

Rain Garden Resources

For more detailed information on rain gardens, their benefits, and how to construct them, please consult the following resources:



A Vermont Youth Conservation Corps member plants Bee Balm in a South Burlington rain garden.

Vermont Organizations:

Winooski Natural Resources Conservation District

802-828-4493

Abbey.Willard@vt.nacdnet.net

VT Agency of Natural Resources

802-879-2339

Karen.Bates@vt.state.us

UVM Extension Master Gardener Hotline

800-639-2230

Master.Gardener@uvm.edu

Web Based Organizations:

University of Wisconsin Extension

<http://clean-water.uwex.edu/pubs/raingarden/>

Rain Gardens of West Michigan

http://www.raingardens.org/Create_A_Garden.php

City of Maplewood, Minnesota, Rain Garden Site

<http://www.maplewoodmn.gov/office.com/index.asp>

(Click on "Maplewood Stormwater Management" on the right side of the page, then click on "Rainwater Gardens")



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The University of Wisconsin Extension publication, "Rain Gardens: A How-to Manual for Homeowners," was utilized to create this brochure.

What is a Rain Garden?

Rain gardens are perennial gardens designed to capture stormwater runoff from a roof, parking lot or other impervious surface.



A recently completed neighborhood rain garden in Vermont.

Rain gardens reduce the amount of stormwater discharging to stormdrains, streams and lakes. The result is less sediment, nutrients, bacteria and other contaminants in our waterways. Plus, when precipitation infiltrates on-site, groundwater sources are recharged.

Common Questions

Does a rain garden form a pond?

No. Rain water will infiltrate the soil and the garden will be dry between rain events.

Will mosquitos breed in the rain garden?

No. Mosquitos require 7 to 12 days to lay and hatch eggs. Precipitation will infiltrate within a few days in a rain garden. Rain gardens attract dragonflies, which eat mosquitoes.

Is a rain garden expensive?

With the help of family and friends for labor, costs can be minimal. The greatest cost is the plants. Ask those you know if they have any perennials ready to divide and you will minimize your expenses. Just be sure to confirm with your local Conservation District or Extension Service that the plants are non-invasive and appropriate for a rain garden.

Do rain gardens require a lot of maintenance?

In the first two years, some weeding, watering, and mulching will be necessary. Once plants are mature, they may require thinning.

How to Build a Rain Garden

Step 1. Site & Size

In selecting a site for your rain garden, choose a fully or partially sunny spot that is at least 10 ft. from any building foundation and not over a septic system. Locate it so the garden will intercept runoff, uphill from any current ponding area. It is easiest to locate your rain garden so it will collect roof runoff from one or more downspouts. Also, keep in mind that gentle slopes are easier to dig since they require less depth.

The size of your rain garden will depend on the slope, soil and drainage area of your site. To determine the size, first calculate the drainage area for your rain garden. The rain garden will be approximately 20-30% of your drainage area. Follow the steps below to determine the area and depth of your rain garden.

1. Calculate roof portion/imperVIOUS drainage area:

(Length) x (Width) = _____ ft²

2. Calculate the slope of your site:

- Round two stakes, about 15 feet apart, at the uphill and downhill ends of your site.
- Use a carpenter's level and string to create a horizontal line between the two stakes.
- Measure the total length of the string and the height of the string at the downhill stake, in inches.
- Divide the height by the length and multiply the result by 100. This number is your slope.
- Use the table to the right to determine the depth of your rain garden.

3. Determine your soil type:

- Roll a clump of moist soil into a ball.
- Using your thumb, roll the ball along your forefinger to try to make a ribbon of uniform thickness and width.

Slope	Depth
< 4%	3"- 5"
5-7%	6"- 7"
8-12%	8"

- If no or only a weak ribbon can be formed, the soil is sandy.
- If a 1-2" ribbon is formed, the soil is silty.
- If the ribbon is greater than 2" the soils is high in clay and will likely need amendments to increase infiltration.

4. Calculate the size of your rain garden:

From your above calculations on depth and soil type, use the table below to determine your size factor. Then multiply the size factor by your drainage area. This is your recommended rain garden area.

Soil Type	3"- 5"	6"- 7"	8"
Sandy	0.19	0.15	0.08
Silty	0.34	0.25	0.16
Clay	0.43	0.32	0.20

$$\text{Size Factor} \times \text{Drainage Area} = \text{Rain Garden Area}$$

Step 2. Dig/Excavate

For safety, call your local utility company or Dig Safe before you begin.

Loosen the soil to a depth of at least two feet. Adding amendments if necessary (sand and/or compost), create a level bed at the depth determined in Step 1. Excavated soil can be used to create a berm on the downhill sides of the rain garden. The berm will help retain the

water during a rain event. Manufactured or natural edging can be used to create a defined look and help keep out weeds and grass.

A downspout extension or plastic pipe buried below the grass can direct rain water to your garden. Also, a perforated drainage pipe in a bed of gravel at the floor of your rain garden will help with drainage. If you choose to insert one, the pipe should be laid perforated side down, at a 2% slope. The outlet end of the pipe needs to be protected from clogging and drain to an area that can accept the water.

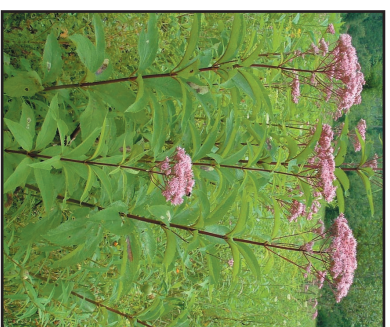


Winooski Conservation District staff works on a rain garden at the Wiltshire Town Library.

Step 3. Plant & Mulch

Before you plant your garden, create a planting plan that shows the layout of your garden. The most important criteria in choosing plants for a rain garden is that they should be able to withstand some brief inundation of water, but also are tolerant of drier conditions. Native plants are often an excellent choice, since they are well adapted to our climate and are easy to care for. Many attractive native plants can be found at local nurseries and garden centers. Consider using a combination of different types of plants in your garden, including flowering perennials, grasses, sedges, ferns, and small shrubs. Be careful that you do not plant any invasive species.

Examples of attractive plants native to Vermont include:



Joe Pye Weed is a native Vermont plant that will thrive in rain gardens.

- Joe Pye Weed** (*Eupatorium maculatum*)
- Blue Lobelia** (*Lobelia siphilitica*)
- Bee Balm** (*Monarda didyma*)
- New England Aster** (*Aster novae-angliae*)
- Cinnamon Fern** (*Osmunda cinnamomea*)
- Blue Yervain** (*Verbena hastata*)
- Red-OsierDogwood** (*Cornus sericea*)
- Winterberry** (*Ilex verticillata*)
- White Turtlehead** (*Chelone glabra*)
- Pussy Willow** (*Salix discolor*)
- Black-Eyed Susan** (*Rudbeckia hirta*)
- Blue Flag Iris** (*Iris versicolor*)

For each plant, dig a hole twice as wide as the plant root mass and deep enough so the soil level of the potted plant will be at the rain garden soil level. Tamp the soil around the roots and water thoroughly. Top off your rain garden with a couple inches of shredded hardwood mulch.

Step 4. Water, Weed & Enjoy!

As the plants are establishing themselves, they will need about an inch of water per week. After the first season, the garden should get most of the water it needs from rain events. Weeding the garden at least once a year will help your plants flourish. Rain garden plants should not need fertilizing and in fact, fertilizing can be harmful to streams and lakes. Your completed rain garden will offer beauty, habitat and stormwater storage for years to come!