

## Rainwater Harvesting Devices (Rain Barrels, Cisterns, Tanks)



A rain barrel/cistern is a water holding device which is placed at the base of a roof downspout with the purpose of collecting rainwater for a specific use. The reuse of rainwater can be either active or passive.

**Active Reuse:** This is the reuse of rain barrel water for either non-potable (cannot drink) or potable (for drinking) uses.

Non-Potable Uses include:

- Irrigating your landscape (typically using a filter and pump system);
- Car washing;
- Cleaning off a deck or patio;
- Flushing toilets (filtration, pump and secondary plumbing required).

Potable reuse or the use of the rain barrel water for drinking requires filtration, disinfection and permits.

If rainwater is stored for reuse, the barrel will not be empty for the next storm. Long-term storage of rainwater should be avoided.



## Homeowner Guide for a More Bay- Friendly Property

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**Passive Reuse:** Watering plants in the landscape utilizing natural slope and/or gravity. This system is typically designed to release rainwater slowly into a landscape bed or the landscape via a soaker hose.

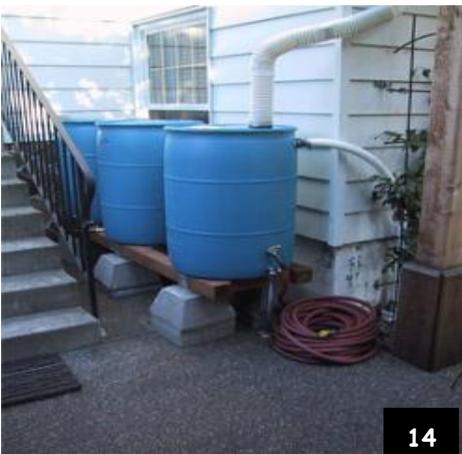
Contact a Rainwater Harvesting professional, Landscape Architect, Civil Engineer, Low Impact Development (LID) specialist, Watershed Steward, or Master Gardener for information.

### Sizing Your Rain Water Harvesting Device

A rain barrel should be sized according to the drainage area of the roof.

During a 1-inch rain a house which is 1,000 sf will yield approximately 600 gallons of runoff. The average storm in Maryland is  $\frac{1}{2}$  inch. Typically a 1,000 square foot house has four (4) downspouts where each downspout serves roughly 250 square feet of roof area. Thus one downspout yields approximately 75 gallons of rainfall in a  $\frac{1}{2}$  inch rain.

So if you desire to reduce your stormwater utility fee it is imperative to size your device to handle at least the 1/2 -inch storm in order to get credit, and preferably capture the one-inch storm (Make sure to check with your locality to see if a stormwater utility fee credit is available).



The 55 gallon rain barrels fill up fast! However you can "daisy chain" barrels together or purchase a larger rain barrel or cistern.

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### Design Considerations

The following are some things to consider before settling on your rain barrel or cistern.

- Tanks or cisterns should not be installed over utilities, easements, or other infrastructure. Also do not install them over septic systems, sand filters or other underground structures. Rain barrels can be installed in any location as they are more temporary devices.
- Ensure that location is level (flat).
- Stabilize the base with pavers, flagstone or gravel.
- The device must be 12-18 inches above the ground if utilizing gravity to drain the water.

### Design Variations

Not all rain barrels and cisterns are created equal. There are design variations depending on the type of practice you want to use and the look you are going for.

#### Above Ground

- A rain barrel/cistern placed at the base of the downspout (gutter cut off and overflow pipe to safe location);
- A rain barrel/cistern placed around the corner (gutter cut off, an elbow attached; overflow pipe to safe location);
- A rain barrel/cistern placed under a deck;



#### Below Ground

A cistern/tank buried below the ground. Be sure to purchase a device which is designed to not heave out of the ground (a very natural occurrence) or is able to be strapped down. These systems typically require a filtration and pump system. Typically you will want to engage a Rainwater Harvesting professional if you are burying a cistern or tank. You can find certified designers and installers at the American Rainwater Catchment Systems Association ([ARCSA.org](http://ARCSA.org)).

### How do I install my above ground rainwater harvesting device?

Follow the rain barrel or cistern manufacturer's installation guidelines. A typical installation requires that you:

- 1) Shorten the downspout and direct into opening of the barrel.
- 2) Make sure the device is level.
- 3) Make sure the screen is in place.
- 4) Secure the downspout to the device with screws, if appropriate.
- 5) Attach overflow pipes and be sure that the overflow can drain safely away from your house or downhill to a landscape bed. Be sure not to direct the overflow towards a neighbor's house or to a sidewalk.
- 6) Connect the hoses to your device and you are ready to go!

#### Materials to Have On Hand during Installation

- Extra gutter (Straight, Elbows)
- Wire mesh screen for keeping debris out
- A lid for safety if the mesh screen is attached to the gutter directly
- Overflow hose
- Handsaw
- Screws
- Level
- Soaker hose - if you are going to do a slow drawdown of the barrel over time

### How do I care for my above ground rainwater harvesting device?

Empty your device during the winter by disconnecting the hose or opening all of the spigots to let water run freely through the barrel. There is no need to detach it from the downspout. This will prevent water freezing in the device over the winter.

#### Other Tips

- Sometimes there is not an opportunity to reuse rainwater. It is recommended to capture water only if you intend to reuse it! Keeping the faucet open or using a soaker hose to slowly drawdown the rain barrel and irrigate your surrounding landscape is a good option.
  - If you are connecting a soaker hose, drill  $\frac{1}{4}$ " holes every 6-8 inches in the rain barrel to help the water drain.
- Raise the height of the barrel so that there is sufficient water pressure to use a hose.

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Unightly cinder blocks can be camouflaged with flagstone or rocks.

- Always have the overflow going to a safe place in the event that the barrel/cistern fills up - make sure it will not deliver water too close to the house.
- Always use some kind of screen to prevent organic debris from entering the barrel. The debris will settle at the bottom of your barrel and eventually clog the outflow. A removable wire mesh screen is all you really need, either mounted on top of the rain barrel or attached to the end of your downspout. A well-fitting lid is also important to protect children and prevent mosquitoes from breeding in the water.
- Put a brick or a large rock in the bottom of the rain barrel so that it does not blow around on a windy day.
- One gallon of water weighs approximately 8.35 lbs, so make sure your device is level and stable. A 55 gallon barrel can weigh upwards of 459 lbs when it is full!
- It is recommended to purchase brass fittings at the outset of installation as they will last longer.

### Resources

- American Rainwater Catchment Systems Association (ARCSA) [www.arcsa.org](http://www.arcsa.org)
- A fun calculator that will help you estimate the amount of rainwater you can collect in your barrel: <http://www.gardeners.com/Rain-Barrel-How-To/5497,default.pg.html>