



Runoff Reduction: Rain Garden

A rain garden is a shallow depression with vegetation that allows the rainwater and stormwater to collect and infiltrate into the ground. Rain gardens allow water to be filtered by vegetation before it soaks slowly into the soil. They are typically installed in community and residential areas. Rain gardens collect and filter stormwater through layers of mulch, soil, and plant root systems where pollutants are retained and absorbed using a specially engineered soil media.

These processes trap pollution and sediment and help to recharge groundwater aquifers that many places use as a source of drinking water.

Design Considerations

- Slope of the landscape is important; rain gardens function best on gentle slopes ranging from 1% to 10%.
- Rain gardens are best located where surface water drains off paved surfaces or turf grass, such as the downhill slope of a driveway or patio.
- Avoid areas with poor drainage that will not support infiltration.
- Avoid compaction of soil by heavy equipment.
- Ensure the rain garden is installed at least 10 to 30 feet from any building. Check building codes and local setback ordinances.
- Plant selection should include native species that tolerate both wet conditions and drought.

Benefits

- Reduces pollution.
- Manages stormwater by allowing it to infiltrate into the soil and the plants, which:
 - Reduces flooding and ponding,
 - Reduces volume of water discharged to sewer systems.
- Provides natural habitat for pollinating insects, birds, and butterflies.
- Beautifies the local community.



Residential rain garden (Source: Delaware Department of Natural Resources and Environmental Control)

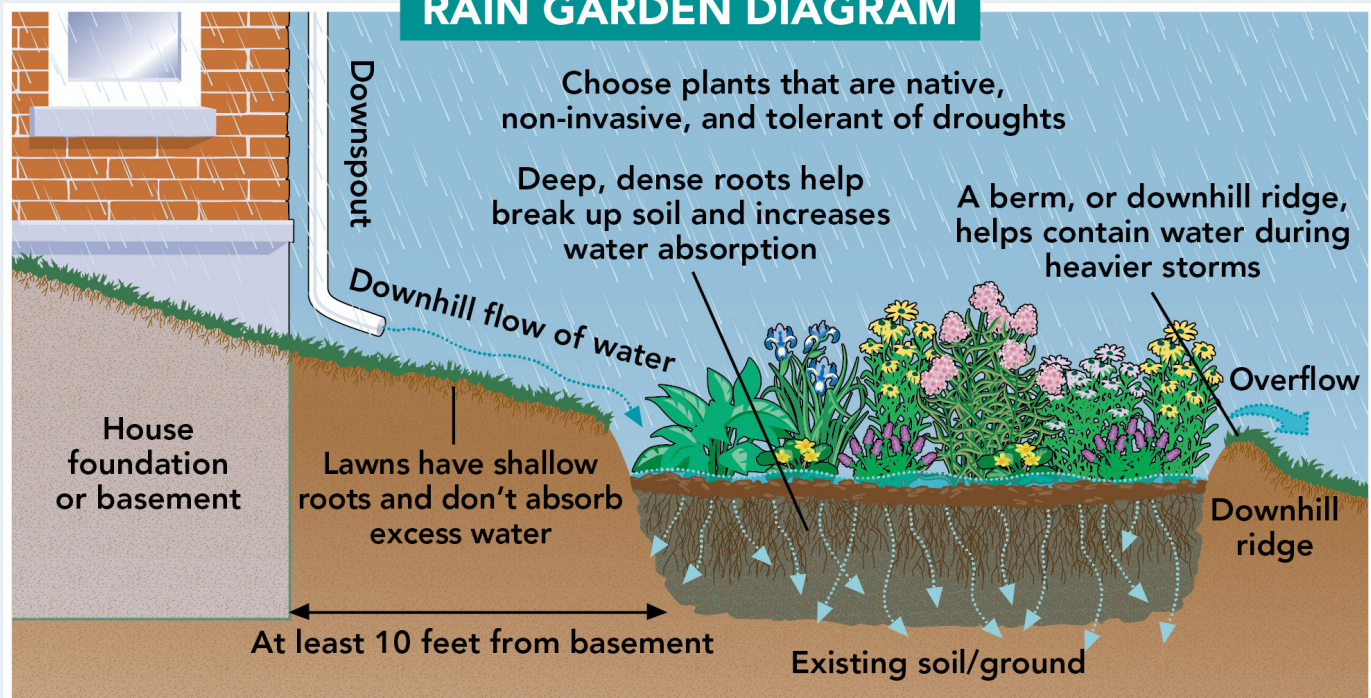
Maintenance

- Remove any trash or debris that has accumulated in the garden.
- Monitor vegetation for damage by insects and other pests.
- Control invasive species.
- Provide regular irrigation and weed control until plants are well established.
- Conduct regular trimming and pruning of plants and remove any weeds that appear in the rain garden.
- Add mulch to the rain garden to preserve soil moisture and reduce soil erosion.

Limitations

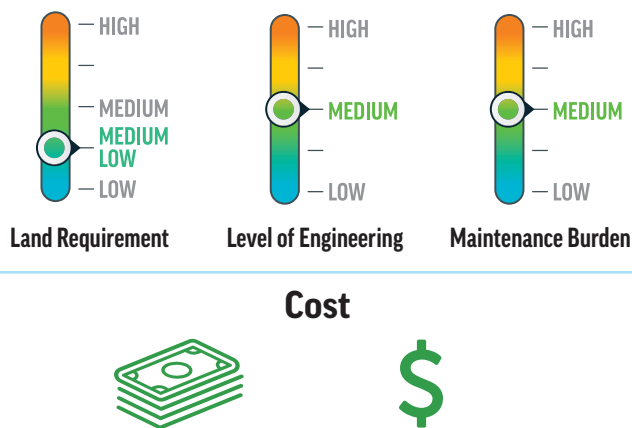
- If a rain garden is not draining properly, rainwater runoff can accumulate in the basin, leading to flooding (regular maintenance helps to avoid this issue).
- An improperly designed rain garden can lead to increased erosion rates.
- The first year of maintenance can be challenging as plants become established.
- Rain gardens are typically small, so they cannot treat large volumes of runoff.
- Rain garden outlets should be directed away from septic systems and wells.

RAIN GARDEN DIAGRAM

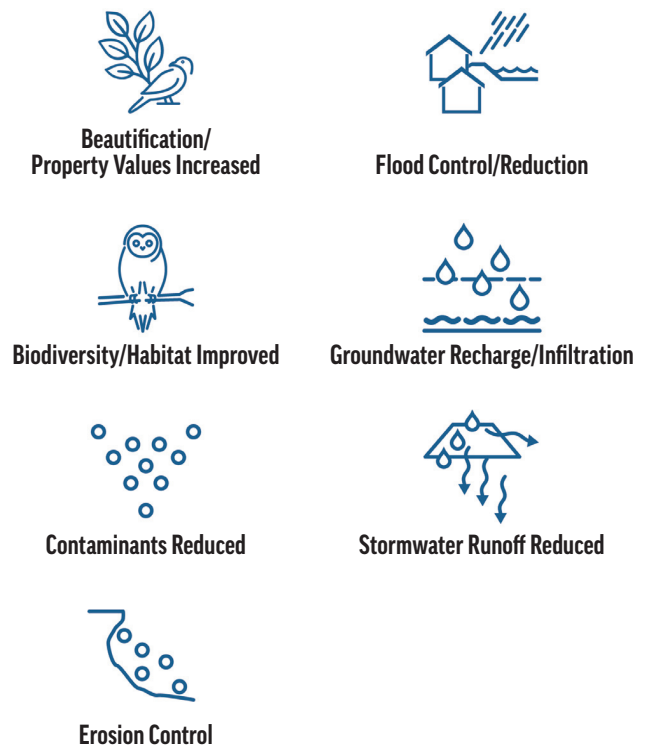


Rain garden illustration by Nanticoke Watershed Alliance

Implementation Considerations



Environmental and Homeowner Benefits



Additional Resources:

Delaware Post Construction Stormwater BMP Standards & Specifications, February 2019. <https://documents.dnrec.delaware.gov/Watershed/Sediment-Stormwater/Regulatory-Guidance/BMP%20Stds%20and%20Specs%20-%20EFF%20FEB%202019.pdf>

Green Infrastructure Primer A Delaware Guide to Using Natural Systems in Urban, Rural, and Coastal Settings, January 2016. https://documents.dnrec.delaware.gov/GI/Documents/Green%20Infrastructure/Green_Infra_Primer2016_FINAL%20web%20version.pdf

Rain Gardens, Nanticoke Watershed Alliance. <https://nanticokeriver.org/restoration/rain-gardens/>

Standard Guidelines for Operation and Maintenance of Stormwater BMPs, February 2019. https://documents.dnrec.delaware.gov/Watershed/Sediment-Stormwater/Maintenance/Std%20Guidelines%20for%20OandM%20_EFF%20FEB%202019.pdf