

Rain Barrels

A drop in the bucket for conservation

A comprehensive guide to deciding on, designing for, building and buying a rain barrel in the Twin Cities Metro Area.



Why Rain Barrels?

Store water away for an un-rainy day.

Up to 40% of summer water use is irrigation. Reduce your household water needs by saving rain.

Water your garden naturally with untreated, air-temperature, non-chlorinated water.

Provide water to areas that can't be reached by your hose.

Collect and direct rain water away from the foundation of your house and to your garden.

Stop storm-water from polluting neighboring waters by keeping it where it falls.

Recycling rain water reduces your personal energy consumption by using less treated water.

Water your dry lawns and gardens during city-imposed watering bans.

Reduce erosion and increase water quality.

Rain Barrel Hydrology Lesson:

Spring snowmelt and rains are usually plentiful. A rain gutter and extended downspout will help keep the water away from your house and minimize freeze thaw cycles that are dangerous for sidewalks and driveways. Because it is unlikely that your garden will be lacking in water at this time, the main spring-time function of rain barrels is to reduce the amount of stormwater running off of your property.

Summer weather is more sporadic with unpredictable rainfall and hot dry spells. Rain barrels provide a way to balance watering needs during this time. Most storms deliver a $\frac{1}{4}$ inch of rain, but 5 to 6 times per year we get a 1-inch deluge. Because the typical residential roof can collect a significant amount of rainfall, the amount of water saved depends on the capacity of your rain barrel(s). If you want to store water for irrigation between summer storms, you will need a rain barrel of adequate size. Connecting 2 or 3 barrels together or installing a barrel at more than one downspout is an easy way to multiply your storage capacity. To help plan your rain barrel set-up, consider the following:

1 inch of rain on 1 square foot of roof yields 0.6 gallons.

1 inch of rain onto a 10 ft x 10 ft. area (100 sq. ft) yields 60 gallons.

Multiply the square footage of your roof that drains into each individual downspout by 0.6 gallons to get your roof runoff volume. Either use a single barrel and prepare for occasional overflows, or select a rain barrel that can link to another to collect as much rain as possible. Check our recommended web links for ideas on both options.

Example: One side of a one-car garage is draining into the barrel. If that roof area is 15 ft x 20 ft (300 sq. ft.), then 1 inch of rain will yield 180 gallons of roof runoff into the barrel. A more common storm event only delivers $\frac{1}{4}$ inch of rain, producing 45 gallons that will flow into the barrel.



Do I need a rain barrel?

The simple answer is no, nobody with access to municipal water *needs* a rain barrel. Instead, it is one of many choices we can make to make to have a positive impact on an over-impacted environment. Choosing rain barrels is a great decision for conservation because while the benefits to the environment are harder to see, the positive effects on your garden will be more visible. Our local waterways will be healthier because you found a means to control the amount of polluted runoff from your own property while you achieve a healthier, more natural garden without needlessly using municipal waters.

**I am committed to helping in some way.
I like the idea of rain barrels. Will it
work at my house?**

**What
is the
next
step?**

Yes

Time to do more research!

1. Calculate how much water you will get from your roof.
2. Consider how much water your garden needs.
3. Shop for a barrel that keeps leaves, mosquitoes and kids out !!
4. Shop for a barrel that you can clean out.
5. Shop for a barrel that appeals to you.
6. Create a flat area to support a rain barrel—the barrel will weigh 500 pounds or more when full !!!
7. Purchase or make your first rain barrel.
8. Link more rain barrels together for more water storage if needed, after assessing your new system.
9. Do-it-yourself workshops are popular, but your local handy-man can install it if you need help.
10. Attach a soaker hose if you do not have time to empty the barrel after big storms or for slow release of water.

**My
house has
gutters and
downspouts or
I am willing to
add them.**

Yes

Yes

No

To protect your local wetlands, creeks and lakes, it is best to have a well-vegetated yard that will soak up the water from your roof.

**Consider
rain
gardens,
infiltration
trenches
and
swales.**



**Are our ideas
soaking in?**

**There are
impervious
surfaces between
my downspout
and vegetated
areas but rain
barrels won't work
for me.**

Yes

There ARE alternatives depending on site conditions

The primary goal is to reduce the amount of rain water runoff from your property. To achieve this without a rain barrel, find a means to deliver rain water from roofs and pavement to vegetated areas.

Install a downspout attachment that drops down across the sidewalk during a storm and sends the water to soak into a vegetated area.

Replace sidewalk or driveway with porous pavers for water to go through to get into the ground if there is at least 10 ft. of distance from the house foundation.

If your yard slopes away from the paved surface, attach a drain pipe to the downspout and embed the pipe in or under the pavement to deliver it to an area where it can soak in.

Words of Wisdom

1. Clean out your rain barrel.
 - ◆ 3/4 cup Clorox per gallon of water to remove remaining contents of recycled barrel prior to installation. This cleaning is only done once before any stored water is used from the barrel.
 - ◆ Sediment and debris removal as needed monthly, yearly, etc.
2. Management of heavy rain storms. Rain barrels fill very quickly in a heavy storm. Connect a 1-1/4 to 1-1/2 inch hose to the barrel's overflow port and direct the water at least 6 feet away from the building foundation. Note: Garden hoses can be too small, causing spillage near the house foundation. Emptying your rain barrel before any rain event will provide "dead storage," and allow for optimal water savings.
3. Winterizing rain barrels. Disconnect downspout connections to the rain barrel prior to the first hard freeze. Redirect the downspout area away from the foundation of the house for the winter season.
4. Maintenance. Periodic checks throughout the season should be done to make sure screens are cleaned out, hoses are well attached, and no small animals have found their way in.
5. For safety concerns regarding rain barrel use for drinking water, on vegetable plants, avoiding mosquitoes, or cautions regarding roofing material, see:
 - ◆ <http://home.comcast.net/~leavesdance/rainbarrels/safety.html>.
6. For installation and maintenance tips see our *Local Rain Barrel Resources and Helpful Web Links* document that is Insert 1 in this information packet.

So What's Next? - Rain barrels are not the only way you can reuse stormwater.

Thank you rain barrel users! You are now holding back around 8% of the stormwater falling on your roof or around 3% of runoff from your entire residential lot. This helps reduce flooding and pollution in the stormwater system. Now, look around to see where else you can hold back more water. For more ideas, see:

<http://clean-water.uwex.edu/pubs/> and look at the section 'Home and Garden Clean Water Practices.'

Use this website as a starting point to learn more about:

Rain gardens. A single rain barrel will not usually be able to contain all the runoff from a heavy storm. To handle larger volumes of water, rain barrels are best used in conjunction with other water management strategies such as rain gardens (see photo).

Planting with Native Vegetation. Native plants are suited to our unpredictable climate. They have deep roots that help use up rainwater and they offer habitat to native birds, butterflies, frogs, and turtles.

Yard Care and the Environment. Use fertilizers, pesticides, herbicides, irrigation, compost etc., wisely and effectively.

If you do not have the internet, use the underlined words above as key words to research these projects at a local library or to ask us!



Connecting a soaker hose to your rain barrel is an efficient means of irrigation.

Photo courtesy of Lake Superior Streams

Ramsey-Washington Metro
Watershed District

2665 Noel Drive
Little Canada, MN 55117
Phone: (651) 792-7950
Fax: (651) 792-7951

Local Rain Barrel Resources and Helpful Web Links

Revised 10/06

Longfellow and Seward Neighborhoods

The Seward Neighborhood Group (SNG) has helped put about 300 55-gallon barrels into the community through "Build Your Own Rain Barrel" workshops. These workshops usually happen in the spring, but SNG also sells pre-constructed, ready-to-install rain barrels for those that missed the classes. They usually have six to eight of these around that can be picked up at their office, 2323 E. Franklin in Minneapolis, for only \$65 each. While you are there, you can donate any old garden hoses or window screens for their next workshop. For more information, contact :

Bernie Waibel

Phone: 612/338-6205 ext. 102

Email: Bernie@sng.org, or visit their website at www.sng.org



Western Container

Fifty-five gallon recycled, closed-top, blue barrels are available to be used in making your own rain barrel. Barrels are rinsed out, but their previous contents are unknown. Ask for a reconditioned barrel rather than a used one to insure you do not use a barrel that used to contain potentially harmful substances. As with any recycled barrel to be used as a rain barrel, smell it to see if there are lingering chemical odors unless you are sure the barrel was used for food. The cost is only \$15! For more information:

Address: 8811 Science Center Dr, New Hope, MN 55428

Phone: 612/338-2413

Website: www.bargaincontainer.com

Consolidated Container Company, LLC

A Minneapolis source for 55-gallon plastic barrels to use in a build-your-own rain barrel. Barrel colors are blue or clear – although clear barrels are not usually recommended as they can promote algal growth and it can cause the water to get too warm to safely use on gardens. Barrels cost \$50 each, payable by cash, check, Visa, or Master Card. Be sure to specify new or food-grade barrels.

Address: 109 27th Ave. NE Minneapolis, MN 55418

Phone: 612-781-0923 or Toll Free: 800-577-0715

Website: www.containerexperts.com

Mills Fleet Farm

Fleet Farm carries 65-gallon Oasis Rain Collection System rain barrels that are available for \$139.95. These have a different shape than most, (see photo) with the likely intent of making them more maneuverable than cylindrical barrels. The rain barrels seen at the Oakdale location were available in gray and light brown (6/06).

For more information:

Address: 5635 Hadley Ave N., Oakdale, MN 55128

Phone: 651/779-7725



Mills Fleet Farm Barrel

RENew Your Place on Earth Rain Barrels

These wooden rain barrels are locally crafted in Northfield, MN, from recycled distillery barrels. It is ready-made with a drain spigot, overflow/soaker hose set up, and a screened downspout inlet. Brass faucets are available with various wildlife forms on each (the turtle spigot is visible in the photo). These unique barrels can hold up to 53 gallons and cost \$160 (includes \$100 tax-deductible contribution to RENew Northfield). It should be noted that wood barrels are heavier than plastic barrels, so be prepared to provide a means to get it from your vehicle to your downspout!

For more information, see or contact:

Bruce Anderson with Renewable Energy for a New Northfield

Address: 402 Washington St. Northfield, MN 55057

Phone: 507/645-7133

Website: www.renewnorthfield.org



RENew Rain Barrel

Gerten's

Gerten's sells 54-gallon rain barrels from Achla Designs for \$179. They are made of heavy weight, UV-stable polyethylene that is available in green only. These same barrels are available on the Achla Designs website (www.achla.com) for \$146.50, but this does not include UPS shipping costs.

Address: 5500 Blaine Ave. Inver Grove Heights, MN 55076

Phone: (651) 450-1501

Website: www.gertens.com

W.E.T.T. Rain Barrels

These barrels are 55 and 20 gallons @ \$90 and \$60 respectively, and cheaper in more quantities.

Available in St. Paul: (612) 327-3343
or thieltr@hotmail.com.



W.E.T.T. Rain Barrel



Achla Designs
@ Gerten's

Local demonstration of RiverSides rain barrels is at Ramsey-Washington Metro Watershed District : 2665 Noel Drive, Little Canada, MN.

Delivered from Canada, these barrels are advertised as being freeze-thaw proof, eliminating the need to detach and store your rain barrel in the winter. Barrels hold 132 gallons! They are octagonal, made of UV-stabilized HDPE to prevent sun damage, and come in several different colors. Cost per barrel is \$185 for sandstone and granite designs, and \$158.40 for green, rust, black or white, not including shipping.



RiverSides Rain Barrels

Website Resources for Rain Barrels

General Information Sites

www.duluthstreams.org/stormwater/toolkit/rainbarrels.html -

Lake Superior, Duluth Streams Organization.

www.rainbarrelguide.com - Rain Barrel Guide

www.ci.minneapolis.mn.us/cso/rain-barrel.asp - City of Mpls

<http://dnr.metrokc.gov/wlr/PI/rainbarrels.htm> - King Co, WA

www.naturalrainwater.com

www.marcy-holmes.org/projects/rainwater/4.html -

Marcy-Holmes Neighborhood Association (Minneapolis)

<http://ricecreek.org/outreach/publications/acd> - Rice Creek Watershed District.

Where to Buy Ready-Made Rain Barrels Online:

www.composters.com

www.cleanairgardening.com/rainbarrels.html

Earth friendly lawn and garden supplies

www.greatamericanrainbarrel.com -

They also sell rain barrel accessories such as polished river stones, and rain diverters (see photo)

www.watersavers.com - Green Culture

www.bestbarrel.com - America's Best Rain Barrels

www.seattlerainbarrels.com - Seattle Rain Barrels

www.rainwatersolutions.com - 100% recycled content



How to Make and Install a Rain Barrel and/or Buy Recycled Barrels

<http://home.comcast.net/~leavesdance/rainbarrels/construction.html>

www.montgomerycountymd.gov/Content/DEP/Rainscapes/pdf/barrel.pdf

www.cwp.org/Community_Watersheds/brochure.pdf

www.hgtv.com/hgtv/gardening/article/0,,HGTV_3546_2165903.00.html

School Project Oriented Website for Building, and Installing Rain Barrels

www.lowimpactdevelopment.org/school/rainb/rbm.html -

LID Sustainable School Projects Website



**2665 Noel Drive
Little Canada, MN**

The RWMWD is a grouping of five smaller urban watersheds (Phalen Chain of Lakes, Beaver Lake, Battle Creek, Fish Creek, and East St. Paul) that drain to the Mississippi River just downstream of downtown St. Paul.

We are a special purpose local unit of government with a mission to protect and improve water resources and water related environments within our jurisdiction. For more information, you can visit our website at www.rwmwd.org, or call our office at 651-792-7950.

How to Assemble and Install Your Rain Barrel



The barrel shown on the right is a typical food-grade plastic drum that you can use to build your own rain barrel. Most of these barrels are between 40 and 60 gallons and can be obtained from vendors other than the manufacturer who initially used the barrel. (See Insert 1: Local Vendors for these barrels or search the web for others.) Because of this, you will need to ask if the vendor knows the following traits for a "good" rain barrel:

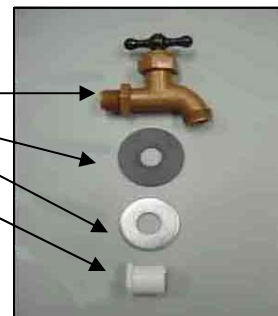
- > Was it ever used to contain chemicals or other harmful substances? This can leach into the ground when you water your garden, harm the soil, pollute the ground water, and possibly affect you and your family. Always smell a barrel before buying it to test for lingering smells. Pickle smells are OK.
- > Does it have a tight fitting lid to prevent curious little critters from getting in?
- > Is it made from UV tolerant plastic so it will not decay with sun exposure?
- > What color does it come in? The practical aspect of this is to keep the water relatively cool. If the barrel is clear, it will get too warm. The aesthetic aspect is simple. If you do not like how it looks against your house, you are less likely to use it.

Assembly A: Faucet

- Drill a 3/4" hole roughly 3 or 4 inches from the bottom.
- Screw the spigot into the hole.
- From inside the barrel, slide the rubber washer over the spigot threads.
- Slide the metal washer over the threads behind the rubber washer.
- Screw on the bushing and tighten.

Cost: Materials Needed

\$4.49	1/2" Hose spigot
\$1.50	3/4" Inside diameter rubber washer
\$0.50	3/4" Inside diameter steel washer
\$0.75	PVC Bushing with inside diameter to fit on non-hose end of the spigot
\$1.96	1-1/2" Wing nut plug (rubber)*



Assembly B: Overflow

- Drill a 1-1/2" hole ~6" from the top.
- From inside the barrel, push the smaller end of the female insert adapter through the drilled hole.
- Attach overflow hose onto the insert adapter. Cut hose to a length that will reach a vegetated area or at least 4 ft from the house foundation.
- Tighten the hose clamp where the hose covers the adapter to secure it.
- From the inside of the barrel, caulk the seam where the adapter meets the barrel walls.

Cost: Materials Needed

\$7.99	1-1/2" Sump pump drain kit, including:
Available at large hardware stores	> 1-1/2" Inside diameter male adapter
	> Hose clamp with range including 1-1/2"
	> 1-1/2" Overflow hose (weather resistant)
\$2.99	Marine or other weather resistant caulk



*Note: The rubber wing nut plug should be used to seal "Plug" in the Figure 2 drawing below if multiple barrels are being connected. To connect another barrel, remove the spigot from the first barrel, and screw in a hose adapter. Optional: installing another rubber wing nut plug on the side of the barrel as close to the bottom of the barrel as fits helps with yearly cleaning (See "Plug" in Figure 1). If barrels are not winterized, leaving this valve open (rubber wing nut plug out) will prevent the barrel from freezing in the winter. Rubber plugs should be kept inside in the winter to prevent cracking.

Figure 1

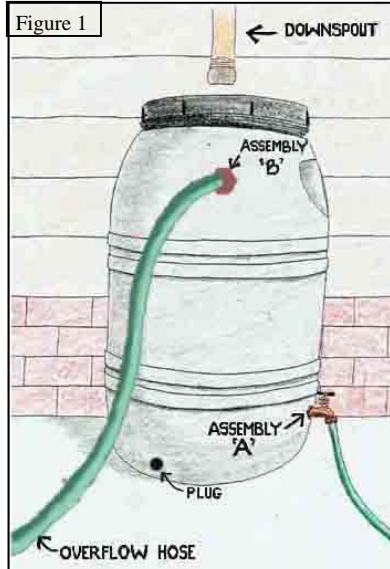


Figure 2



Lid: Be Creative. Used barrels vary greatly, so you may have to improvise.

Example A: Barrel with lid.

- Use a jigsaw to cut a hole in the lid the size of the inside of the atrium grate rim. Cutting it the same size as the outside of the rim will make it fall into the barrel.
- Put filter sock in the atrium grate and secure. This will assure that mosquitoes won't use your barrel to create more mosquitoes. Clean as necessary.

Cost	Materials
	Jigsaw or sharp utility knife
\$6.99	6" atrium grates
\$7.99 for 3	Inlet filter sock



Example B: Barrel with no lid - bottom of barrel becomes top of rain barrel

- Use jigsaw or knife to cut 8-1/2" - 9" hole in drain tray.
- Trace the size of this hole on the base of the barrel.
- Cut out three holes as shown in photo of the blue barrel. The remaining plastic "Y" is for support and to make sure small critters don't fall through the screen.
- Cut screen and hardware cloth in 10" circles. Stack and center both layers over holes.
- Place drain tray over screens. Screens should not stick out of edge.
- Screw drain tray through screen and to barrel. Pre-drill holes one at a time if you want. Drilling all holes before adding any screws often results in misaligned holes.

Cost	Materials
	Jigsaw or sharp utility knife
\$3.00	14" drain tray from plastic plant pot
\$1.25	1 sq. ft. hardware cloth - 1/4" grid
Recycle or <\$6/roll	1 sq. ft. window screen - smallest possible grid for mosquito control
\$0.72	(6) stainless steel screws, 3/4" in



Example C: Barrel with threaded or snap-on lid that has tall edges

- Cut out circle in lid to desired size. Note: it should be big enough to handle large amounts of water, but small enough to keep kids and animals out.
- Take lid off, and place window screen over the top of the barrel.
- Pop or twist the lid back on.
- Trim edges of screen, but leave excess so it will be easy to re-assemble after cleaning.

Cost	Materials
	Jigsaw or sharp utility knife
Recycle or usually < \$6/roll	3 - 4 sq. ft. window screen - smallest possible grid for mosquito control (Measure the diameter of your lid, and overestimate by ~4" on each of four sides to allow for overhang).



This document produced by
 Ramsey-Washington Metro Watershed District
www.rwmwd.org
 in cooperation with:
 The Association of Metropolitan Soil and Water
 Conservation Districts.