

# Rain Gardens

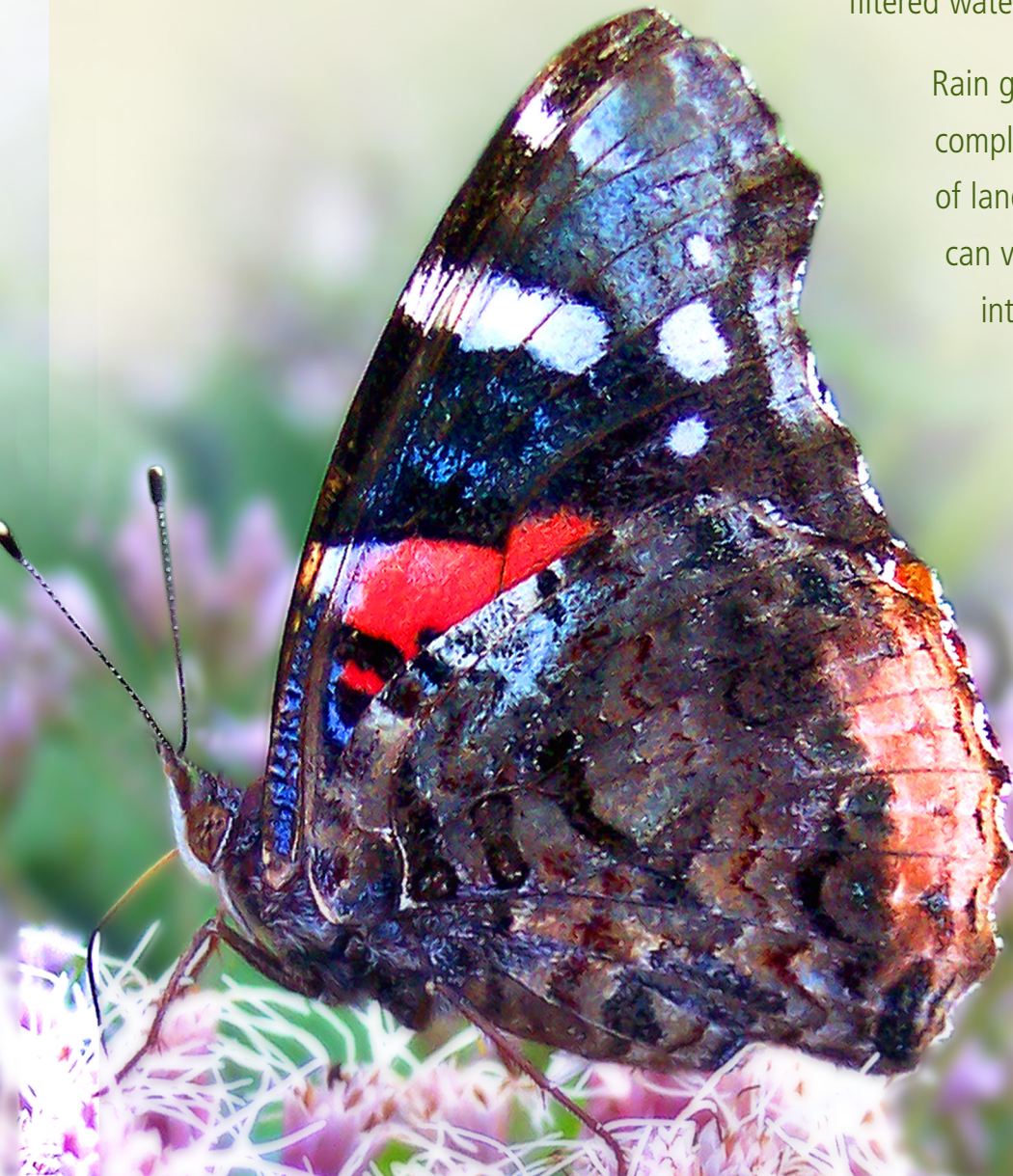
Rain gardens, or bioretention systems, are beautiful landscaping features that manage

stormwater on site. Their loose, deep soils absorb water and filter pollutants. Some rain gardens have under-drains that carry filtered water away.

How to design and construct a successful professional rain garden

Rain gardens complement any style of landscape. Their size can vary, and they can fit into odd shapes and spaces.

They are an excellent method of keeping stormwater on site and out of the sewer system.



# Before You Start

Professional tools for designing rain gardens are free!

You can get spreadsheets to calculate project size and price, engineering manuals, plant information, the latest research, and more at the following URL:

[www.raingardens.org/docs/bioretenation\\_tools.pdf](http://www.raingardens.org/docs/bioretenation_tools.pdf)

## Creating a Functional Design

### Put your rain garden in the right place;

down-slope from building foundations and up-slope from storm drain infrastructure. The most practical way to determine rain garden location is to visit the site. Re-grade to ensure stormwater goes into the rain garden. Direct overflow and under-drain flow to enter existing stormwater infrastructure.

### Size the rain garden correctly.

Do not guess the amount of stormwater going into your rain garden. Use the free tools to perform the necessary stormwater calculations.

**Evaluate existing soils.** You should replace soils with an absorbent soil mix to ensure water will soak in. However, the characteristics of local soils also affect your rain garden. The in-situ soils must be able to infiltrate at a speed that prevents saturation. If they do not, you will need to design an under-drain and overflow plan. Special considerations apply in clay soils.

### Be sure to budget for necessary costs.

Contractors who have never designed and constructed a rain garden before will want to do things the way they have always done them. The project may require additional supervision; plan for this expense. Group meetings are a good way to share information with project managers, engineers, excavators and landscapers.

### Create an attractive design.

Rain gardens feature easy-care plants that are native to your region. Landscapers can create a planting layout that is both beautiful and functional, with attractive designs and drifts of color. Seeded or naturalistic rain gardens are economical and function well, but some people find them inappropriate in formal settings.

Give your rain garden a tended appearance (neatly defined borders, not weedy looking). Landscapers new to rain gardens or native plants may need guidance in plant selection. Do not choose aggressive species that you will need to divide frequently.



# Constructing a Successful Rain Garden

**Seek contractors experienced with rain gardens, or those open to acquiring new skills.**

Contractors unfamiliar with rain gardens may misunderstand the concept. Be sure you are actually creating a rain garden. The goal of a rain garden is to soak stormwater into the soil quickly, not to create a pond.

**Replace soil to a depth that insures infiltration.**

**Soil preparation is essential for success.** Replace existing soils with a loose soil mix appropriate for your site. In heavy clay areas, research and experience indicate that a mix of sand and compost (no topsoil) works well. Additional drainage infrastructure will contribute to reliable infiltration. This prevents soil compaction, soil saturation and standing water.

**Avoid soil saturation, especially in cold climates where the rain garden soil may freeze.**

Be sure you have excellent infiltration and drainage. Overflow and under-drain plans are part of a successful project. A three-inch layer of shredded hardwood mulch helps keep the soil from freezing. Do not use bark chips, which wash away.

**Stage construction carefully to avoid erosion.**

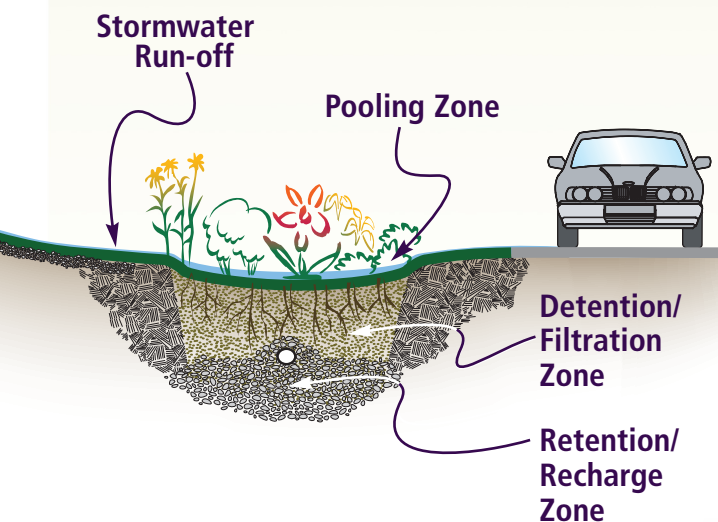
Protect the rain garden from erosion and sediment during and after construction. Sediment can seal the surface. Install effective erosion controls, and leave them in place until all site construction, including other landscaping, is completed.

**The most common cause of failure of a rain garden is soil compaction. It is essential to avoid compaction of soils during all phases of construction.**

Do soil placement and grading from the side. Prevent vehicles from driving on the rain garden. Place barriers to protect from foot and construction traffic.

**Retrofits can be successful if you apply all design considerations.**

You can sometimes convert existing detention or retention ponds into rain gardens. However, many smaller rain gardens scattered throughout a development will function better than converting a large pond at a remote location.



# Maintaining a Beautiful Rain Garden

## Care for your rain garden regularly.

Regular maintenance is required to keep your rain garden looking good and functioning well.

Be sure to include this in your plan and your budget!

**WATER:** Water daily the first few weeks after planting, then regularly until plants are established. Later on, water in a drought if this is practical. You can install irrigation, and only turn it on manually as needed.

**WEED:** Weed on a regular basis, especially the first year. Educate people working in the rain garden. They may identify native plants as weeds.

**MULCH:** A rain garden planted with plugs or container plants benefits from a layer of shredded hardwood mulch. This reduces weeding and watering and helps establish the plants. It also prevents surface sealing of the rain garden, and removes specific pollutants from pavement runoff.

**FERTILIZE:** Should not be necessary. Native plants should thrive in the prepared soil mix. Avoid use of herbicides, pesticides, and fungicides in and around the rain garden.

## KEEP SALT OUT OF THE RAIN GARDEN:

Salt destroys soil biology and damages plants. It builds up in the soil, and, over time, you will need to replace soil and plants. Use alternate deicers, but sparingly.

If you cannot avoid salt, filter through the rain garden and carry away salty water with an under-drain.

Get the free bioretention tools!

[www.raingardens.org/docs/bioretention\\_tools.pdf](http://www.raingardens.org/docs/bioretention_tools.pdf)

[www.raingardens.org](http://www.raingardens.org)

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one garden at a time

Raingardens.org is a program of West Michigan

Environmental Action Council in Grand Rapids, Michigan.



We promote keeping stormwater on site in the Great Lakes basin, and, thanks to our website, everywhere else in the world.

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