

Rain Gardens 101

Preventing Erosion with Beautifully Layered Gardens



Who Am I?

- Caitlee Greene
- Grew up in Atlanta, GA
- Moved to Aiken Fall 2019
- Aiken Master Gardener & Master Rain Gardener, Classes of 2021
- Equine Bodyworker & Owner, Greene Roots
- Passion for learning and sharing that knowledge!



Today's Goals

- Learn the What, Why, When, and Where of Rain Gardens
- View Examples of Rain Gardens
- Learn How To: Plan, Install, and Maintain Rain Gardens

What is a Rain Garden?

- “..depression gardens designed and located to receive water runoff from a roof, driveway, or lawn. They work with nature to collect, filter and infiltrate runoff, while showcasing a variety of colorful and low-maintenance plants.”



What is a Rain Garden?

Infographics from Clemson and Aiken County Government

Soak up the Rain

RAIN GARDENS

Rain gardens are landscape depressions planted with native flowers, shrubs and grasses that help collect, soak up, and filter stormwater runoff from streets, driveways, parking lots, roofs, and other hard surfaces. This rain garden is an important part of the City of Aiken's efforts to manage stormwater. Rain gardens not only look beautiful, but they also create important habitats for birds, insects, and other animals. Consider planting one at your house.

WHAT TO LOOK FOR:

- Aquatic Milkweed**
Asclepias perennans
- Sweet Shrub**
Calycanthus
- River Oats**
Chaetochloa
- Inkberry Holly**
Ilex glabra
- Cardinal Flowers**
Loebelia

BENEFITS OF RAIN GARDENS

- Replenishes Groundwater
- Removes Pollutants
- Attracts Pollinators
- Protects Waterways
- Reduces Flooding

Stormwater Runoff → Filtered water

DID YOU KNOW?
Rain gardens can filter out dangerous substances including phosphorus, nitrogen, bacteria, and lead.

 SCAN HERE TO LEARN MORE

Rain Gardens

Water for Wildlife

CITY OF FOLLY BEACH SOUTH CAROLINA **WATER RAIN GARDENS**

Rain Gardens 101

It's all-natural!

- Stormwater — runoff from roofs, driveways and roads — and rainwater collects in the rain garden
- Plants trap sediment and metals while roots absorb water and nutrients
- Water filters through the soil to replenish groundwater
- Overflow leaves the garden cleaner, improving downstream water quality
- Plants grow, providing beautiful spaces and habitat

What wildlife can you find in a rain garden?

Rain gardens create habitat for wildlife, particularly in urban areas where habitat can be scarce. Birds, butterflies and other insects flock to the flowers. With available food and cover, frogs and lizards arrive, too!

- Bumblebee
- Carolina Chickadee
- Carolina Wren
- Green Anole

Stormwater Runoff

Watch as rainfall fills the rain garden then soaks into the soil.

Smell the fragrant plants!

Clean Water

Rain gardens are sponges for the landscape — absorbing and holding stormwater, allowing it to soak in or run off slowly.

bluebird feeding young

Listen for wildlife!

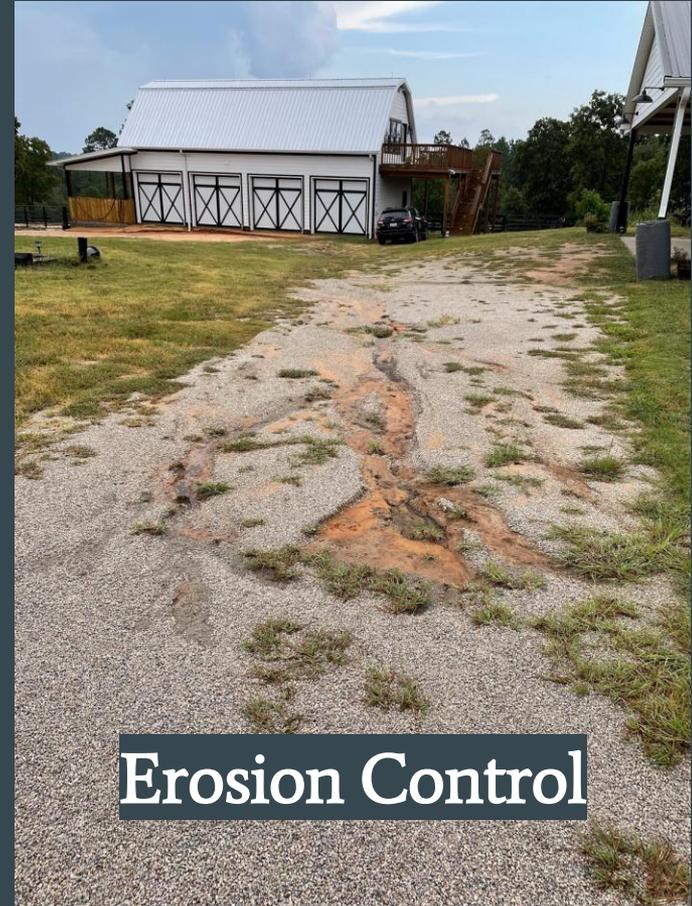
The alternative: pavement causes stormwater to run off quickly into waterways, carrying pollutants downstream and increasing the potential for flooding.

COOPERATIVE EXTENSION

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Why Do We Use Rain Gardens?

- **Impervious Surfaces** don't absorb rainwater
- **Stormwater Runoff** gathers pollutants & carries them downstream
- **Erosion Damage** caused by runoff mitigation



Erosion Control

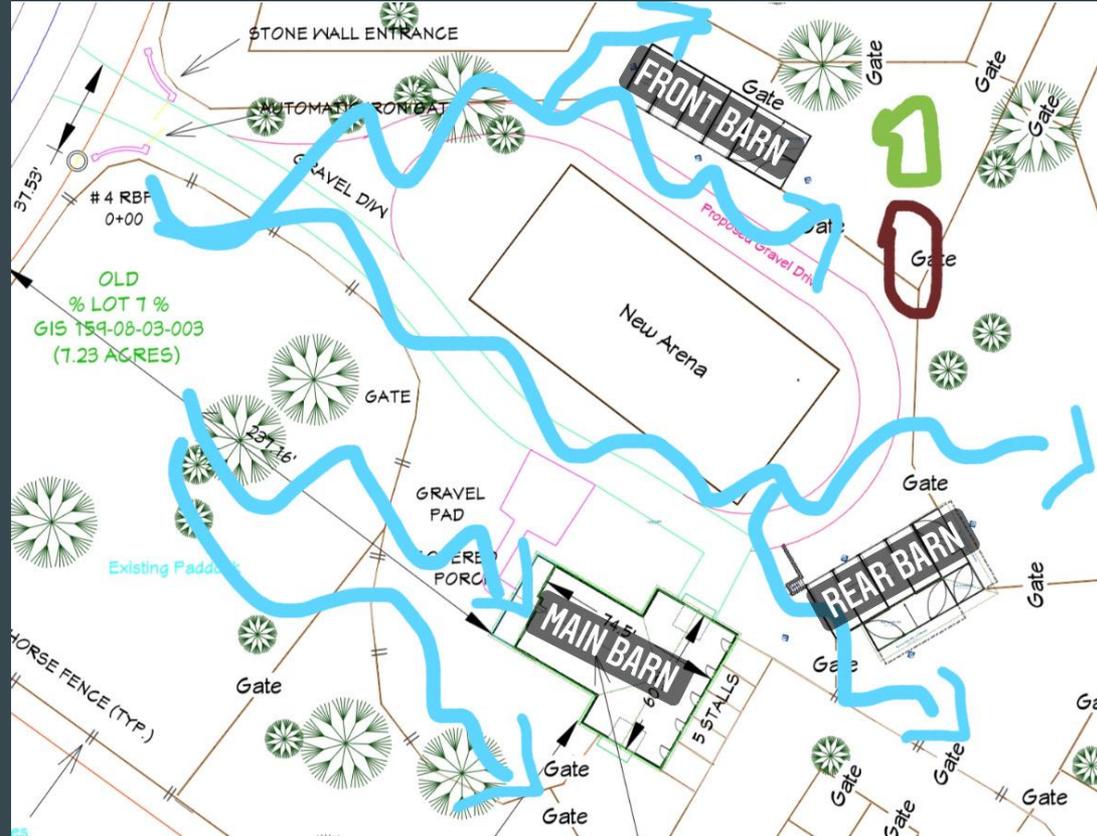
When Should Rain Gardens be Installed?

- Homes and commercial sites with erosion issues, along new buildings, around spaces with minimal permeable surfaces



Where to Install Rain Gardens

- Where can you best intercept stormwater runoff?
- 10' from Building Foundations
- 25' from Septic Drain Fields
- Full sun is ideal, though shade rain gardens are possible



Other Questions While Assessing...

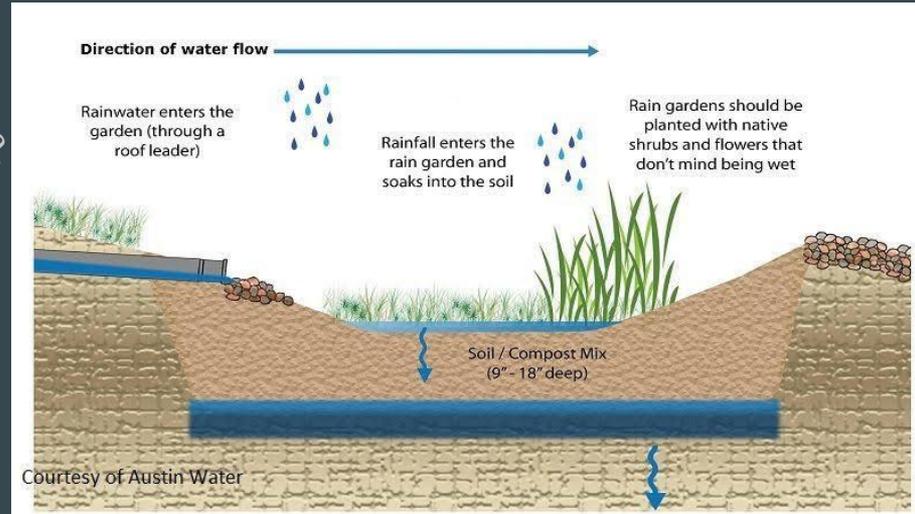
What is the land's flow of water?

What is the total square footage of impervious surfaces (i.e. roof, driveway, etc.)?

How much rain water on average is the property getting?

Are neighboring properties contributing to water flow/erosion damage?

Where can the garden be effectively located?



Residential Rain Gardens

- Tied into gutter systems
- Can be an attractive addition to landscaping
- Costs may include compost, sand, mulch, plants and labor.
- Minimal upkeep once established

Can be a fun weekend project to help prevent stormwater erosion!



Photo from HGIC Rain Garden Fact Sheets

Examples of Residential & Public Rain Gardens



Field Day Master Rain
Gardener Build, in
Charleston, SC →

Rain Gardens from
Clemson Factsheet
HGIC 1864 →



Aiken City Rain Gardens



Urban Farm at Enston Home Charleston, SC



Baker Visitor Center Rain Garden: NC Arboretum



1. Dwarf Blazing Star
Liatris microcephala
2. Virginia Dayflower
Iris virginica
Miniature Tall Bearded Iris
Iris fulva
3. Arrowwood Viburnum
Viburnum dentatum
4. Prairie Sky Switch Grass
Panicum virgatum 'Prairie Sky'
5. Common Rush
Juncus effusus
6. Swamp Hibiscus
Hibiscus moscheutos



Folly Island, SC Rain Garden



Other Rain Garden Examples



Photos from HGIC Rain Garden Fact Sheets

Steps to a Rain Garden

Planning:

- Property Measurements
- Site Selection
- Soil Assessment
- Plant Selection

Installation:

- Digging & Berm Building
- Soil Amendment
- Mulching
- Planting

Maintenance:

- Weed Management
- Post-Storm Clean-Up
- Annual Mulching



How To: Building a Rain Garden



Planning: Property Measurements

- Calculate Total Area of Rooftops
- Rain Gardens = 20% of Impervious Area
- Length x Width x .623 = 1" Rainfall Amount Formula
- Total Rooftop Area:
 $9,341' = \underline{5,819}$ gal/1" rain

Rain Garden Measurements

Front Barn: 73'x26'
FB Total SqFtg: 1,898'
FB Modified, front gutters only: 949'^2

Rear Barn (w/out run in): 50'x26' =1300
RB Bear Run In: 15'x42'=630
RB Girl's Run In: 15'x42'=630
RB Total SqFtg: 2,560
RB Modified, front only: 50'x13'=650'^2
★ RB to Overflow/Outlet: 1,910'^2

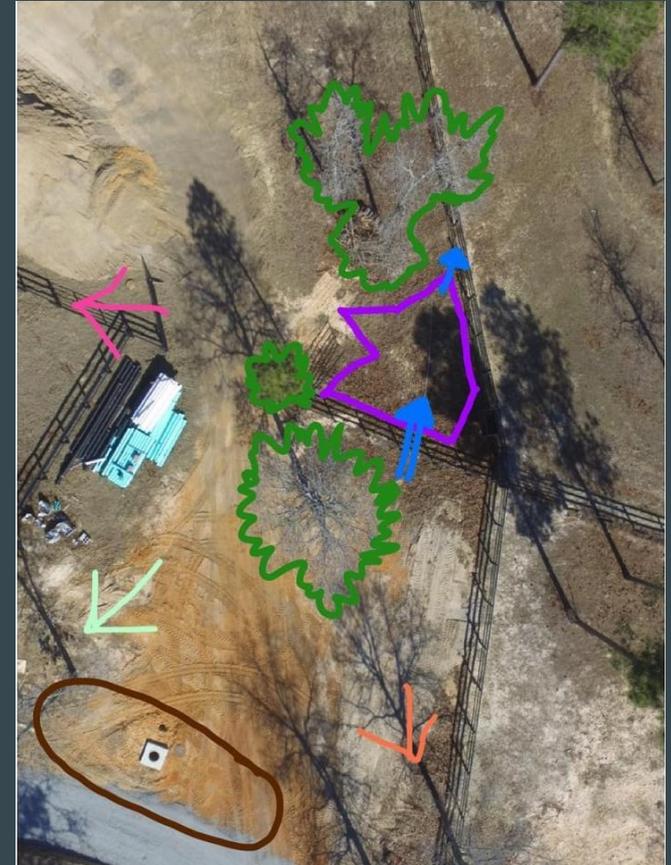
Main Barn Barn Section: 38'x82.5' = 3,135
MB House Section: 46'x38' = 1,748
MB Total SqFtg: 4,883
MB Modified, front gutters only, Total: 2,004.5
Left gutter: 19'x41.25' = 783.75
Middle gutters: 19'x41.25' = 783.75
Right gutter: 19'x23' = 437

Total Roof SqFtg: 9,341'
Modified Roof SqFtg: 2,004.5' + 949 + 650 = 3603.5

1in Rainfall Event Produces: 5,819.44gal
Modified 1" Rainfall Event Produces: 3603.5x

Rain Garden Size: 1,868 sq ft
Modified Rain Garden for RB Overflow Size: 1910' x .20 = 382 sqft

Compost: 19.1 cubic ft



Planning: Site Selection

- Our Considerations:
 - Horse Pastures
 - Trailer Parking
 - Slope
 - Proximity to Gutters/Cistern



Planning: Site Selection

- Other Considerations:
 - Building Locations
 - Trees
 - Septic, Foundations, Cables
 - Call 811 before you dig!

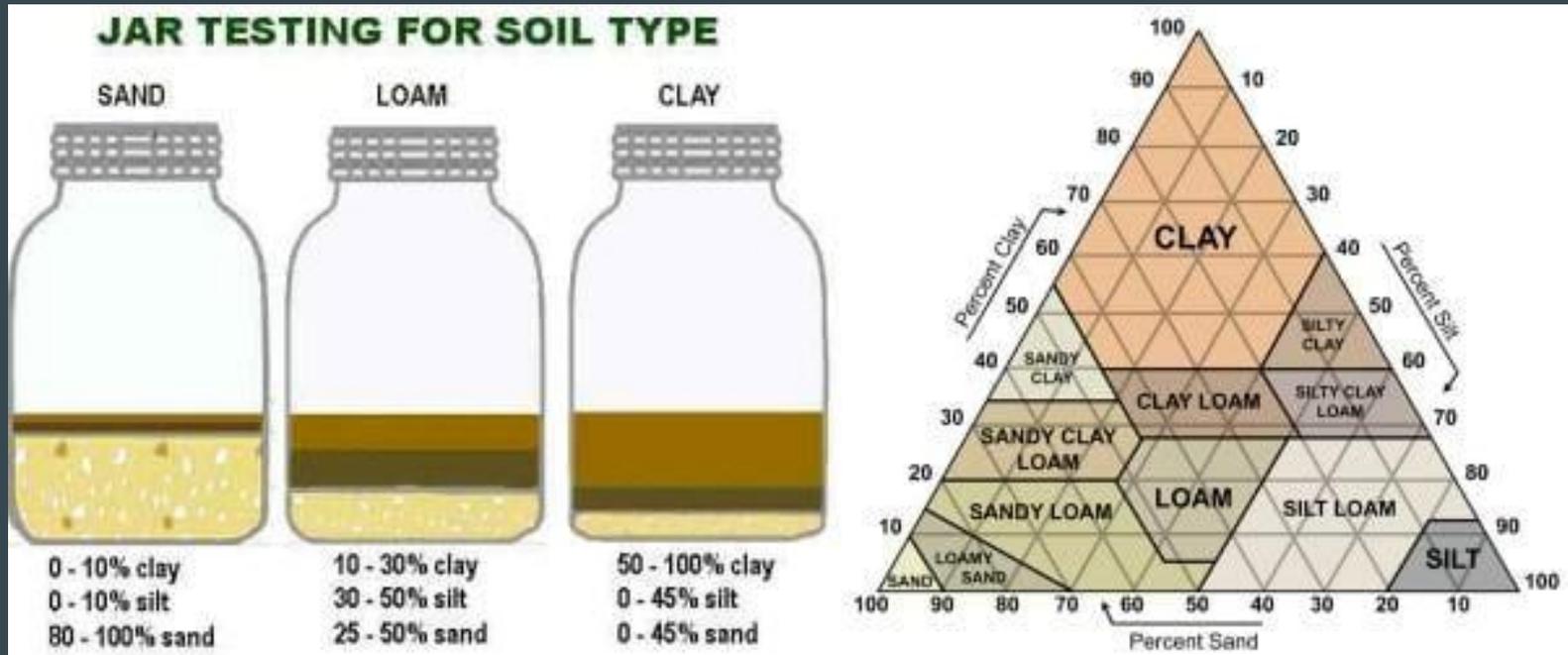


Planning: Soil Assessment

- Percolation (Perc) Test:
 - Dig a 6"x6" hole
 - Fill with water
 - Observe drain time
 - Less than 24hr drain = Good Rain Garden Site!
- Jar Test
 - Collect & dry soil
 - Fill jar 1/3 with soil
 - Add water & tsp powdered dishwasher soap
 - Agitate, allow to settle
 - Mark Sand @ 1min, Silt @ 2hr, Clay @ 3dys



Soil Assessment Chart



Planning: Plant Selection

- Choose native plants that like wet conditions, and tolerate dry spells.
- Hardy perennial plants available in your zone
- HGIC resources for rain garden plants
- Year-round color is possible



Kim Morganello



Plants I Selected

- *Callicarpa americana* - American Beautyberry
- *Callistemon* - Bottlebrush Shrub
- *Chasmanthium latifolium* - Northern River Oats
- *Helianthus angustifolius* - Swamp Sunflower
- *Malvaviscus drummondii* - Turk's Cap Mallow
- *Monarda punctata* - Dotted Horsemint
- *Muhlenbergia capillaris* - Pink Muhly Grass
- *Phlox paniculata* - Garden Phlox
- *Serenoa repens* - Saw Palmetto



Installation: Drain Basins & 8,000 gal Cistern



Installation: Sourcing Compost & Mulch

- Non-Fecal Matter Compost
- Double Ground Cedar*,
Hardwood, or Arborist Chips



Installation: Digging & Shaping



Installation: Digging & Shaping



Installation: Berm Building



Installation: Berm Building



Installation: Soil Amendment



Installation: Soil Amendment



Installation: Mulching



Installation: Mulching



Installation: Planting



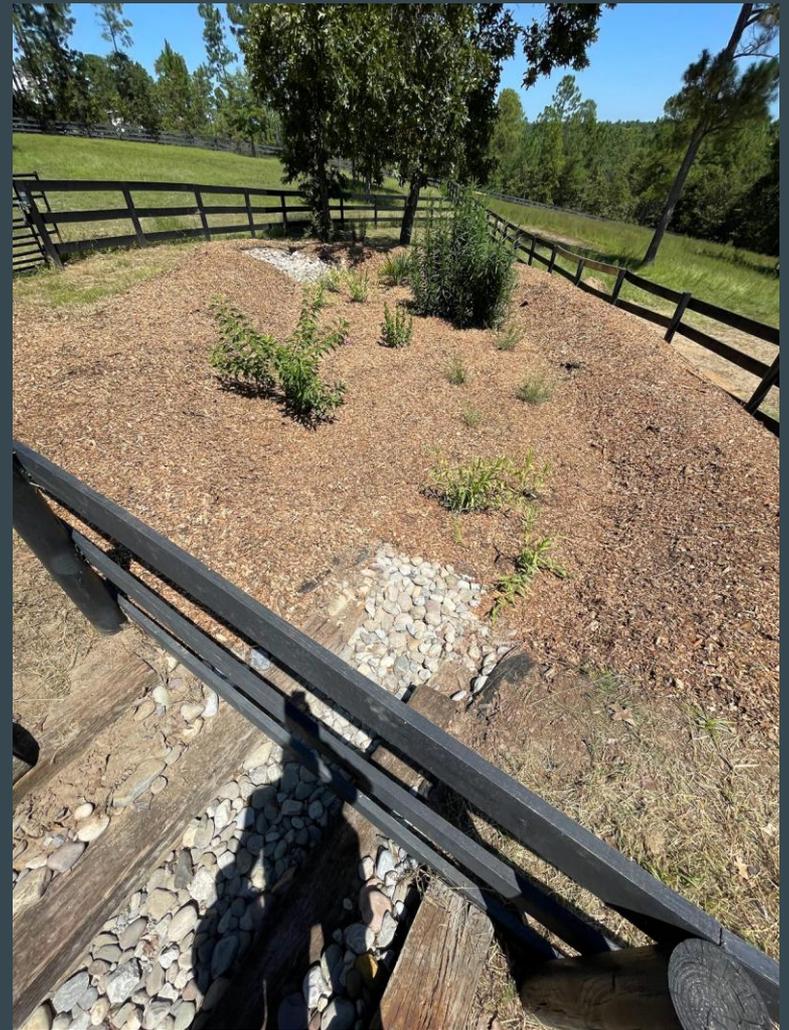
Installation: Planting



Maintenance: Weed Management



Maintenance: Annual Mulching



Maintenance: Post-Storm Clean-Up



Maintenance: Structural Repair



Success!



Plants Thriving & Wildlife



Ready for Rain!



To Review...

1. Planning:
 - a. Property Measurements
 - b. Site Selection
 - c. Soil Assessment
 - d. Plant Selection
2. Installation:
 - a. Digging & Berm Building
 - b. Soil Amendment
 - c. Mulching
 - d. Planting
3. Maintenance
 - a. Weed Management
 - b. Annual Mulching
 - c. Post-Storm Clean Up



How Can YOU Have a Rain Garden?

- Most residential rain gardens will be smaller scale - 200sqft or less
- By following the steps we discussed, for the garden size you need!
- Introduce diversity to your yard, creating a pollinator and wildlife friendly garden
- Do your part to diminish stormwater runoff!



Resources

- Clemson HGIC
- Rain Garden Plants: Introduction *HGIC Factsheet 1864*
- Maintain Your Rain Garden *HGIC Factsheet 1905*
- Clemson Extension Carolina Rain Garden Initiative
- Rain Garden Manual from Clemson
- Clemson Carolina Yards Course

Questions?

