of a rain garden at a depth of 2 to 3 inches.
6. Often rain gardens have a better appearance and are more easily maintained if they have defined edges, similar to a normal garden.
7. The rain garden needs a defined overflow spot directed to sheet flow to surrounding grass or the street. The overflow should be at a height so that the depth of standing water is not excessive in the event that the water does not soak into the soil. This can be a low point in the berm protected from erosion by rock or other means, or a yard drain with a piped outlet through the berm and a domed grate to minimize clogging from debris.



## Maintenance

Rain garden maintenance is similar to the maintenance that you would typically perform in your landscaped area. Regular maintenance is necessary to keep the rain garden looking good and functioning as required to continue receiving credits.

Routine rain garden maintenance should include:

1. Weeding and removing invasive plants.
2. Deadheading or thinning out plants if they get too large.
3. Replacing dead plants.
4. Replenishing mulch when depleted.
5. Repair areas that have been damaged by erosion.
6. Water as necessary to help the plants get established in the first few years.

Maintenance will vary depending on the size and type of rain garden plantings installed.

## Resources for Detroit

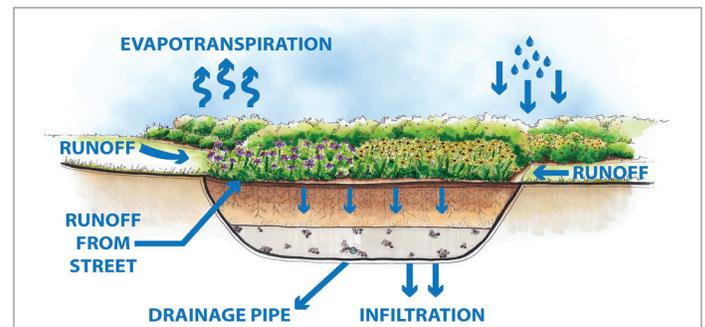
### Native Plant Suppliers

Native plants are recommended because they are adapted to the wet springs and dry summers of southeast Michigan. A list of native plant nurseries can be found online at [www.mnppa.org](http://www.mnppa.org).

### Soil Testing Resources

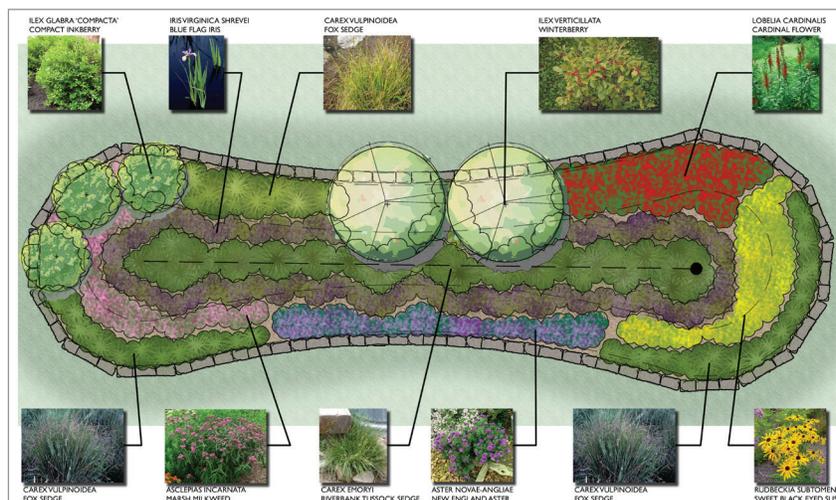
Soil testing is free to members of Keep Growing Detroit's Garden Resource Program. Call 313.757.2635 or visit [detroitagriculture.net](http://detroitagriculture.net) for more information.

If you are not yet a member, you can work directly with Michigan State University's Extension Program. They have a Home Lawn and Garden Soil Test Mailer for \$25. Call 888.678.3464 or visit [msusoiltest.com](http://msusoiltest.com) for more information.



## Permits

In order to be eligible for a drainage charge credit, the stormwater practice must be approved by DWSD. To obtain a drainage charge credit, the property owner will need to submit a credit application with complete drawings stamped by a registered Professional Engineer or Landscape Architect, apply for and receive an approval from DWSD, and fulfill on-going operations and maintenance requirements.



*Planting the rain garden in large groups of the same types of plants makes it easier for an inexperienced gardener to tell the difference between a weed and plant. Clustering of plants creates a pleasant visual experience as well*

## Additional Resources

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For Drainage Charge Credit information and other resources, visit the drainage webpage: [www.detroitmi.gov/drainage](http://www.detroitmi.gov/drainage)

Specific documents to review:

- ◆ Guide to Drainage Credits
- ◆ Guide to Credits for Commonly Used Stormwater Management Practices
- ◆ Credit Calculator
- ◆ Credit Application

Low Impact Development Manual for Michigan

<http://www.semco.org/reports/lid/files/assets/basic-html/page-1.html>

Friends of the Rouge: Rain Gardens to the Rescue Program

<http://www.therouge.org/our-work/river-restoration/growing-sustainable-water-solutions-rain-gardens-to-the-rescue-program>

Uncontrolled document when printed. Refer to website for most current version.