

A Lesson in 'Rainscaping': Building a Garden That Makes the Best Use of Water



A "rainscaping" arbor, left, at the Chesapeake Ecology Center helps keep rainwater on site. Runoff, right, is harnessed and cleaned, meaning little water is wasted. (Photos By Zora Lathan -- Chesapeake Ecology Center)

By [Joel M. Lerner](#)

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It's been raining a lot lately, this being hurricane season. While it's good to leave our drought of the past three years behind, it's clear that sudden drenching rains, or sustained heavy rain, can cause flooding and serious damage.

When water falls too hard or for too long, it doesn't get absorbed into the soil; it runs off into storm drains or streams, and eventually into the [Potomac River](#) and [Chesapeake Bay](#). This contributes to pollution by carrying fertilizer, pesticides and roadway contaminants straight to waterways.

It's possible, though, to harness and clean this water.

"Ideally, most if not all of the water that falls on a site should stay on the site," said Zora Lathan, executive director of the Chesapeake Ecology Center in Annapolis. But "we've leveled out the land and paved over paradise."

One solution to cleaning up the waterways, Lathan said, is to put contours back into the land by creating rain gardens. These are gardens that imitate nature and allow rain to infiltrate the soil, be filtered of pollutants and recharge the ground water. "We all contribute to storm-water runoff, and we need to be part of the solution."

The rain garden concept has caught on, and there are initiatives in numerous places to promote them. In Kansas City, Mo., a public-private effort launched in 2005 aims to create 10,000 rain gardens in the metropolitan area. In Atlanta, the Clean Water Campaign seeks to encourage the creation of rain gardens with a detailed how-to brochure. Pepco has rain gardens at its Benning Road service center in the [Anacostia River](#) watershed in Washington. There have been efforts in Maryland by Pepco and by environmental organizations to promote the installation of rain gardens.

Lathan is starting a major public education campaign to encourage people in [Anne Arundel County](#) to practice Bay-saving landscaping techniques such as the use of green roofs, rain barrels, rain gardens and pervious paving that allow water to seep into the ground. She calls it "rainscaping." The effort will include posters and brochures, and also places where people can see what these elements look like and see and hear how they work. Right now her effort is concentrated on Anne Arundel County, but Lathan said what she and her associates are doing could easily be replicated throughout the Chesapeake watershed.

A rainscaping arbor has been installed at the Chesapeake Ecology Center, a nonprofit environmental organization that runs 18 native plant demonstration gardens on the grounds of J. Albert Adams Academy in Annapolis. The academy is an alternative school for at-risk middle school students, who work in the gardens. It has a green roof, rainwater-collecting barrels, permeable paving under the arbor and three rain gardens. Lathan's plans include a Web site, more rainscaping locations installed in public areas and nursery operations using these water-conserving practices.

Lathan said she always points out that rain gardens are simple to install. Some people have become intimidated by information about "bio-retention systems," which are often larger installations than required by homeowners. While rain gardens are a form of bio-retention, they needn't be complex or multi-layered, requiring massive earth moving or heavy labor. They can be fairly ordinary gardens of native plants.

These plants are installed in a shallow depression. "A garden in a saucer" is how Lathan describes it.

Homeowners who want to install a rain garden should do some homework first. There are issues of siting and size, and some locales are simply not right for rain gardens. It's important, for instance, that the soil underneath be permeable.

It's common in modern construction for contractors to level the land and regrade it with compacted clean fill, said Stuart Schwartz, senior research scientist at the Center for Urban Environmental Research and Education at the University of Maryland Baltimore County. The leveled area is planted with sod or seeded. Turf grows on a very thin layer of soil. It looks green and healthy, but it no longer functions as a water-absorbing and -filtering system. "The perviousness of the soil has been compromised," he said. In these cases, he said, turfed areas actually increase runoff.

The mid-Atlantic region typically has 100 storms a year. About half of them produce rainfall of four-tenths of an inch or less. That's only about 10 to 15 percent of annual runoff. The other half of the storms produce most of the rainfall, some several inches. "And in those storms," Schwartz said, "even green spaces on compacted fill produce runoff almost as heavily as paved areas."

So the first thing a homeowner planning a rain garden should do is check the soil. Schwartz offered two simple tests:

- Dig a hole six inches deep, and fill it with water. If it takes more than 24 hours for the water to drain, that's a bad spot for a rain garden. You may have compacted fill or heavy

clay. If you have a place in the yard where water typically pools after a storm, that's also not a good place for a rain garden, as the soil is less permeable.

- To check for soil type, take some dirt in your hand, add a couple of drops of water, and work it between your forefinger and thumb into a ribbon until it breaks. If it feels smooth and the ribbon is an inch or longer before it breaks, that indicates high clay content. It's not desirable soil for a rain garden.

If the soil is permeable, the next step is to figure out how big a rain garden you need. You can put in a rain garden of any size, but be aware that a very small one will catch and filter only a small proportion of the water that falls on it. It can't hurt, but it won't be a lot of help. And rather than planting one huge rain garden, it's probably better to plant two or more smaller ones in different areas.

Schwartz suggests that you measure the footprint of your house and make a diagram showing all the gutters and how much of the roof each one drains. A rough idea would be that for every 1,000 square feet of roof, you might need a rain garden of 200 to 500 square feet. The garden should not be square; many guidelines suggest a kidney shape.

All rain gardens have benefits, Schwartz said: They're aesthetically pleasing, and they restore some normal hydrological function to the landscape. He and fellow researchers are studying ways to make larger areas function as rain gardens by using agricultural techniques. He foresees a day when an entire public park, for instance, might return to its natural role as a water-absorbing, water-cleaning landscape.

Here are some more tips to make the best of your rain-garden installation:

- If you have poor drainage or high clay content, soil might have to be removed to a depth of 24 to 30 inches and replaced with sand.
- Rain gardens should be installed at least four feet above your water table. They should be at least 100 feet from a well.
- The slope into a rain garden should be no steeper than a 20 percent grade.
- Keep rain gardens two feet from property lines. Make sure that overflow will discharge in a safe direction, into planting beds, away from structures or standing water.

Check the following Web sites for additional information: Chesapeake Ecology Center, <http://www.chesapeakeecologycenter.org>; the bio-retention manual of [Prince George's County](http://www.raingardens.org/Rain_Garden_History.php), http://www.raingardens.org/Rain_Garden_History.php (Scroll to "Maryland Rain Gardens," and click on the link for the manual); Wisconsin Department of Natural Resources, <http://dnr.wi.gov/runoff/rq>.

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