

RAIN BARRELS

General Information

Summary

Rain barrels are designed to collect roof runoff. Essentially any water-tight barrel can be set next to a building with a gutter downspout funneled into it to collect and store water that can later be used to water lawns and gardens. Manufactured barrels with lids and spigots are available through catalogues and hardware stores and are safe for households with children.

Advantages

- ✧ Rain barrels are an inexpensive means of controlling rooftop runoff and can be easily employed by individual homeowners throughout a neighborhood.
- ✧ Many downspouts are connected directly to storm drains; connecting rooftop downspouts to rain barrels can reduce storm runoff discharges into sewers.
- ✧ They are a good means of collecting and recycling rainwater for use on gardens and lawns, thus lowering water bills.
- ✧ They are relatively unobtrusive and can be an aesthetically acceptable addition to gardens adjacent to houses.



A typical rain barrel (Photo: EPA)

Disadvantages

- ✧ Runoff mitigation for neighborhoods is minimal unless used by multiple homeowners.
- ✧ Insect growth can be a problem if the barrel is not set up or managed properly.

Conventional Alternatives

Normal downspouts and gutters connected to gutters and sewers.

Design Information

Average rain barrels are generally between 35 to 40 inches tall and 23 to 30 inches wide although smaller and larger ones can be found. On average they take up about 3 ft² (.27 m²) in area. Most commercially made rain barrels come with mosquito-proof lids and covers. A thin layer of cooking oil can also be added to the surface of the water to further discourage insects.

Uses in combination with other techniques

Rain barrels can be used in combination with rain gardens, rain gutter retrofits, small swales and pervious paving to reduce the runoff from a home or small cluster of houses. They can also be connected to dry wells, so that overflow is captured and infiltrated into the ground.

Cost

Rain barrels cost from \$40 to \$260 depending on the size and manufacturer. A 75-gallon barrel with lid and spout can cost between \$100 to \$150. Designs are also available for individuals wishing to construct their own rain barrel at less cost.

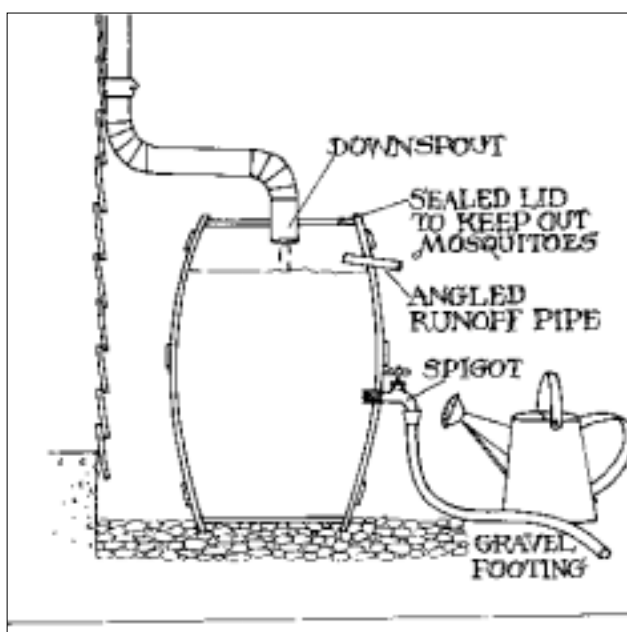
Runoff Reduction

The amount of runoff that rain barrels can prevent varies depending on the number of rain barrels a home installs, the size of the barrels, the amount of rainfall the area receives per year, and the roof surface area of the house.

In general, every inch of rain that falls on an impervious surface of 1000 square feet creates approximately 600 gallons of runoff. Roof surface area is equal to the total square area of the house plus the extension of the eaves. A calculation for a 30 ft x 40 ft house with one-foot eaves on two sides would look like this:

$$(1+1+30) \times 40 = 1280 \text{ ft}^2$$

If 1 inch of rain over 1000 ft² creates 600 gallons, then 1280 ft² creates 768 gallons. Rain barrel capacity ranges from 20 to 80 gallons. Having one or two rain barrels in place and using the water in them can reduce stormwater runoff, but will not manage all runoff, particularly during larger rainfalls. However, rain barrels work very well to detain runoff from small storms and when used in combination with other stormwater mitigation methods, they can help slow water flow from the house and provide free water for gardens and lawns.



A basic rain barrel diagram (Diagram: Low Impact Development Center)

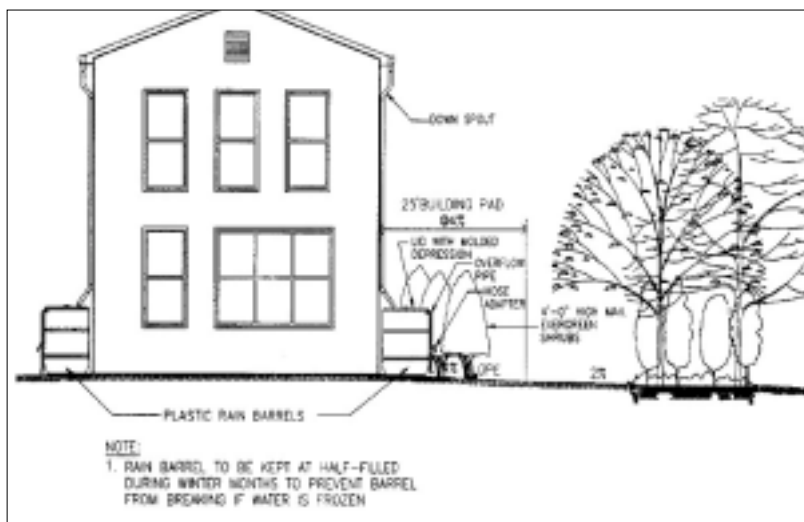


Diagram of rain barrel placement around a house (Drawing: Prince George's County LID Design Guide)

Specialized Information

Soils

Soil type has no effect on Rain Barrel use.

Cold Climates

Some rain barrels are made to withstand cold climates. Others need to be drained and sometimes stored during cold weather. Check the product specifications to determine how a particular barrel handles cold weather.

Case Study - Rouge River Rain Barrel Project

The Rouge River runs through several urban communities in the Detroit metropolitan area. The river has been the site for many industrial plants and operations over the last century, providing a beneficial resource but also succumbing to substantial environmental damage. Industrial and human waste was routinely flushed into the Rouge as urban population centers grew along the river in response to the industrial boom.



Rain barrel in use at a school (Photo: Low Impact Development Center)

Starting in 1989, local and federal officials along with conservation groups and environmental consultants began a project to clean up the Rouge River. Much has been accomplished in cleaning up the river by upgrading sewer systems and water treatment. In addition to these infrastructure improvements, community projects have made major contributions as well. The rain barrel demonstration project in Dearborn, Michigan has been one such project. Throughout 2000 and 2001 the city of Dearborn in partnership with Friends of the Rouge River gave out 400 free 54-gallon rain barrels to local residents in order to retain a significant amount of rainwater that would normally wash off houses and overwhelm the cities combined and separated sewer systems. The project's goal was not only to protect the river and water quality, but also to save the region much needed funds in stormwater infrastructure and maintenance by reducing the water volume in the system.

The project result was an overall reduction in the amount of water flowing into the river, along with residents who were very happy with their rain barrels. The success of the program has lead to similar projects throughout the Detroit area, where rain barrels are either bought and distributed by local governments, or they are subsidized to lower the costs to local residents.

Additional Sources

On-line rain barrel guide
<http://rainbarrelguide.com/>

University of Michigan and Friends of The Rouge River Rain Barrel Project
http://www.snre.umich.edu/riverflows/Restoration_project/Rain_Barrel.html

City of Ottawa - Build your own rain barrel
http://www.city.ottawa.on.ca/city_services/water/27_1_4_3_en.shtml

Garden Gate - Build your own rain barrel
<http://www.gardengatemagazine.com/tips/40tip11.html>

Seattle rain barrel initiative
http://www.cityofseattle.net/util/rain_barrel/default.htm

Santa Fe rain barrel initiative