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Sustainable Landscapes Series

Harvesting Water

Harvesting water involves capturing rainwater, grey-water, and wastewater on your property and recycling it on site, either for irrigation or to recharge groundwater supplies. Implementing this water conservation strategy provides a myriad of environmental benefits.

What are the benefits of harvesting water on your property?

- **Reduces stormwater run-off to reduce water pollution and flash flooding.** Instead of taking advantage of rainwater as a resource, most landscapes encourage it to leave the property as soon as possible. As it spills down graded lawns and pavements, it picks up pollutants before flowing into storm drains and eventually into natural water bodies. During heavy rainfalls, the sudden influx of run-off stormwater from urban and suburban areas into rivers causes flash flooding. Trapping rainwater on-site reduces the amount of runaway, renegade stormwater.

- **Promotes recharge of groundwater supplies.** Because so many sites are designed to have rainwater flow off the property, the aquifers under many of our cities and towns are not being adequately recharged by rainfall. Harvesting rainwater and using it on site allows it to percolate through the soil, where impurities are filtered out as it soaks down to the water table.

Cistern for harvesting stormwater that drains from the roof.

- **Decreases demands on a shrinking potable water supply.** As groundwater levels are dropping, potable water demands are rising with rising populations. By using harvested water for irrigation needs, you reduce your potable water use—and accordingly, your potable water bills.

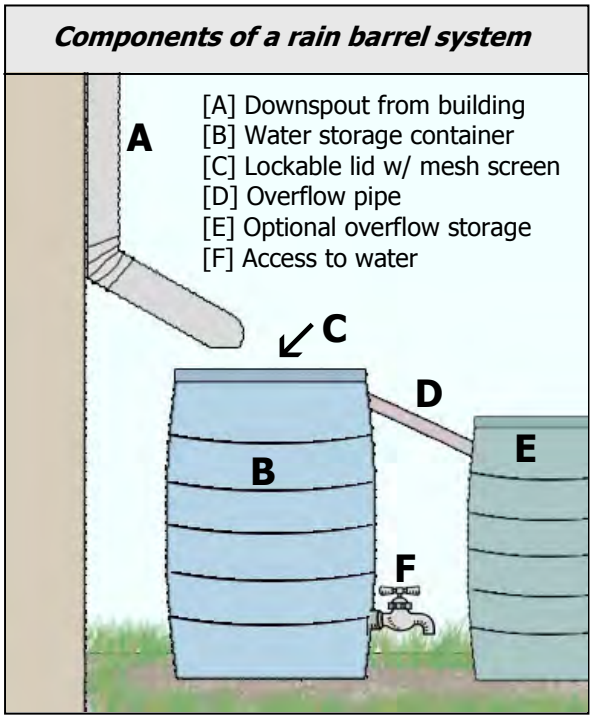
- **Lessens strain on septic and stormwater management systems.** Recycling grey-water means less of it needs to be processed by septic systems. Capturing stormwater on site reduces tax dollars needed to build and maintain municipal storm drains.

- **Increases water availability for landscape plants.** Especially during droughts when home landscape irrigation is prohibited (or at the very least, irresponsible), recycling on-site water provides a sustainable way to meet the needs of your plants. An added bonus: Rainwater is generally lower in soluble salts and higher in nitrogen than potable groundwater.

Methods of Harvesting Water on Your Property

Rain Barrels and Cisterns

Water tanks stored above and/or below ground can capture rainwater from downspouts for later use.



Rain barrels and cisterns come in many styles, materials and sizes to accommodate a variety of needs. Generally, they are constructed from recycled plastic, metal, or concrete and are equipped with a fill pipe (A) (connected to a downspout), a lockable lid, and an overflow pipe with optional overflow storage. Inlet and outlet areas are screened with fine mesh to prevent debris, mosquitoes and other pests from accessing the water supply. Rain barrels placed at higher elevations can be used with a hose attachment to deliver a low-pressure water flow around the landscape. Small pumps are useful for extracting water from ground-level rain barrels or below-ground cisterns.

To protect against potential leaks, the International Building Code recommends rain barrels and cisterns be located at least 10 feet away from building foundations. If located less than 10 feet, there should be a minimum slope of 5% away from the building.

For instructions on constructing a do-it-yourself rain barrel, check out the Appoquinimink River Association's Rain Barrel brochure, available online at http://www.apporiver.org, on the Projects page under "Gardening for the Environment."

Recycling Grey-Water

Grey-water is used water from showering, bathing, washing dishes, laundry, aquariums, etc. It does not include wastewater from toilets or latrines.

Sub-surface irrigation through perforated pipes or buried soaker hoses is the safest way to use untreated grey-water. In many cases, surface irrigation is also appropriate, as percolation

through healthy topsoil will remove most impurities. No matter how you use grey-water, it is important to use it completely on site. Any unused captured grey-water should be disposed of through your normal septic system, not dumped down storm drains.

There are many grey-water recycling systems or do-it-yourself kits on the market that involve re-routing your drainage pipes, with opportunities for on-site treatment. A simple way to capture a portion of your grey-water is to place a bucket in your showers and sinks, using it when full to irrigate house or landscape plants.

Some localities have ordinances regarding harvesting and use of grey-water, so check with your local government before investing in grey-water recycling systems. Research on safety and health concerns is ongoing, so play it safe by adhering to the following guidelines.

Guidelines for Grey-Water Use

- Do not use grey-water that results from use of bleach, cleaning chemicals, hair dye, disinfectants, or from washing items soiled with human or pet wastes.
- Use biodegradable soap and detergents when possible, or choose detergents that are low in phosphorus and salts.
- Do not harvest wastewater from toilets.
- Do not store captured grey-water unless you have installed an on-site treatment system.
- Do not use for vegetables, fruit, herbs, or other edible crops.
- Do not use on planting areas with frequent human or pet contact, such as heavily-used turf areas or plantings near patios.
- Avoid using grey-water to irrigate acid-loving plants, as they tend to do poorly.

Rain Gardens

Rain gardens, sometimes called bio-retention areas, are shallow depressions in the landscape that capture stormwater and allow it to gradually percolate into the soil. Planted with moisture-loving plants that help filter out pollutants, rain gardens provide an attractive way to reduce the impact of stormwater on the environment. For more information, consult the fact sheet "Rain Gardens," available at http://www.ag.udel.edu/udbg/sl/hydrology.html

Green Roofs

A green roof is a specially-engineered rooftop that supports plant life and captures rainwater before it runs off. Green roofs have been utilized in Europe for 30 years and are quickly gaining popularity in the United States. For more information, consult the fact sheet "Green Roofs," available at http://www.ag.udel.edu/udbg/sl/hydrology.html

Additional Resources

City of Tucson Water Harvesting Guidance Manual
http://dot.ci.tucson.az.us/stormwater/downloads/2006WaterHarvesting.pdf

Greywater Central
http://www.greywater.net

Rain Barrels - Appoquinimink River Association
http://www.apporiver.org/RainBarrelBrochure_Final.pdf

Rainscapes: Rain Barrel Assembly
http://www.montgomerycountymd.gov/Content/DEP/Rainscapes/pdf/barrel.pdf

Rainwater Harvesting for Drylands and Beyond: Rainwater-Harvesting Info/Resources
http://www.harvestingrainwater.com/rainwater-harvesting-inforesources

Urban Design Tools: Rain Barrels and Cisterns
http://www.lid-stormwater.net/raincist_specs.htm

Water for Life: Grey Water
http://www.deus.nsw.gov.au/Water/Greywater/greywater.asp

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