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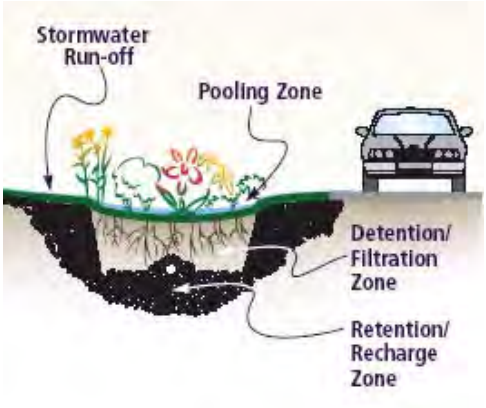
What is a Rain Garden?

Rain gardens are shallow, constructed depressions that are planted with deep-rooted native plants and grasses. They are strategically located to capture runoff from hard surfaces such as a driveway, parking area, sidewalk or streets. Rain gardens fill with a few inches of water after a storm and then water filters into the surrounding soil, rather than running off to the street or storm culvert.

Rain gardens also conserve water, reducing the need for irrigation. Rain gardens are a beautiful and colorful way for homeowners, businesses and municipalities to help ease storm water problems. There is a growing national trend by municipalities and homeowners to incorporate natural processes such as rain gardens to help relieve flooding and pollution.

Benefits of Rain Gardens

Rain gardens are an inexpensive, simple to implement and environmentally sound solution to residential and urban storm water runoff.



Increased imperviousness – the increased build up of towns and cities with buildings, roads, parking lots and other hard surfaces – alters the local water cycle and inundates guts and bays with large quantities of storm water and associated contaminants.

By mimicking the natural absorption and pollutant removal abilities of a forest or meadow, rain gardens can absorb runoff more efficiently – as much as 30% - 40% more than a standard lawn. By capturing rainwater in a rain garden, holding it, and then slowly releasing it into the soil, the rush of runoff from a large storm can be slowed and cleaned – quickly, neatly and naturally.

Rain gardens are a very good option to help lower the impact of impervious surfaces and polluted runoff because they are low-tech, inexpensive, sustainable and aesthetically pleasing. A Rain Garden will:

- Filter pollutants from runoff,
- Recharge groundwater,
- Conserve water,
- Protect guts, ponds and coastal waters,
- Remove standing water in your yard,
- Reduce mosquito breeding,
- Increase beneficial insects that eliminate pests,
- Reduce potential of home flooding,
- Create habitat for birds & butterflies,
- Survive drought seasons,
- Reduce garden maintenance, and
- Enhance property value.

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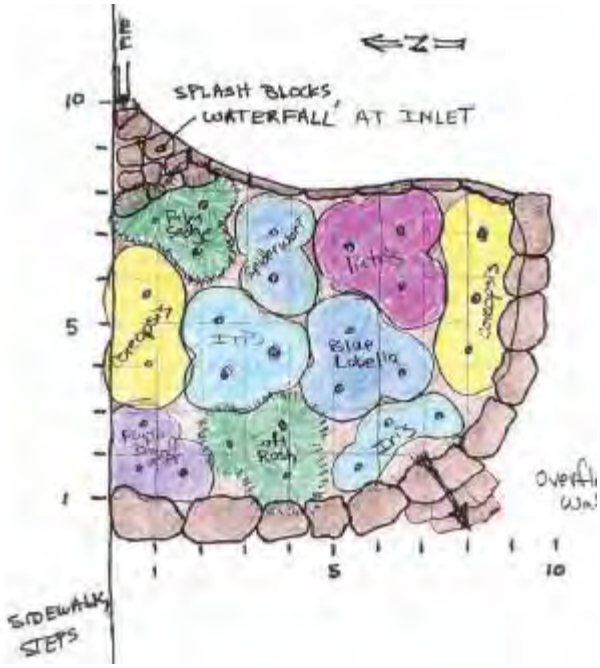
Rain Garden Design

For a low-maintenance garden, choose a natural style rather than a formal style. Integrate the rain garden into your existing landscape.



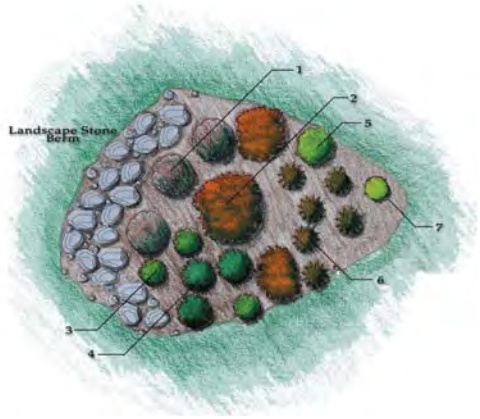
Put your rain garden in the right place. Your property has an existing drainage pattern (even though it may not be very noticeable), and it will usually be easiest to take advantage of that. Note the direction of runoff and low spots where water collects. If these spots are away and downhill from your building foundations, they will be good places for your rain garden. Call utility companies to make sure underground wires, cables or pipes aren't located in the proposed garden area.

- The garden should not be within 10 feet of the house foundation.
- Gardens should be located at least 25 feet from a septic system drainfield.
- Gardens should not be placed within 25 feet of a well head.
- Make sure to avoid underground utility lines.
- The best location for the garden will be in partial to full sun.
- Rain gardens should be constructed where the water table is at least 2' below the surface of the soil. If you hit the water table when constructing your rain garden, consider turning it into a wetland garden.

Size the rain garden correctly. Figure out what kind of soil you have (sandy, clayey or mixed).

- Estimate the area that your garden will get storm water from. Multiply the width by the length of each area (driveway, sidewalk, parking area, and any other paved surface) to get square feet of each. Add each area to get square feet of the total drainage area. Remember, though, that different paved areas on your property may drain to different spots — you want to estimate only the square footage that will drain into your rain garden.
- For sandy soil, your rain garden should be 20-30% of the drainage area. For example, if the parking area and driveway measure 1200 square feet and all the rain from them will be used, your rain garden should be 20 to 30% of that, or 240-360 square feet. (ex: 10' X 24')
- For clay soil, your rain garden should be about 60% of the drainage area (Clay absorbs water very slowly; the varieties of rain garden plants that do well in clay take at least three years to get established. Soil replacement may be the best choice in clay soils).
- If you replace your soil with rain garden mix (50-60% sand, 20-30% topsoil, 20-30% compost) to improve your soil drainage, your rain garden should be about 20-30% of the square footage of the drainage area.
- Dig a coffee-can sized hole where the deepest part of the rain garden will be. Fill the hole with water. Mark the water level with a popsicle stick. After four hours, measure between the stick and the new waterline. For example: if the water fell one inch, then it will percolate 6 inches in 24 hours. Your rain garden should be a maximum of 6 inches deep. ***The results of your percolation test determine the depth of your rain garden.***

Rain gardens for single-family homes will typically range from 150 to 400 square feet. But remember; any size rain garden, even a small one, will contribute to solving local water pollution problems. It will also be a lovely addition to your landscape.



Create an attractive planting design. Rain gardens should feature easy-to-maintain plants that are native to the Caribbean. Give your rain garden a neat appearance (neatly defined borders, not weedy looking). Home owners new to rain gardens or native plants may need guidance in plant selection. Do not plant aggressive or invasive species that will need frequent pruning or weeding. ***For help in selecting plants, contact the UVI Cooperative Extension Service or the V.I. RC&D office.***

Building a Rain Garden

Use stakes and string, non-toxic soccer-field paint, or just a hose to show the shape of the garden bed. Think about where rain goes in and overflows out. If possible, direct your storm water into the rain garden with a grassed or rock-lined swale. Use "splash rocks" to disperse rain and keep soil from washing away near the place where storm water enters the rain garden. Plan where rain will overflow during storms with very heavy rainfall.

Stage construction carefully to avoid erosion. Protect the rain garden from erosion and sediment run-off during and after construction. Make sure to install a silt fence before you begin excavating the rain garden area. Sediment can seal the surface. Install effective erosion controls, and leave them in place until all site construction, including other landscaping, is completed.

Dig a flat depression 6-12 inches deep, located at least 10 feet away from building foundations, septic systems and utility lines. Once your garden is dug, give it a trial run. Put a hose or sprinkler on in the garden for 30 to 60 minutes to see how well water soaks in (infiltrates). Once plants are mature, infiltration will be much quicker. Be sure to let the garden dry out before planting. If the bed does not drain, remove 3-4 inches of soil. Add compost or sand. Till deeply, about a foot, to loosen compacted soil. On slopes, use some of the excavated soil to create a berm on the down-stream edge of the rain garden to help hold storm water from small storms. In the first year, you may also cut a notch at the top of the garden to let rain flow out; the bed will not fill to the top, allowing plants to establish root systems for infiltration.

Place plants in pots on the bed, according to your design. Gently remove plants from pots, break up the roots, and plant. A rain garden planted with plugs or container plants benefits from a layer of shredded hardwood mulch. Mulch reduces weeds and conserves water, helping to establish the plants. It also prevents surface sealing of the rain garden and removes some pollutants from pavement runoff. Water the bed once a week with one inch of water until plants are established.

The most common cause of rain garden failure is **soil compaction. Avoid soil compaction during all phases of construction. P**lace and grade soil in the rain garden from the side. Prevent vehicles from driving on the rain garden. Place barriers to protect the rain garden from foot and construction traffic.

Maintaining a Rain Garden

Rain gardens are not completely maintenance-free. It is important to weed, clean-up and re-mulch the garden periodically, and especially after heavy rains. Regular maintenance is required to keep your rain garden looking good and functioning well. Be sure to include this in your plan and your budget!

Caring for your garden the first several weeks after planting is critical to its success. The most important work during the first year of the garden is watering and weeding. A young garden will need about an inch of water per week until it is established.

All gardens need constant weeding and replenishing of mulch. Educate people working in the rain garden. They may identify native plants as weeds. As the garden matures, weeds will be pushed out by the growing plants. Periodically prune dead vegetation and plants that are too big. Rake mulch periodically and replenished yearly.

Fertilizer should not be necessary. Native plants should thrive in the prepared soil mix. Avoid use of herbicides, pesticides, and fungicides in and around the rain garden.

Mosquitoes won't find rain gardens to be good breeding area because if a rain garden is built properly the water will drain within 24 hours (but usually within an hour or two). Mosquitoes prefer to breed in small, stagnant containers of water. These are usually old tires, pots, birdbaths and pans under planters.

The development of a mosquito, from egg to adult takes 10 to 14 days depending on the air temperature. The warmer the air the shorter time the eggs take to mature. It takes 24 - 48 hours for eggs to hatch. After the eggs hatch the mosquito larva must live in water for 7 -12 days.

V.I. RC&D works directly with homeowners and other property owners to help them do what they can on their property and in their lives to protect the water quality of our guts, ponds and coastal waters from pollution and the damage done by storm water runoff. To see a rain garden in action, visit V.I. RC&D's Rain Garden Demonstration site at the V.I. Waste Management Authority's Green House Program located on Centerline Road in Estate Lower Love, St. Croix, west of the St. Croix Educational Complex, or visit www.usvircd.org.

More Information about Rain Gardens

www.raingardennetwork.com
www.raingardens.org
www.lowimpactdevelopment.org/raingarden_design
www.rainKC.com
http://clean-water.uwex.edu/pubs/home.htm#rain
www.npsnj.org/rain_garden_home.htm
www.bae.ncsu.edu/topic/raingarden
www.dof.virginia.gov/rfb/rain-gardens/shtml

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