

Green Infrastructure Fact Sheet

Rain Barrels, Cisterns, and Downspout Disconnections

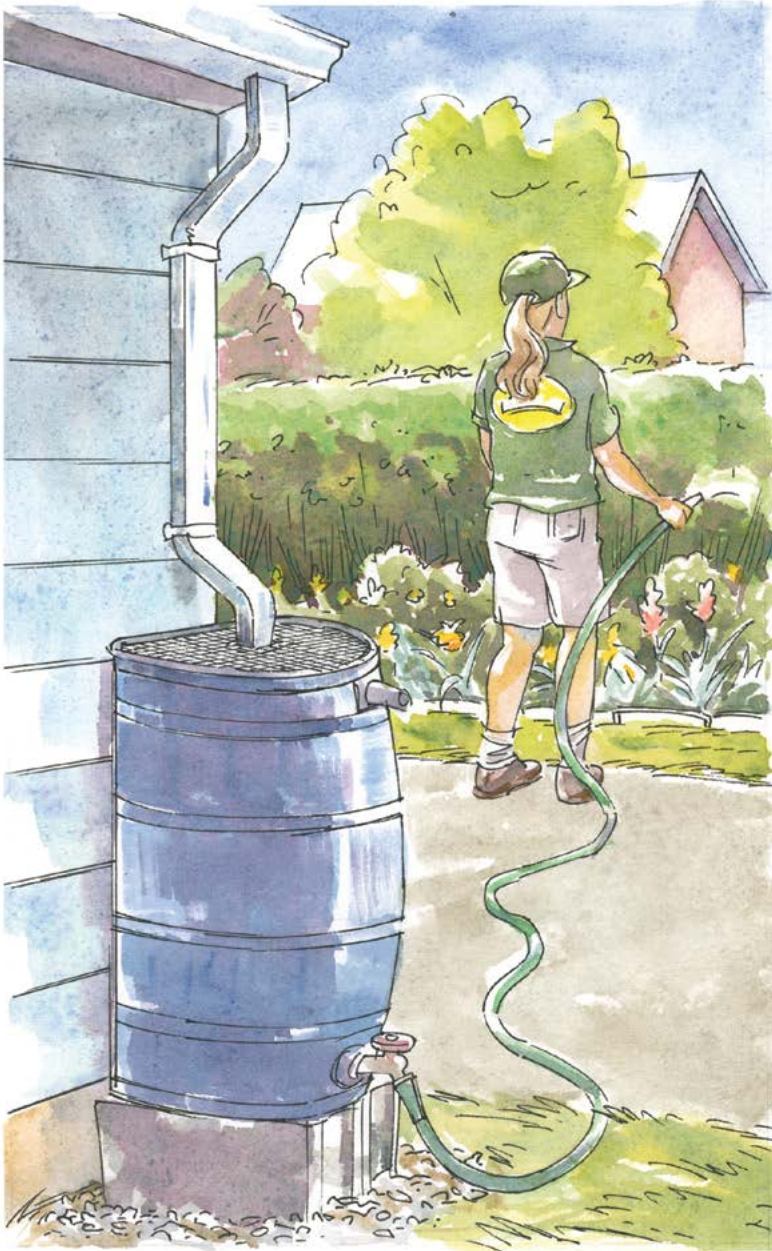


ILLUSTRATION: Jeffery Mathison

Rain barrels and cisterns are "rainwater capture" systems that collect and store rainwater from a roof that would otherwise be lost to runoff and diverted to storm drains and streams. A rain barrel usually consists of a 55-gallon drum that can sit conveniently under any residential gutter downspout.

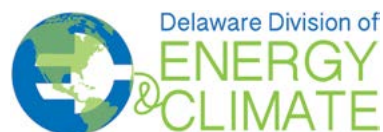
A cistern is a larger tank that holds up to several hundred gallons and uses a small pump to distribute the water throughout the landscape.

Downspout disconnections can be an effective strategy for reducing sewer volumes and redirecting stormwater onto lawns, rain gardens, or other landscaping.

For more information:

Green Infrastructure Primer

www.de.gov/greeninfrastructure



Benefits:

- Reduce stormwater volume by capturing runoff from impervious roof surfaces
- Redirect runoff to infiltration systems instead of into storm sewers
- Decrease and delay peak runoff by storing rainwater for later use
- Reduce water pollution by reducing stormwater runoff, which can contain pollutants such as sediment, oil, grease, bacteria, and harmful nutrients
- Conserves water and lowers water bills by reducing the use of potable water for landscape irrigation and other uses such as washing windows or cars



APPOQUINIMINK ENVIRONMENTAL CLASSROOM

The Appoquinimink School District's Environmental Classroom in Middletown installed rain barrels connected to a hydration system that waters the demonstration garden filled with vegetables and herbs. The project is one of the first in the nation focusing on conservation and cutting-edge green technologies and teaching methods.

PHOTO CREDIT: Eric Crossan, Gilbert Architects, Inc.

Site and Design Considerations:

- Rain barrels must be raised or placed above gradient of infiltration area to allow gravity flow of water for use in landscaping or other uses.
- For rain barrels with overflow valves and with downspout disconnections, make sure water drains away from structures and does not flow onto pavement, sidewalks, or neighboring properties.
- Rain barrels are primarily designed for small storm events. In a half-inch storm a 1,000 square-foot roof can capture roughly 300 gallons of water, but most rain barrels hold only about 55 gallons. Rainwater capture systems can be designed for added capacity or provided with overflow valves or structures to divert water away from a full container.
- Downspout disconnections require an adequate receiving area, such as a garden, planter, or vegetated swale with good infiltration.
- A cistern can be designed for aboveground or underground locations. A pump is generally required, and emergency overflow systems may be needed in case of power outage.
- Rainwater collected from rooftops is not potable and should not be used for drinking, cooking, or bathing. It may be contaminated by residue or debris on the roof surface, or by the breakdown of roofing material.

Maintenance:

- Rain barrels and cisterns must be emptied between storm events to prevent overflow. Installation of flow bypass valves may also be used to manage larger storm events.
- Rain barrels should be drained and disconnected from the downspout during winter months to prevent ice damage. It is recommended that you remove the existing downspout and elbow in late fall, store it intact during the winter months, and reinstall it in the spring.
- Fine mesh screen should be used to cover any openings in the rain barrel to prevent mosquitoes, shield from small animals, and trap debris. For added mosquito protection, add a tablespoon of vegetable oil to the water or use a mosquito dunk that kills mosquito eggs but is not toxic to plants and animals.
- Periodic inspection of valves, hoses, and screens is necessary to address clogs or leaks.

Resources:

University of Delaware Cooperative Extension Fact Sheet: Rain Barrels
http://ag.udel.edu/udbg/sl/hydrology/Harvesting_Water.pdf

University of Delaware – Sea Grant: Report on Natural Stormwater Management
<http://www.deseagrant.org/products/protecting-water-quality-smart-growth-strategies-and-natural-stormwater-management-sussex>