

Rainwater Harvesting



Brought to you by:

Capital Area Master Naturalist Volunteers

and

Barton Springs/Edwards Aquifer Conservation District



Rainwater Harvesting



Why Harvest Rainwater?



Saves the consumer money



Conserves water – less stress on the organisms that depend on surface and groundwater



Reduces the need for new water treatment plants and associated infrastructure

Rainwater Harvesting

Basic Components



💧 Systems come in all sizes and shapes, but have a few things in common:



Rainwater Harvesting



Catchment Area



Likely
your roof



Metal roofs
work best, but
any roof will
work for non-
potable



Rainwater Harvesting

Transport System



Gutters



Downspouts



PVC piping-
(if needed)



Rainwater Harvesting

Leaf Screens and Roof Washers



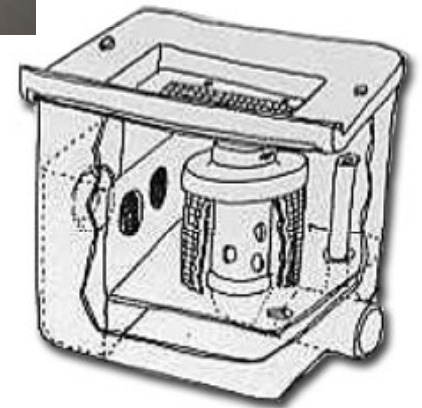
Screens or mesh



Roof washer
diverts first
flush



FloTrue
Valve



Rainwater Harvesting

Storage Tank or Cistern

- 🌧️ Rainbarrels
- 🌧️ Many different materials
- 🌧️ Dark-colored tank to prevent algae growth



The District collects water off a 600 sq. ft section of roof. The water is gravity-fed into a 1550-gallon black polyethylene tank, which becomes nearly full after a 4 in. rain. We chose this lightweight, dark-colored tank in order to prevent the growth of algae. It measures approximately 7'-6" in diameter by just under 6'-0" high.

Rainwater Harvesting

Delivery System to Landscape

- 🌊 Spigots
- 🌊 Gravity-Fed
- 🌊 Pump
- 🌊 Building Codes



The pump is connected to a 20-gallon air-charged pressure tank, which contains a bladder that fills up and keeps the pump from constantly running. Those wishing to install systems should get professional assistance with pump installation and investigate local building codes.

Rainwater Harvesting



System Design Steps



Calculate how much water you can collect:

Calculate the square footage of your total catchment area (your roof). Multiply that figure by .6 gallons of water per column inch of rain.

For example: We have 640 sq. ft. of roof available; therefore, $640 \times .6 = 384$ gallons of rainwater per column inch of rainfall.

Rainwater Harvesting



Analyze your site:

- storage capacity you will need to handle your irrigation needs: the size of your yard
- the amount and type of turf grass
- the number of flower or vegetable beds
- the average rainfall you can expect. Your budget, space constraints, and calculated usage will determine the tank's ideal containment capacity.
- components (e.g., gutters) you need to upgrade or purchase
- where you want to place your storage tank. You can place the tank under the eaves of your home or you can place it farther away in your yard.
- If you will be installing a pump, you will need to place the system near an electrical outlet.

Rainwater Harvesting



System Design Steps



Tips:

- Once your tank is full you cannot collect additional rainfall. You might be tempted to buy a big tank, but most rainwater consultants remind new harvesters that added storage can easily be added if desired.
- Remove tree branches that might fall on your gutters or might deposit large amounts of debris.
- Consider that a gallon of water weighs 8 pounds. Multiply 8 pounds by the capacity of your tank and you will quickly see why it is important to have a strong, level base to support the weight of your tank.

Once you have calculated the amount of storage needed and where you would like to place your tank, it is time to design the details of your system.

Rainwater Harvesting



System Design Steps



Select a tank

Many types and sizes of tanks are available, and many may be purchased at area ranch and farm supply stores.

Design the water intake transport system

Trace the path from your downspout to the tank. If your tank (or especially a rainbarrel), is located under the eaves, you will not need to run PVC pipe.

If your system requires piping, design the PVC pipe path so it has the fewest turns and angles.

Design the water delivery system

Design the PVC pipe path with the fewest turns and angles. Decide how many hose bibs you will need and where you will place them in the path. (Install a hose bib near the tank as well in case you need to drain it)

If you have a rainbarrel, elevate it to create higher outlet pressure and allow easy access to the spigot. If you have a large storage tank and your landscape is far away, you might need to install a pump.

Rainwater Harvesting

Installation



Tank pad

Install your pad site for the tank. Use a masonry level to make sure your site is level and smooth. You may want to build a pad with landscape timbers and crushed granite. Tamp down the granite before placing your tank on top.

Roll Tank into Place!!!



Our tank is installed on a bed of tamped, crushed granite. We fashioned a framework of landscape timbers to contain it. (At nearly 8 pounds per gallon, we have to support over 6 tons of water, so a proper level foundation is needed.)

Rainwater Harvesting

Installation



1. Lay out the PVC pipe and all the connecting joints.
2. Dig the trench that will house the pipe(s).
3. PVC piping will be connected using Weld-On™ PVC 705 glue.
4. Do not glue until all piping is laid
5. USE LOTS OF GLUE



When connecting your pipe, make sure to apply ample glue to dry, clean PVC.

Rainwater Harvesting

Install your downspout converter: higher point than the tank's intake opening.

The 5" seamless aluminum gutter and 3" x 4" downspout, at the rear of our office, are the main transport components.

From there the downspout converter is coupled with a 4"-diameter reducer to connect the 2"-diameter schedule 40 PVC pipe used to get the water into the tank.



Rainwater Harvesting



Installation



Install your roof washer
and clean out valves



Rainwater Harvesting

Installation



Glue piping and install pressure tank and pump

Install electrical outlet – hire a professional electrician if needed and always check with local building codes

Rainwater Harvesting



Installation



We built a small roofed structure to house the water pump and an outline for a heat strip in the winter.

Rainwater Harvesting



Caring for Your System



Regular maintenance:

- Remove branches that hang over your gutters to prevent damage, debris, and roosting birds.
- Clean your gutters and empty your tank yearly. This will help keep your system from clogging and keep your tank from developing odors.
- Use mosquito dunks to control mosquitoes. Dunks can be bought at local nurseries and farm supply stores.

Rainwater Harvesting



You don't have to do it alone!

- Wealth of printed materials
- Rainwater harvesting consultants

Rainwater Harvesting

Financial Assistance



City of Austin Customers (and Eligible MUDs):

Rainbarrels: Next Rainbarrel Sale September 17!

\$60 per barrel

4 barrel limit

\$95 for those living outside Austin

Also have rebates for larger systems

<http://www.ci.austin.tx.us/watercon/rainwater.htm>



Rainwater Harvesting



Financial Assistance



Hays County Residents:

<http://www.co.hays.tx.us/departments/envirohealth/pdf/rainwater.pdf>

Hays County offers a fee reimbursement for new development permitted through Hays County Environmental Health and a property tax reduction based on rainwater collection system construction costs. This site includes the application and a list of designers and installers. Call Hays County Environmental Health at 512-393-2150.

<http://www.capitol.state.tx.us/hrofr/interim/int78-9.pdf>

Under HB 645 (passed into law during the 78th Legislature), it is illegal for homeowner associations to ban rainwater harvesting systems.

www.window.state.tx.us/taxinfo/taxpubs/tx96_237_4_02.html

All rainwater harvesting materials (and all water-saving devices) are tax-free.

Rainwater Harvesting

Contact Information

**Barton Springs/Edwards Aquifer
Conservation District
1124 Regal Row
Austin, Texas 78748
Phone: 512-282-8441
Fax: 512-282-7016**

**Website: www.bseacd.org
E-mail: bseacd@bseacd.org**

