

# How to Build and Install a Rain Barrel



## What Is a Rain Barrel?

A rain barrel collects and stores rainwater from your rooftop to use later for things like lawn and garden watering. Water collected in a rain barrel would normally flow through your downspout, onto a paved surface, and eventually into a storm drain.

## Why Use a Rain Barrel?

- ◆ Rain barrels help **lower water costs** by saving approximately 1,300 gallons of water during peak summer months.

- ◆ Using stored rainwater on your garden or lawn instead of directing rooftop runoff to the storm drain network helps **recharge groundwater** naturally.

- ◆ Rain barrels **reduce water pollution** by reducing stormwater runoff, which can contain pollutants like sediment, oil, grease, bacteria, and nutrients.
- ◆ Rain barrels are **inexpensive and easy** to build and install.

You can purchase a ready-to-install rain barrel from the South River Federation. For more information contact the Rain Barrel Community Action Team at #410-721-0661 or [actionteams@southernriverfederation.org](mailto:actionteams@southernriverfederation.org).

## SUPPLIES

(can be found at most hardware stores)

- ✓ One 55-gallon barrel (also available for \$5 from Pepsi Bottling Company)
- ✓ One 5' section of garden hose (3/4" OD x 5/8" ID)
- ✓ One 8" diameter atrium grate (basket used in garden ponds and pool skimmers for filtering)
- ✓ One 1/2" male threaded barbed fitting
- ✓ One hose coupler for 5/8" and 3/4" garden hose
- ✓ One 5' section of drain hose or sump pump line (1-1/4" diameter)
- ✓ One 1-1/4" female barbed fitting and one 1-1/4" male threaded coupling (for overflow connector)
- ✓ One 3" gutter elbow (or downspout adapter and corrugated plastic pipe)
- ✓ One shutoff valve with male and female threaded ends
- ✓ One 1/2" hose clamp
- ✓ Silicone caulk
- ✓ Measuring tape
- ✓ Tools: drill, 3/4" and 1-5/8" hole saw, channel lock pliers, router or jig saw for cutting downspout, screwdrivers, 3/4" tap

### Optional

- ✓ Window screen material or mosquito netting, PVC glue, spigot

## Instructions

Follow the three steps below to build and install your own rain barrel. You may need to modify some steps based on the supplies you have.

### STEP 1. Cut Holes in Barrel

#### ◆ Lower drain hole

Measure about 1 inch above the bottom of the barrel and mark this location for the lower drain hole. Using a 3/4" bit or hole saw, drill a hole through the barrel.

#### ◆ Upper drain hole (overflow hole)

Mark the upper drain hole 3-5 inches from the top of the barrel where you want the overflow to be located in relationship to the lower drain. Use a 1-5/8" hole saw to cut the upper drain hole.

#### ◆ Top hole for atrium grate (filter)

Using the atrium grate as a template for size, mark a circle at the center of the top of the barrel. Drill a 1/2" hole inside of the marked circle. Use a router or jig saw to cut until the hole is large enough to accommodate the atrium grate, which filters out large debris (see photo at right). Do not make the hole too big – you want the flange of the atrium grate to fit securely on the top of the barrel without falling in.

#### ◆ Spigot (optional)

If desired, mark and cut a hole for a spigot in the side of the barrel using a drill or hole saw.

### STEP 2. Modify Downspout

- ◆ Place the barrel on level ground underneath your downspout. Cut your existing downspout using a saw so that the end can be placed over the top of your rain barrel. Use a 3" vinyl downspout elbow to connect the two downspout pieces and trim the end of the downspout if necessary. Another option is to cut your existing downspout and use a downspout adapter to attach the rectangular downspout to a piece of corrugated plastic pipe (see photo at right) which can be placed over the top of your rain barrel. The method you use will depend on the type of downspout you have and the position of the rain barrel in relation to the downspout. You may have to get creative!

### STEP 3. Assemble Parts

#### ◆ Garden hose and shutoff valve

Thread the lower drain hole with a 3/4" tap. Place silicone around the 3/4" male barbed fitting to get a water tight seal. Use a pair of channel lock pliers to twist the fitting into the lower drain hole. Attach the 5' section of garden hose to the hose coupler and tighten screws. Screw the shutoff valve onto the other end of the hose coupler. Place the 1/2" hose clamp onto the garden hose. Attach the garden hose to the barbed fitting at the lower drain hole (see photo at right) and tighten clamp down onto the barbed fitting.

#### ◆ Overflow connector and drain hose

Put the 1/4" male threaded coupling inside the barrel with the threads through the hole. From the outside, screw the 1/4" female barbed fitting onto the threaded coupling. Use silicone on the threads. Attach 5' section of drain hose to this overflow connector (see photo at right).

#### ◆ Atrium grate (filter)

Cut window screen material or mosquito netting to fit the top of the atrium grate. Using PVC glue, secure the screen to the lip of the basket to filter out debris and keep out mosquitos (using screening material is optional). Place the atrium grate into the hole on top of the barrel (basket down).

#### ◆ Spigot (optional)

Thread the spigot hole with a tap, and screw in the spigot. This will come in handy later for filling watering cans and buckets.

- ◆ Use a drill to put drain holes around the inside of the barrel lip and the threaded caps on top of the barrel. This will keep water from collecting on the top of the barrel and keep mosquitos away.

- ◆ Position the end of your downspout or corrugated pipe so it drains onto the atrium grate on the rain barrel. You may need to clean the atrium grate from time to time or empty the barrel in winter so the water does not freeze. Enjoy your barrel!



## Sources

**Pepsi Bottling Company**  
Charlie Dickerson #410-366-3500

**South River Federation**  
Rain Barrel Community Action Team  
#410-721-0661  
[actionteams@southernriverfederation.org](mailto:actionteams@southernriverfederation.org)

**Maryland Green Building Program**  
[www.dnr.state.md.us/smartgrowth/greenbuilding/rainbarrel.html](http://www.dnr.state.md.us/smartgrowth/greenbuilding/rainbarrel.html)

**Arlington Echo Outdoor Education Center**  
[www.arlingtonecho.org](http://www.arlingtonecho.org)



STEP 1



STEP 2



STEP 3



STEP 3

*This instructional flyer was created by the South River Federation and the Center for Watershed Protection, August, 2002  
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SOUTHRIVERFEDERATION



CHESAPEAKE BAY TRUST

# How to Install a Rain Garden

## What Is the South River Federation?

The South River Federation (SRF) is a non-profit organization dedicated to restoring, protecting and preserving the South River watershed. For more information on how you can help protect the South River or for information about membership, rain barrels or rain gardens, visit SRF's website at [www.southernriverfederation.org](http://www.southernriverfederation.org), call Drew Koslow at #410-990-9173 or send email to [membership@southernriverfederation.org](mailto:membership@southernriverfederation.org)



Photo by Roger Bannerman

## What Is a Rain Garden?

Like a rain barrel, a rain garden captures runoff from your rooftop before it reaches the storm drain network. A rain garden uses native landscaping to soak up rain water directed from your downspout. The middle part of the garden holds several inches of water, allowing it to slowly infiltrate into the ground instead of being delivered to the storm drain all at once.

## Why Install a Rain Garden?

A rain garden allows 30% more water to infiltrate into the ground than a conventional lawn. This helps replenish the groundwater supply (important during a drought!), and reduces the amount of pollution that reaches our streams through stormwater runoff. Since studies show that the first inch of rainfall is responsible for the bulk of the pollutants in stormwater, a rain garden is designed to temporarily hold water from a one-inch rainstorm, and slowly filter out many common pollutants like sediment, oil, grease and nutrients. Rain gardens require less watering and fertilizer than conventional lawns, and can provide habitat for birds and butterflies.

## SUPPLIES

(can be found at most hardware stores)

- ✓ Hose
- ✓ Rope or string
- ✓ Level
- ✓ Shovel or spade
- ✓ Measuring tape
- ✓ Downspout extension (optional)
- ✓ Humus or other planting medium (optional)
- ✓ Native plants (see list below)



STEP 1

Photo by Corinne Reed-Miller

15 feet 15 feet 1/4 of the roof drains to one downspout = 15' x 15'



STEP 2

Photo by Roger Bannerman



STEP 3

Photo by Corinne Reed-Miller



STEP 4

Photo by Corinne Reed-Miller



Photo by Roger Bannerman

## Instructions

Follow the four steps below to install a rain garden in your yard.

### Step 1: Size the Rain Garden

Measure the footprint of your house and determine how much of the rooftop area drains to the downspout you will be directing to your rain garden (for gutters with a downspout at each end, assume that half the water goes to each downspout). Be sure to measure the house footprint only; do not take the roof slope into account. The surface area of your rain garden should be between 20% and 30% of the roof area that will drain into the rain garden (use 20% for very sandy soils). Locate the garden at least 10 feet away from the house (to prevent soggy basements), and maintain a minimum 1% slope from the lawn down to the rain garden (you can also create a shallow ditch to ensure the water flows from roof to the garden, or use a downspout extension to direct the flow into the garden).

#### Rain garden sizing example:

30' x 30' house area  
 1/4 of this area drains to one downspout  
 $15' \times 15' = 225 \text{ ft}^2$   
 20% of  $225 \text{ ft}^2 = 45 \text{ ft}^2$   
 30% of  $225 \text{ ft}^2 = 67.5 \text{ ft}^2$   
 Rain garden area =  $45 \text{ ft}^2$  to  $67.5 \text{ ft}^2$  for a 1-inch storm

### Step 2: Locate the Rain Garden

Using a measuring tape and rope or string, lay out the boundary of the rain garden.

### Step 3: Dig the Rain Garden

To enable the rain garden to hold several inches of water during a storm, the surface of your rain garden will have to be 3-4 inches below the surface of your yard. You will have to dig a hole 3-4 inches deep across the entire surface of the garden before planting. If the soil in your yard is not suitable for planting, you can improve it by digging the hole 5-6 inches deep, and adding 2-3 inches of humus or other organic planting material. Make sure the bottom of the garden is level. Test how the garden will hold water during a storm by letting water flow into the rain garden from a hose placed at the downspout. Based on this test, make any necessary adjustments (e.g., create a berm on the lower side of the garden using the diggings, or use a downspout extension or shallow ditch to direct the water into the garden).

### Step 4: Add Plants to the Rain Garden

Choose drought-tolerant plants that will not require much watering, but make sure they can withstand wet soils for up to 24 hours. A list of native plants that meet these criteria is provided below. Also take into account how much sun your garden receives. It's often helpful to draw out a planting plan before you start, and mark planting areas within the garden with string. After planting, weeding may be required until the plants become more established. You may also need to periodically prune some of the plants to let others grow. In the winter, leave dead or dormant plants standing and cut back in the spring. Your garden may need a bit more maintenance than a lawn in the beginning, but in the long run it will be easier to care for and provide many added benefits!

## Native Plants for Rain Gardens

☀ = sun or part sun    ☀☀ = part sun/part shade    ☀☀☀ = shade

#### Ferns

- ☀ rattlesnake fern
- ☀ hay-scented fern
- ☀ Grasses
- ☀ blue wood sedge
- ☀ Canada wild rye
- ☀ bottle brush grass
- ☀ Virginia wild rye

#### Perennials

- ☀ butterflyweed
- ☀ New England aster
- ☀ joe-pye weed
- ☀ wild snakeroot
- ☀ cardinal flower
- ☀ wild bergamot
- ☀ blue-eyed grass

- ☀☀☀ Solomon's seal
- ☀☀☀ black-eyed Susan
- ☀☀☀ wild pink
- ☀☀☀ purple coneflower
- ☀☀☀ yellowflag iris
- ☀☀☀ St. John's wort
- ☀☀☀ early goldenrod
- ☀☀☀ daylily

- ☀☀☀ hosta
- ☀☀☀ grass-leaf blazingstar
- ☀☀☀ Shrubs
- ☀☀☀ mountain laurel
- ☀☀☀ highbush blueberry
- ☀☀☀ spicebush
- ☀☀☀ inkberry
- ☀☀☀ sweet pepperbush

## Sources

Weems Creek Conservancy [www.weemscreek.org](http://www.weemscreek.org)

**Rain Gardens: A household way to improve water quality in your community** University of Wisconsin -Extension and Wisconsin Department of Natural Resources <http://clean-water.uwex.edu/pubs/raingarden/gardens.pdf>

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SOUTHERN RIVER FEDERATION



CENTER FOR WATERSHED PROTECTION



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