

## Size Your Rain Garden

For every 1" of rainfall, 623 gallons of water will run off from 1000 square feet of impervious surface.  
For approximate sizing, follow this calculation:

**#1:** Study the chart you created of runoff from your property. Figure the total impervious area in square feet that drains to the chosen area for your rain garden. This is your runoff area.

**#2:** Plan final garden **depth**, which will be the amount of space you will leave from the top of the final mulch cover to the brim of the garden.

If 3": Make garden 30% of runoff area

If 6": Make garden 15%-20% of runoff area

If 9": Make garden 10-15% of runoff area.

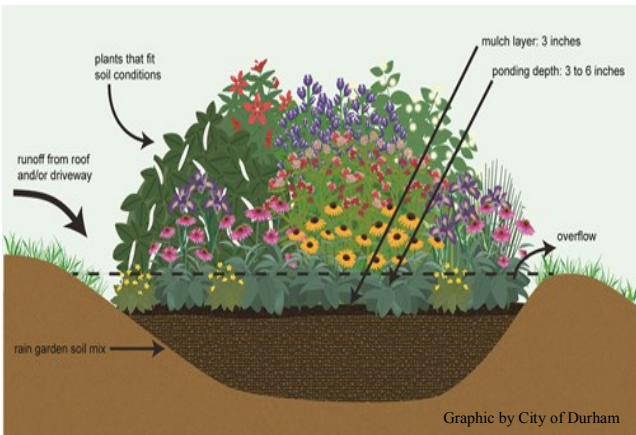
**Example: 1000 sq ft of impervious area drains into the rain garden.**

**For a depth of 3 inches:**  $1000 \times .30 = 300$  sq ft  
Garden can be a minimum of 15 ft x 20 ft.

**For a depth of 6 inches:**  $1000 \times .15 = 150$  sq ft  
Garden can be a minimum of 15 ft x 10 ft.

**For a depth of 9 inches:**  $1000 \times .10 = 100$  sq ft  
Garden can be a minimum of 10 ft x 10 ft.

Make sure to allow overflow drainage away from the house in the event of a storm greater than 1" of rain.



## Piedmont Rain Garden Plants

### Full Sun



Rudbeckia hirta—Blackeyed Susan



Asclepias incarnata—Swamp milkweed



Viburnum rufidulum—Blackhaw viburnum



Chelone glabra - Turtlehead



Chasmanthium latifolium—River oats



Itea virginica—Sweetspire



## Planning and Building Backyard Rain Gardens

- ◆ Solve runoff problems
- ◆ Reduce flooding
- ◆ Filter pollutants
- ◆ Recharge groundwater
- ◆ Provide butterfly habitat
- ◆ Protect our streams



Town of Chapel Hill  
Stormwater Management Division  
405 Martin Luther King Jr. Blvd  
Chapel Hill, NC 27514  
919-969-RAIN

[www.townofchapelhill.org/stormwater](http://www.townofchapelhill.org/stormwater)

## What is a rain garden?



Rain gardens are saucer-shaped depressions with well-draining soils, designed with native plants tolerant to both drought and wet conditions. They are placed

to capture and treat stormwater runoff coming from impervious surfaces such as roofs, sidewalks and parking areas.

By temporarily holding runoff, rain gardens help to filter sediment, nutrients, and other pollutants from runoff to keep our waterways cleaner and allow recharging of groundwater. They reduce the volume and force of water flowing across your yard, into storm drains, creeks or neighbors' yards. They can also prevent hot runoff in summer from going directly into creeks and killing fish.

Many older roof downspouts are piped directly into creeks, causing erosion of stream banks and contributing to flooding downstream. Homeowners are encouraged to disconnect downspouts and direct roof runoff into rain gardens or cisterns.

## Rain gardens, compared to grass lawns

- ◆ allow an estimated 30% more water to infiltrate the ground;
- ◆ require less watering and no fertilizing after plants are established;
- ◆ add beauty to your home and attract birds and butterflies!



## Plan your rain garden

**1) During a rainstorm, observe where water flows from impervious surfaces on your property.** Chart the flow from roofs, sidewalks, parking and driveway areas. Decide on the best interception points in which to collect runoff in a rain garden.

### 2) Choose a spot

- At least 10' away from your foundation
- At least 25' away from septic drain field or well head
- Away from buried utility lines: Call 811 to locate
- Away from tree roots; preferably in the sun
- Where no groundwater appears when digging 2' deep

### 3) Test the drainage at your favored spot

A low-lying area will have natural drainage into it, but may not drain. Test by digging a hole 8" wide by 8" deep; fill the hole with water. If the water takes more than 48 hours to soak in, you will need to replace or heavily amend the soil for your garden. If it does not drain at all, find a different location. Water must drain from your finished rain garden within 72 hours to prevent mosquito breeding.



### 4) Size the garden area

You want the finished rain garden to temporarily hold a 1" rain volume draining into it. A 3" deep garden will be about 30% of the drainage area; a 6" deep garden will be about 15-20% of the surface area draining into it. **Depth** is measured from the top mulch cover to the "brim" of the completed garden.

**Example:** If you have a 60'x40' roof surface (and one-fourth drains to the downspout leading to the rain garden) you have 600 sq ft of roof area (2400 sq ft/4). If parking and patio areas contribute an additional 400 sq ft. of runoff area, you have a total of 1,000 sq ft draining into the rain garden.

### 5) Evaluate your soil

Heavy clay soil will need to be removed and replaced with sandy loam, or some of it removed and the remainder amended with quality soil and compost. Have soil amendments ready for the construction.

## Dig your rain garden



- 1) Outline the garden area.
- 2) Dig about two feet deep, sloping the sides.
- 3) Roughly level the rain garden bottom to allow water to collect and infiltrate.

4) Use some of the clay soil to create a compacted, flat-top berm on the downhill end if the garden is on a slope. Make sure overflow area (lowest point of berm) drains **away** from the house.

5) Add soil to the garden. Allow space for the desired final depth to provide temporary holding capacity for stormwater running into the garden.

6) Connect the gutter downspout or rain barrel overflow to the garden with drain pipe or stabilized channels (swales).

## Plant your rain garden

- ◆ Mulch or plant grass on the berm and temporarily stabilize it with straw or an erosion control mat.
- ◆ Sample design plans can be found online. Choose North Carolina native plants that are tolerant both to drought and flooding. Remember that they may be inundated for a day or two after heavy rain, and may be very dry during droughts. Use plugs or potted plants and label or mark them so they don't get accidentally pulled during weeding.
- ◆ Cover the garden with 2"-3" of shredded hardwood mulch, leaving the crowns of the plants free. Hardwood mulch will not "float" during a rain like pine straw and will absorb nitrogen well.

## Maintain your rain garden

- ◆ Water and weed the garden until plants are established, and maintain routinely as needed. You may need to water during droughts.
- ◆ Check the berm for stability, especially after heavy rains, and repair as necessary. Add landscape fabric and stone at overflow if needed.
- ◆ Keep well mulched.