



# Rain Gardens



A rain garden is designed to treat stormwater runoff and allow more water to infiltrate. In your neighborhood, they benefit your pond by intercepting and limiting pollutants and reducing flooding.

Rain gardens are vegetated, shallow basins in a landscape designed to collect and filter pollutants from stormwater runoff. They add beauty and can increase pollinator diversity in your lawn. Rain gardens are generally low maintenance; after establishment they often require little to no watering or weeding.

## ***Rain Garden Benefits***

- ◆ May absorb more rainwater than a typical lawn and supplements groundwater levels
- ◆ Often more cost effective than traditional stormwater infrastructure and moderates residential flooding
- ◆ Filters pollutants on-site to reduce downstream pollution



GRDA'S WATERSHED CONSERVATION PROGRAM

Guard the Grand  
GRDA's Watershed Conservation Program

# Rain Garden Components



- ◆ Inflow - Where the water enters the rain garden
- ◆ Basin - The depression where plants and soils exist
- ◆ Outflow - Where the water is released from the rain garden

## 7 Steps to Building an Effective Rain Garden

### Step 1. Select a proper location for your rain garden.



A rain garden should be located in an area with a slope between 1-10%. Do not install a rain garden within 10 feet of a building or within 100 feet of a wellhead. Avoid installing a rain garden in areas that are always wet, above septic systems, or where there is a shallow groundwater table (<2 feet below the bottom of the rain garden).



### Step 2. Perform a water infiltration test to understand whether your soil is suitable and to determine an appropriate ponding depth.

The infiltration rate must be enough to drain the ponding water within 24 to 48 hours. To determine the infiltration rate, dig a hole 12 inches or deeper where the rain garden could be located, pre-wet the hole with water and let the water drain. Fill the hole again and measure the depth of the water with a yard stick every hour. Each hour that you measure, write down the height of the water in inches, as indicated by your yard stick. After 2 or 3 of your consecutive measurements are the same, then the drainage is at a steady state. At this point, the inches drained per hour is your infiltration rate. To determine the ponding depth, find how much water will drain in 24-48 hours based on the infiltration rate and surface area. The goal depth is between 4 and 12 inches.

### Step 3. Calculate the size and shape of the rain garden by using the square footage of impervious areas that contribute to run-off.



Impervious areas cannot absorb rainwater and include roofs, patios, sidewalks and driveways. The rain garden should have a square footage of 3-10 percent of the square footage of nearby impervious areas, depending on the intended depth of ponding and infiltration rate. A smaller square footage is okay, but may increase the risk of erosion during large storms. Over time the soil in the rain garden may infiltrate slower because the soil may clog.

It is important to loosen the soil, clean the media occasionally or make the size of your rain garden a little larger to account for the slower infiltration rate.

*(Sum of the Area of Impervious Surface) X (0.03 - 0.10) = Garden Size*



#### **Step 4. Design the soil berm, inflow and outflow to maximize the water flow path length in the rain garden.**

In most cases, a soil berm will need to be constructed to hold water. Ensure that this berm does not exceed a 3:1 slope. The inlet should be placed where water will flow into the rain garden and should be reinforced with erosion preventing material such as rock cobble. The outlet is a part of the berm and should be placed to maximize the flow path length in the rain garden. The water should spend no more than 48 hours in the rain garden before flowing out or infiltrating the soil.

#### **Step 5. Draw a planting plan that includes the types of plants and locations of planting to provide the best conditions for the plants to thrive.**



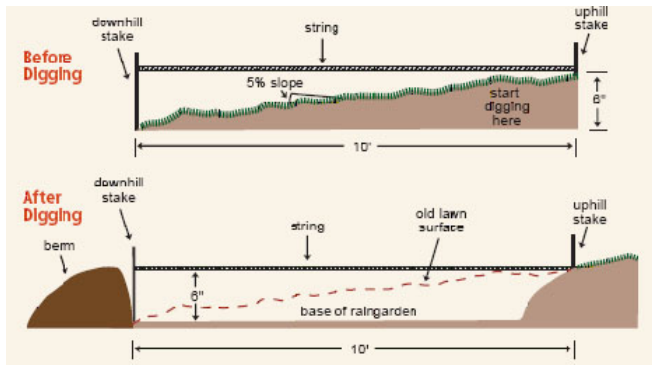
The plants selected for a rain garden should match the local climate and landscape. They should be able to tolerate wet roots for periods of 24 to 48 hours. Plants suitable for drier conditions can be planted on the upper edge of the rain garden, while plants suitable for wetter conditions can be planted in the inner basin. Visit the following website to view native rain garden plants by state:

<https://nemo.uconn.edu/raingardens/plants.php>



#### **Step 6. Build the rain garden using the determined dimensions and plant species after careful preparations.**

To build the rain garden, first outline the desired dimensions and inlet and outlet locations using a hose or a string. Dig the depression using a shovel or backhoe and build the berm with the excess soil. The bottom of the rain garden should be close to level, to ensure that water is uniformly draining. Add a thin layer of mulch (2 to 3 inches) after the garden is constructed. Plant as designed in the planting plan.



<http://raingardenalliance.org/planting/prepping>

#### **Step 7. Monitor the rain garden for standing water, perform plant maintenance and weed when necessary.**



Initially, the plants may require watering; however, if they are properly selected and once established, they will need little care. Monitor the inflow and outflow of the rain garden to gauge if it is still properly functioning by simply checking on your garden during or after a rain event. Sit back and enjoy your new rain garden!

# Frequently Asked Questions

**Q: Will the water attract mosquitoes?**

A: The water should drain in less than 48 hours, which is not enough time for mosquito larvae to hatch.

**Q: Do I really need plants in the garden?**

A: No, but they help increase drainage and the area's attractiveness.

**Q: Should I use compost in my rain garden?**

A: Not necessarily. It can be used, but may not be required. If used, about 3 to 5 percent is adequate for most soils.

**Q: Can I build a rain garden myself?**

A: Yes, and you can purchase the supplies and plants from local retail stores.

**Q: What happens if none of my soil has a high enough infiltration rate?**

A: The native soil can be excavated and replaced with artificial media that has a higher infiltration rate.

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Guard the Grand is an educational program with the goal of fostering an ethic of environmental stewardship in Oklahomans residing in watersheds that flow into Grand Lake O' the Cherokees.

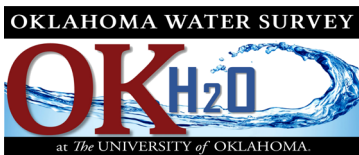
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This publication was developed under Assistance Agreement No. NE-01F627-01 awarded by the U.S. Environmental Protection Agency. It has not been formally reviewed by EPA. The views expressed in this document are solely those of Grand River Dam Authority and EPA does not endorse any products or commercial services mentioned in this publication.

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Information adapted from Nebraska Rain Garden Design Guide