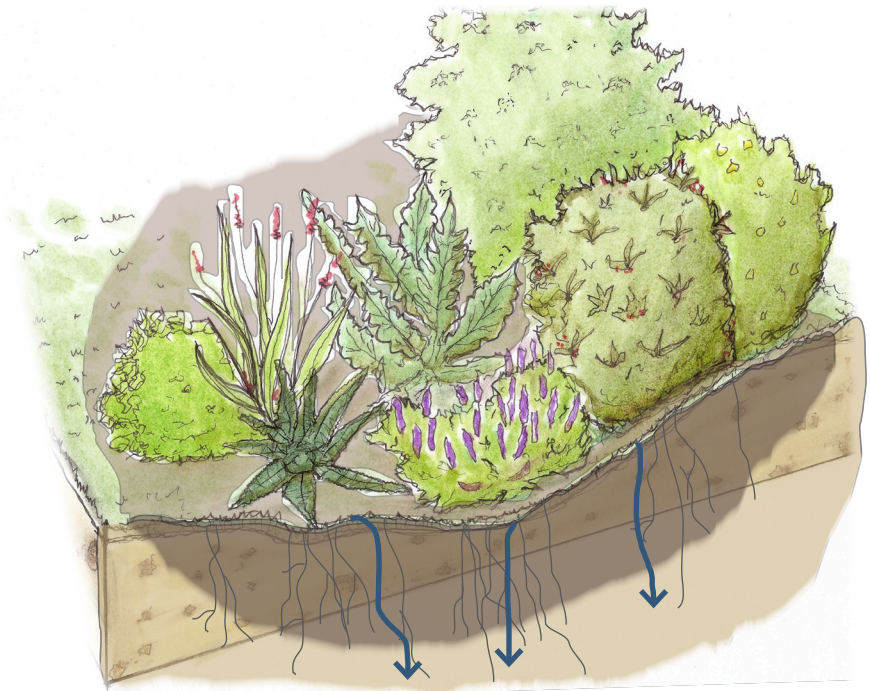


RAIN GARDEN

A rain garden is a bowl-shaped garden that uses soil, mulch, and plants to capture, absorb, and treat stormwater. This helps to reduce the amount of stormwater coming from your property and to recharge groundwater.



SIZING AND DESIGN

STEP 1. Calculate the drainage area using the information in the **Estimate How Much Stormwater Your Property Creates** (page 14) section of this Guide.

STEP 2. Determine the soil type and suitability for a rain garden using the information in the **Water Table and Soil Testing** (page 19) section of this Guide.

STEP 3. Calculate the slope to determine the rain garden's depth.

- a. Place one stake at the uphill end of the rain garden and another at the downhill end as illustrated in Figure 1.
- b. Level the string between the two stakes.
- c. Measure the total length of the string and the height of the string at the downhill stake in inches.
- d. Divide the height by the length and then multiply the result by 100. This is the slope.

EQUIPMENT & MATERIALS

- ✦ Calculator
- ✦ Measuring tape or ruler
- ✦ Stakes (2)
- ✦ String or yarn
- ✦ Shovel
- ✦ Level
- ✦ Compost
- ✦ Mulch
- ✦ Plants

OPTIONAL

- ✦ PVC or other plastic piping
- ✦ Landscaping stones or edging

RAIN GARDEN

e. Use Table 1 to determine the recommended rain garden depth.

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

Soil Type	Rain Garden Depth (from Table 1)		
	3-5 in	6-7 in	8+ in
Sand	0.19	0.15	0.08
Silt	0.34	0.25	0.16
Clay	0.43	0.32	0.20

STEP 4. Determine the rain garden's size.

- Use Table 2 to determine the rain garden size factor.
- Multiply the size factor by the drainage area. This is the recommended rain garden size.

$$\text{SIZE FACTOR} \times \text{DRAINAGE AREA (square feet)} = \text{RAIN GARDEN SIZE (square feet)}$$

STEP 5. Design your Rain Garden.

- Your rain garden can be any shape, but **MUST** have a level bottom.
- Stabilize the area where water will enter your rain garden with stone or gravel to slow the flow and prevent erosion. Place hardy flood tolerant plants where the stormwater enters the garden.

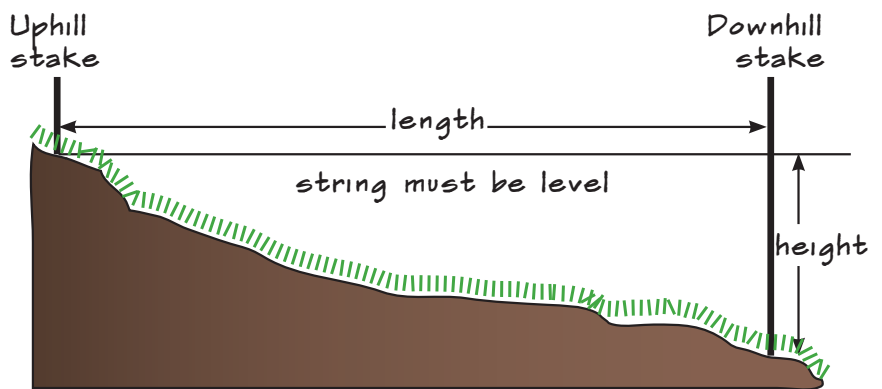


Figure 1. Determine the slope of the landscape before digging.

- Select plants that are able to tolerate extreme moisture fluctuations typical of a rain garden. Plants must be able to tolerate both wet and dry conditions and survive the freezing winter conditions. See the **Native Plant List** in Appendix A of this guide for a list of recommended plants.

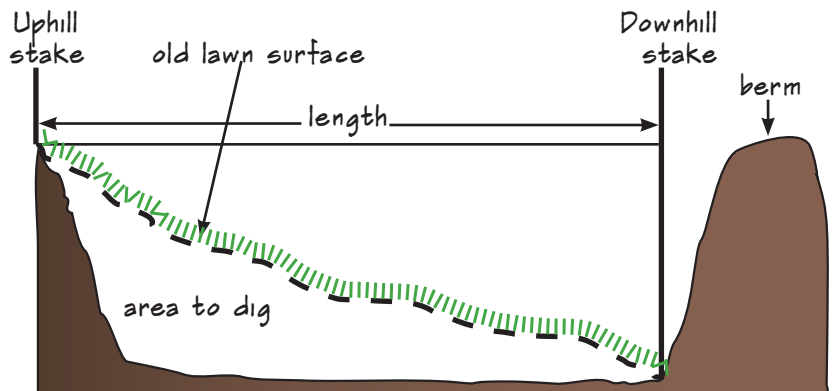


Figure 2. Where to dig and put the soil.

RAIN GARDEN

INSTALLATION

STEP 1. Define the borders by using string or spray paint to outline the shape of the rain garden.

STEP 2. Remove the grass within the rain garden area. You can either dig through the lawn or lay a tarp or sheet of black plastic within the rain garden area for several weeks to kill the grass. Herbicides are not recommended because they could kill newly planted rain garden plants.

STEP 3. Dig the rain garden.

- a. Prepare the perimeter of the garden:

On a Slope: If the rain garden is on a slope, a berm or low wall is needed on the downside of the rain garden to hold the water in the garden (Figure 2). Create a berm while digging the rain garden by piling the soil around the downside garden edges. The berm should be the same height as the uphill side of the garden to make the entire perimeter of the garden level. After shaping the berm, compact the soil and cover with sod, mulch, or other stabilizing ground cover.

On Level Ground: If the rain garden is on level ground, no berm is necessary and the excavated soil can be removed or used somewhere else on your property. Landscaping stone or edging can be used to help hold water in the garden.

- b. Dig the rain garden bed (bottom) 4" - 6" deeper than determined earlier to make room for compost and mulch. Avoid compacting the soils on the bottom of the garden. When the entire rain garden area has been dug out, lay a 2 x 4 board in the garden and place a carpenter's level on it. Dig or add soil to level out the bottom. Once level, rake the soil.
- c. Apply at least 2" of compost to the rain garden and mix into the native soils to help retain moisture and improve plant growth.

NOTE. *There is no need to add fertilizer to your rain garden soil. Adding fertilizer will add unnecessary nutrients and will reduce the ability for the rain garden to effectively treat stormwater.*

STEP 4. Place plants in the garden according to your planting plan. When removing the plants from their pots, loosen the root ball with your fingers to encourage root growth. Water generously after planting.

STEP 5. Apply a 2"-3" layer of mulch over the entire rain garden to help retain moisture in the soil and to prevent weeds. A cubic yard of mulch will cover approximately a 100 square-foot-area with about 3 inches of mulch.

DESIGN REFERENCES

Winooski Natural Resources Conservation District. [*The Vermont Rain Garden Manual "Gardening to Absorb the Storm"*](#). 2009

Wisconsin Department of Natural Resources. [*Rain Gardens: A How-to Manual for Homeowners*](#). 2003.

Figures adapted from Wisconsin Department of Natural Resources. [*Rain Gardens: A How-to Manual for Homeowners*](#). 2003.