Rain Gardens

A How-To Manual For Homeowners

Your Personal Contribution To Cleaner Water

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MARYLAND COASTAL BAYS PROGRAM

Rain Gardens

Building a rain garden on your property is a beautiful way to help "slow the flow" and improve the quality of water in the Maryland Coastal Bays. While an individual rain garden may seem like a small thing, collectively they produce substantial neighborhood and community environmental benefits.

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Introduction

Rain gardens: Your personal contribution to cleaner water

Homeowners in many parts of the country are catching on to rain gardens, which are landscaped areas planted with wildflowers and other native vegetation that can collect and soak up rainwater.

Rainwater flowing from the roofs, lawns and other paved surfaces fill the rain garden with a few inches of stormwater, which minimizes the amount of water entering a storm drain. They help protect the Maryland Coastal Bays from pollutants carried by urban rainwater such as fertilizers, pesticides, oil and other fluids that leak from cars and numerous harmful substances that was on roofs and paved areas.

Why are rain gardens important? Compared to a conventional patch of lawn, a rain garden allows about 30% more water to soak into the ground. Building a rain garden on your property is a beautiful way to help "slow the flow" and improve the quality of water in the Maryland Coastal Bays. While an individual rain garden may seem like a small thing, collectively they produce substantial neighborhood and community environmental benefits.

The rain garden consisting of plants, mulch, loose soil, and sometimes a layer of small gravel utilizes several methods to absorb and disperse water. Plant roots absorb water for use in the biological processes of plant metabolism through the leaves into the atmosphere.

Water not used by the plant roots is absorbed into the loose soil. As water moves downward through the mulched layer, chemical and biological processes filter and break down many pollutants found in the stormwater that runs off the land. Over time, excess water evaporates into the atmosphere. This process minimizes the flow into the storm drains and ultimately the Maryland Coastal Bays.

This manual provides homeowners and landscape professionals with the information needed to design and build rain gardens on residential lots. Guidelines presented in this manual can also be used to treat roof runoff at commercial and institutional sites. However, the manual should not be used to design rain gardens for parking lots, busy streets and other heavily-used paved areas where stormwater may require pretreatment and should rely on more technically engineered designs. See the "Maryland 2000 Stormwater Design Manual" for more information on these types of systems.

Rain gardens are fairly simple to build and yield lots of benefits. They include the following:

- Rain gardens increase the amount of water that filters into the ground, which recharges local groundwater.
- They help protect communities from flooding and drainage problems.
- Rain gardens help protect structures and other vegetation in your yard from flowing water.
- They enhance the beauty of yards and neighborhoods.
- They provide valuable habitat for birds, butterflies and many beneficial insects.

It is a good idea to read the entire manual before you get started. In Appendix A, you will find a list of native plants to help you select the right plants for the spot you have chosen for your rain garden.

Rain garden FAQs

Does a rain garden form a permanent pond?

No. The stormwater should soak into the ground and be utilized by the vegetation so that the garden is dry between rainfalls. Within 24 hours it should be dry. (Note: Some rain gardens can be designed to include a permanent pond, but that type of rain garden is not addressed in this publication.)

Will a rain garden provide a breeding ground for mosquitoes?

No, the opposite. Mosquitoes need several days to lay and hatch eggs. Standing water in the garden should last only for a few hours after a storm. Mosquitoes are more likely to lay eggs in a birdbath, plant pots, and old tires than a rain garden. Also, rain gardens attract dragonflies and birds eat mosquitoes.

Does a rain garden require a lot of maintenance?

No. Rain gardens can be maintained with little effort after the plants are established. Some weeding and watering will be needed in the first two years, and perhaps some thinning in later years as the plants mature.

Is a rain garden expensive?

It doesn't have to be. The cost is site-specific and will vary depending on who does the work and what plants you select. To keep costs down, you can invite family and friends to help build the garden, or start with smaller planted areas.

Step One

Sizing and Siting the Rain Garden

This section of the manual covers rain garden basics: the placement, size, depth, length, width, soils, and slopes. The best way to ensure a successful rain garden project is to follow the instructions in this section.

Where should the garden be located?

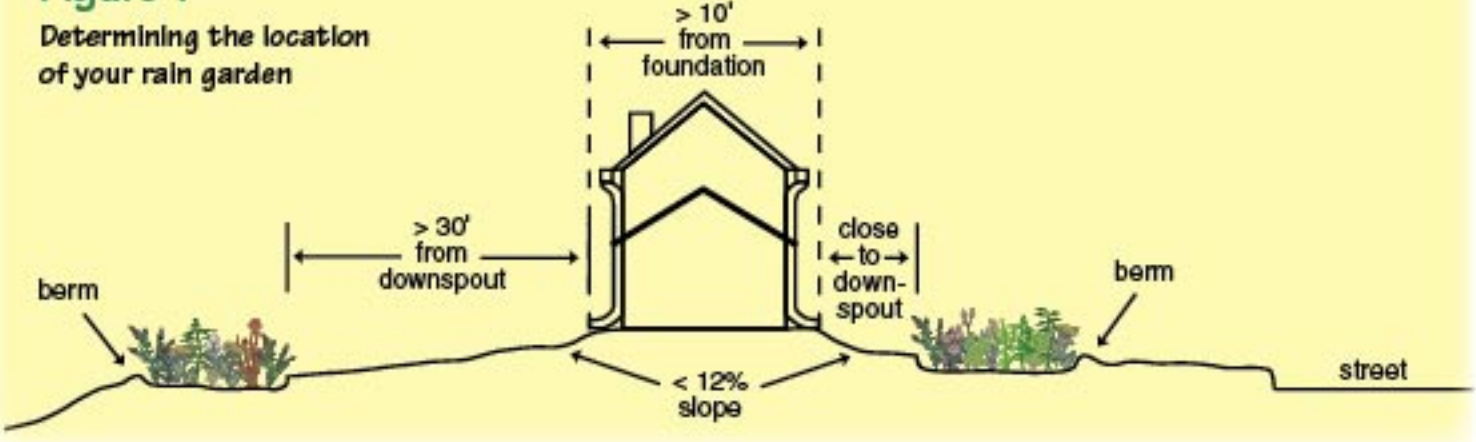
Home rain gardens can be located 10 or more feet away from the house to catch roof runoff, or farther out in the lawn to collect water from the lawn, roof and driveway. When considering placement of your rain garden, think about how the garden can be integrated into existing landscaping. Also, pay attention to views from inside the house as well as those throughout the landscape. Determine how far away or how close you want your rain garden to be to outdoor gathering areas. For example, why not locate it near a porch or patio where you can enjoy the colors and fragrances.

To help you decide where to place your rain garden, consider these points:

- The garden should be at least 10 feet from the house so infiltrating water doesn't seep into the foundation or crawl space. See Figure 1.
- Do not place the rain garden directly over a septic system.
- The goal of a rain garden is to encourage additional water infiltration. Wet patches in your yard may already be retaining water. You may want to add rain garden plants to that area and choose another location for the rain garden.
- It is better to build the garden in full or partial sun. For a list for native plants appropriate for shade and sun, please see Appendix A.
- Be careful not to put your rain garden directly under a large tree.
- Digging will be much easier if you choose a more level or gently sloped part of the yard. Slope is discussed later in this section.
- See Figure 2 for ideas on siting the rain garden.

Figure 1

Determining the location of your rain garden



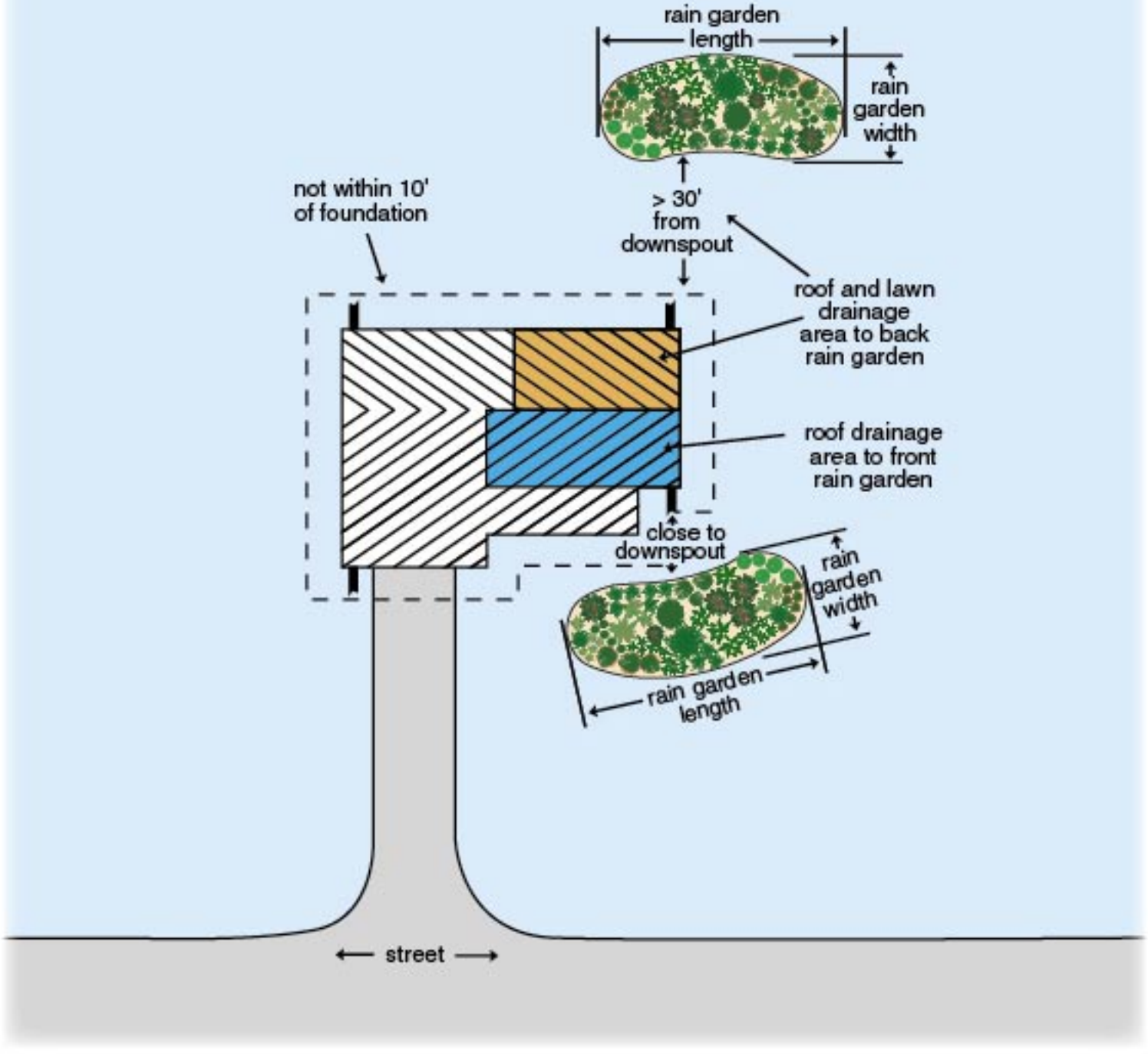
What size and shape should the garden be?

The size of your rain garden will depend on the following factors:

- What type of soil do you have?
- How much roof and lawn area will drain to the rain garden?
- How deep will the rain garden be?

Figure 2

Ideas on siting the rain garden



What type of soil makes up your rain garden site?

It is very important to identify your soil type: sandy, silty, or clay. Sandy soils provide the fastest infiltration; clay soils have the slowest. Since clay soils take longer to absorb water, rain gardens in clay soils must be larger than rain gardens in sandy or silty soils.

If the soil feels gritty and coarse, you probably have sandy soil. If your soil is smooth, but not sticky, you have silty soil. If it is very sticky and you can form a ball, you probably have clay soil.

Refer to Appendix B for two simple soil tests to determine your soil type. If you have questions about your soil, call the Worcester County Cooperative Extension's office located on River Street in Snow Hill at 410-632-1972. The office is open from 8 a.m. to 4:30 p.m. weekdays; closed on county holidays.

Runoff flows into a new rain garden.

An established rain garden.

How large is the area draining to your rain garden?

In choosing your rain garden site, determine the size of the area draining to the garden. The larger the drainage area, the larger the rain garden will have to be. There is a little guesswork in determining the size of the drainage area, especially if a large part of the lawn is upgrade from the proposed garden site. Use the suggestions below to estimate the drainage area.

For rain gardens located 10 to 30 feet from a downspout:

1 When the rain garden is closer to the house, almost all of the water will come from the roof and downspouts. Walk around the house and estimate what percent of the roof feeds to that downspout. Many houses have four downspouts, each taking about 25% of the roof's runoff.

2 Next, to determine the size of your roof, find your home's footprint – the area (square footage) of the first floor. If you don't already know it, use a tape measure to find your home's length and width. Multiply the length and width together to find the approximate square footage (area) of your roof. You don't have to be exact; just get a good idea of the size of your roof.

3 Finally, multiply the approximate roof area by that part (percentage) of the roof that feeds to the downspout draining to the rain garden. This is the roof area that drains to the rain garden.

For rain gardens over 30 feet from the downspout:

1 If there is a significant area of lawn upgrade that will drain to the rain garden, add this lawn area to the roof drainage area. First, find the roof drainage area using the process outlined in Steps 1-3 for the rain garden less than 30 feet from the downspout.

2 Next, find the area of the lawn that will drain to the rain garden. Stand where your rain garden will be and look up toward the house. Identify the part of the lawn sloping into the rain garden.

3 Measure the length and width of the uphill lawn and multiply them to find the lawn area.

4 Add the lawn area to the roof drainage area to find the total drainage area that will be directed to the rain garden. If your patio or driveway also drains to the rain garden, be sure to measure them as well and add that square footage to your total area.

Example

Calculating the roof area draining to your rain garden

Your house is 60 feet long x 40 feet wide.
To calculate the roof area, multiply 60 x 40 = 2,400 square feet.
Your roof area is 2,400 square feet.

You estimate that a certain downspout collects water from 25% of the 2,400-square-foot roof.
To calculate the drainage area, multiply 2,400 x .25 = 600 square feet.

A 600-square-foot portion of the roof drains into the rain garden.

Note: If your lawn is sloped, also note the example below to calculate slope and depth.

How deep should the rain garden be?

A typical rain garden is between 4 and 8 inches deep. A rain garden deeper than 8 inches may pond with water too long, resembling a hole in the ground and possibly create a safety hazard for anyone who accidentally steps into it.

Additionally, a rain garden less then 4 inches deep will require a large surface area to contain water runoff generated from heavier storms.

No matter what the depth of the rain garden, the goal is to keep the garden level. Digging a very shallow rain garden on a steep lawn will require bringing in extra topsoil to bring the downslope part of the garden up to the same height as the upslope part of the garden.

As the slope gets steeper, it is easier to dig the rain garden a little deeper to make it level.

Finding the slope of your yard

The slope of the lawn should determine the depth of the rain garden. Find the slope of your lawn by following these six steps; see Figure 3.

Materials List

String and ruler
Carpenter's level or string level
Two wooden stakes
Calculator (optional)

1 Pound one stake in the uphill end of your rain garden site and pound the other stake in at the downhill end. The stakes should be about 15 feet apart.

2 Tie a string to the bottom of the uphill stake and run the string horizontally across the garden site to the downhill stake.

3 Using a string level or the carpenter's level, make the string horizontal and tie the string to the downhill stake at the height.

4 Measure the width (in inches) between the two stakes.

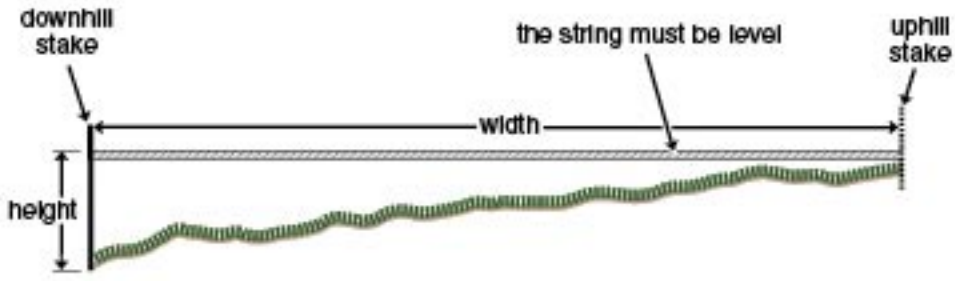
5 Now measure the height (in inches) on the downhill stake between the ground and string.

6 Divide the height by the width and multiply the result by 100 to find the lawn's percent slope. If the slope is more than 12%, it's best to find another site or talk to a professional landscaper.

Using the slope of your lawn, select the depth of the rain garden, e.g. based on a 5% slope, build the rain garden 6 to 7 inches deep.

Figure 3

The string should be tied to the base of the uphill stake, then tied to the downhill stake at the same level



Example

The horizontal distance of the string between the stakes is 180 inches.
The string's vertical height on the downhill stake is 9 inches.
Divide the height by the (horizontal) distance between stakes
and multiply by 100 to find your lawn's percentage slope.

$$\frac{9 \text{ inches}}{180 \text{ inches}} = \frac{1}{20} = .05$$

.05 x 100 = 5% slope

Percent of your slope	Recommended depth
Less than 5%	5 inches deep
5 to 7%	6 to 7 inches deep
7 to 12%	About 8 inches deep

How big should the rain garden be? How much land should it take?

The surface area of the rain garden can be almost any size, but time and cost will always be important considerations in sizing decisions.

Any reasonably sized rain garden will capture some stormwater runoff, and every bit you capture helps.

A typical residential rain garden ranges from 100 to 300 square feet. Gardens can be smaller than 100 square feet, but very small gardens have little plant variety. If a rain garden is larger than 300 square feet, it takes a lot more time to dig, is more difficult to make level, and costs more to plant.

Now that you have established the drainage area, soil type, and depth for your garden, use Table 1 and 2 below to help determine the garden's surface area. Use Table 1 if you plan to place the garden 10 to 30 feet from the downspout; use Table 2 if it will be more than 30 feet from the downspout. Follow the steps below to size the garden.

1 To find the size factor, refer to Table 1 or 2.

2 Multiply the size factor by the drainage area size.

3 If the recommended garden surface area is much more than 300 square feet, distribute the area requirement into two or more smaller rain gardens.

Choose a size that is best for your yard. Remember that these are only guidelines. The size of the garden also depends on how much room you have in your yard, how much runoff you wish to contain and how much you want to spend.

Table 1

Size factor for rain gardens less than 30 feet from the downspout

Soil type	5 inches deep	6-7 inches deep	8 inches deep
Sandy soil	0.19	0.15	0.08
Silty soil	0.34	0.25	0.16
Clay soil	0.43	0.32	0.20

Table 2

Size factor for rain gardens more than 30 feet from the downspout

Soil type	Size factor for all depths
Sandy soil	0.03
Silty soil	0.06
Clay soil	0.10

Example

How to determine surface area of the rain garden

(Using both slope and drainage area calculations where appropriate)

Your lawn has a 5% slope, so you will have a 6-inch-deep rain garden.
Your lawn is silty and your rain garden is 10 to 30 feet from the downspout.
By referring to Table 1, you see that a size factor of 0.25 is recommended.
You multiply the downspout drainage area*, 600 square feet (from previous example),
by 0.25 to find the recommended rain garden area: 150 square feet.

600 square feet x 0.25 (Table 1) = 150 square feet

*If your drainage area includes an area of lawn or driveway, etc., as well as roof downspout, remember to use the total drainage area in your calculations.

Guidelines are not rules

The sizing guidelines described in this manual are based on a goal of controlling 100 percent of the runoff from your determined drainage area for the average rainfall, while keeping the rain garden size reasonable.

A goal of retaining all the water that falls on your roof, yard, and driveway helps compensate for any error that may creep into the design and construction of the project.

If you follow the guidelines in the manual and decide the calculated surface area is just too large for your goals, it is perfectly acceptable to make the rain garden smaller. The rain garden can be up to 30% smaller and still control almost 90% of the annual runoff. On the other hand, it is fine to make the rain garden larger than the guidelines indicate.

Any actions you take will help reach the ultimate goal of "slowing the flow" and reducing the amount of water that drains from your property.

How long and wide should the rain garden be?

Before building the rain garden, think about how it will catch stormwater. Runoff will flow out of a downspout and should spread evenly across the entire length of the rain garden. The rain garden must be as level as possible so water doesn't pool at one end and spill over before it has a chance to infiltrate.

The longer side of the rain garden should face upslope; that is, the length of the rain garden should be perpendicular to the slope and the downspout. This way, the garden catches as much water as possible. However, the rain garden should still be wide enough for the water to spread evenly over the whole bottom and to provide the space to plant a variety of plants.

A good rule of thumb is that the rain garden should be about twice as long (perpendicular to the slope) as it is wide.

When choosing the width of the garden, think about the slope of the lawn. Wide rain gardens and rain gardens on steep slopes will need to be dug very deep at one end in order to be level. If the rain garden is too wide, it may be necessary to bring in additional soil to fill up the downhill half.

Experience shows that making a rain garden about 10 feet wide is a good compromise between the effect of slope and how deep the rain garden should be. A rain garden should have a maximum width of about 15 feet, especially for lawns with more than an 8% slope. See Example below.

Example

How to determine the length of the garden

Pick the best rain garden width for your lawn and landscaping.
Divide the size of your rain garden by the width to find your rain garden's length.
You want a rain garden that is 10 feet wide, so divide 150 square feet (previous example) by 10-foot width to calculate your rain garden's length.
The length in this example would be 15 feet.

$$\frac{\text{Rain garden area}}{\text{Width}} = \frac{150 \text{ feet}}{10 \text{ feet}} = 15 \text{ feet}$$

Step Two

Building the Rain Garden

BEFORE YOU START DIGGING, call Miss Utility at 1-800-257-7777 or go to http://www.missutility.net/iticlite — internet request for homeowners only

Now that the size and place for the rain garden are set, it's time to get a shovel and start digging. Working alone, it will take about six hours to dig an average-size rain garden. If friends help, it will go much faster, possibly only an hour or two.

If you are building the rain garden into an existing lawn, killing the grass first can reduce digging time. An environmentally friendly approach is to place black plastic over the lawn until the grass dies. Also, the best time to build the rain garden is in the late spring. It will be easier to dig and the plants are more likely to thrive.

Materials List

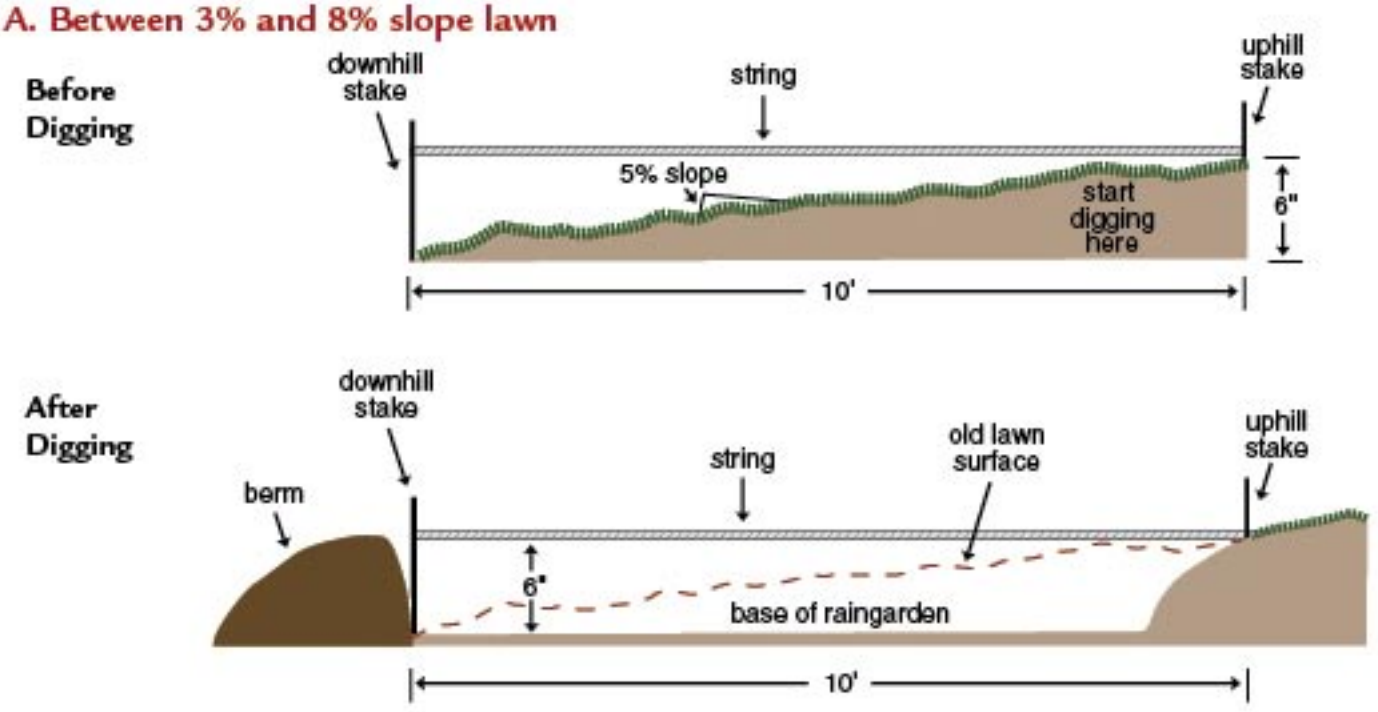
The following tools will help in building the rain garden

- Tape measure
- Shovels
- Rakes
- Trowels
- Carpenter's level
- Wood stakes at least 2 feet long
- String
- Garden hose
- 2x4 board, at least 6 feet long (optional)
- Small backhoe with caterpillar treads (optional)
- Plants and mulch

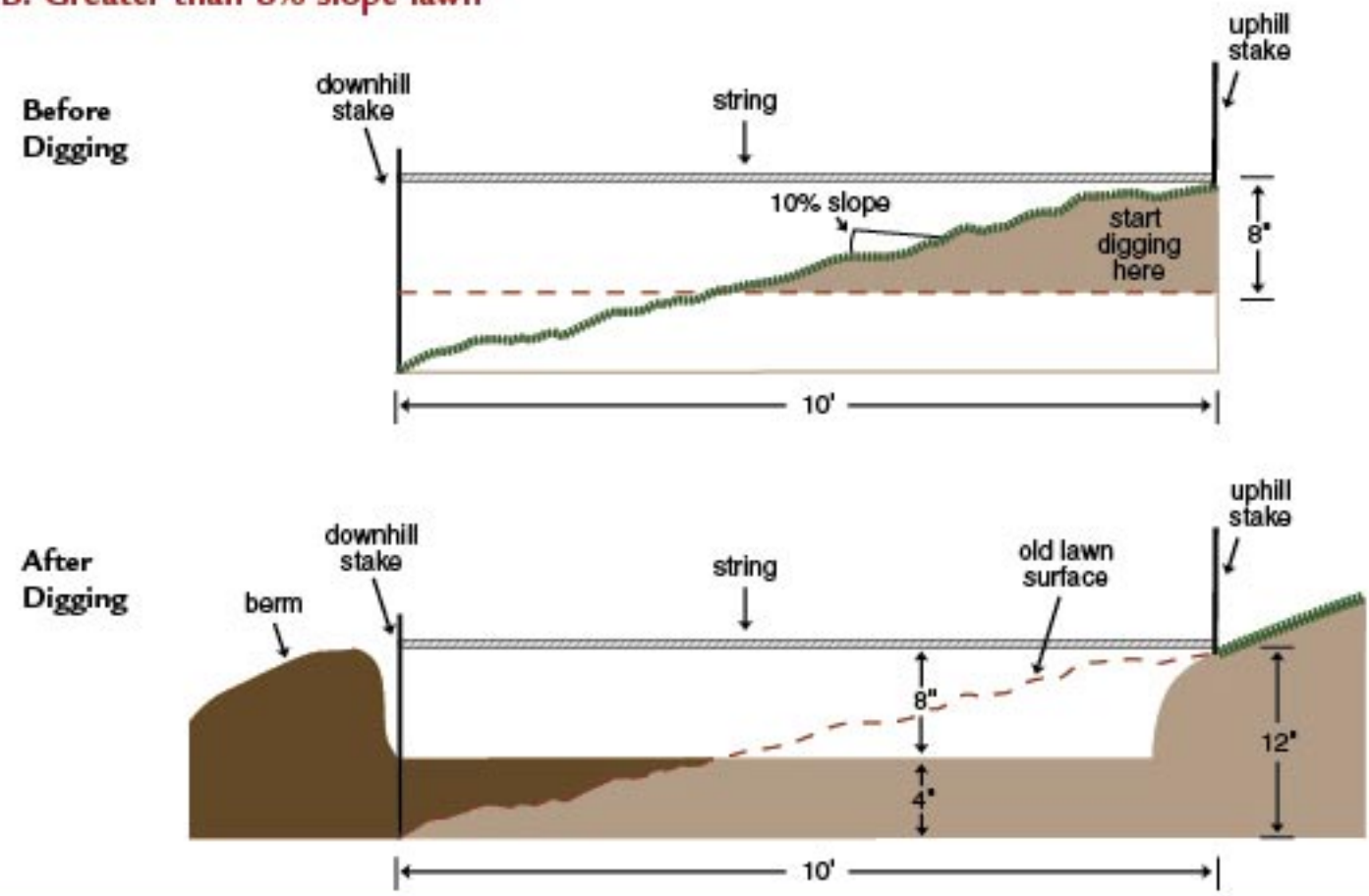
Figure 4

Where to dig and where to put the soil you've dug

A. Between 3% and 8% slope lawn



B. Greater than 8% slope lawn



Digging the rain garden

1 While digging the rain garden to the correct depth, heap the soil around the edge where the berm will be. (The berm is a low "wall" around three sides of the rain garden that holds the water in during a storm.) On a steeper lawn, the lower part of the rain garden can be filled in with soil from the uphill half, and extra soil might need to be brought in for the berm.

2 Create the shape of your rain garden by laying a garden hose or string in the pattern that you wish to use. Remember that the berm will go outside the hose. Next, put stakes along the uphill and downhill sides, lining them up so that each uphill stake has a stake directly downhill. Place a stake every 5 feet along the length of the garden.

3 Start at one end of the rain garden and tie a string to the uphill stake at ground level. Tie it to the stake directly downhill so that the string is level. Work in 5-feet-wide sections, with only one string at a time. Otherwise, the strings will become an obstacle.

4 Start digging at the uphill side and the string. Measure down from the string and dig until you reach the depth you want the garden to be. If the garden will be 4 inches deep, then dig 4 inches down from the string. Refer to Figure 4 and Step 6 (below) for guidance.

5 If the lawn is almost flat, you will be digging at the same depth throughout the garden and using the soil for the berm. If the lawn is steeper, the high end of the garden will need to be dug out noticeably more than the low end, and some of the soil from the upper end can be used to fill in the lower end to make the garden level. Continue digging and filling one section at a time across the length of your garden until it is as level as possible.

6 In any garden, compost will help the plants become established, and now is the time to mix in compost. A roto-tiller can make mixing much easier, but it is not necessary. If you do add compost, dig the garden 1 to 2 inches deeper than planned. Then add 1 to 2 inches of compost.

The perimeter of a rain garden is defined with string before digging.

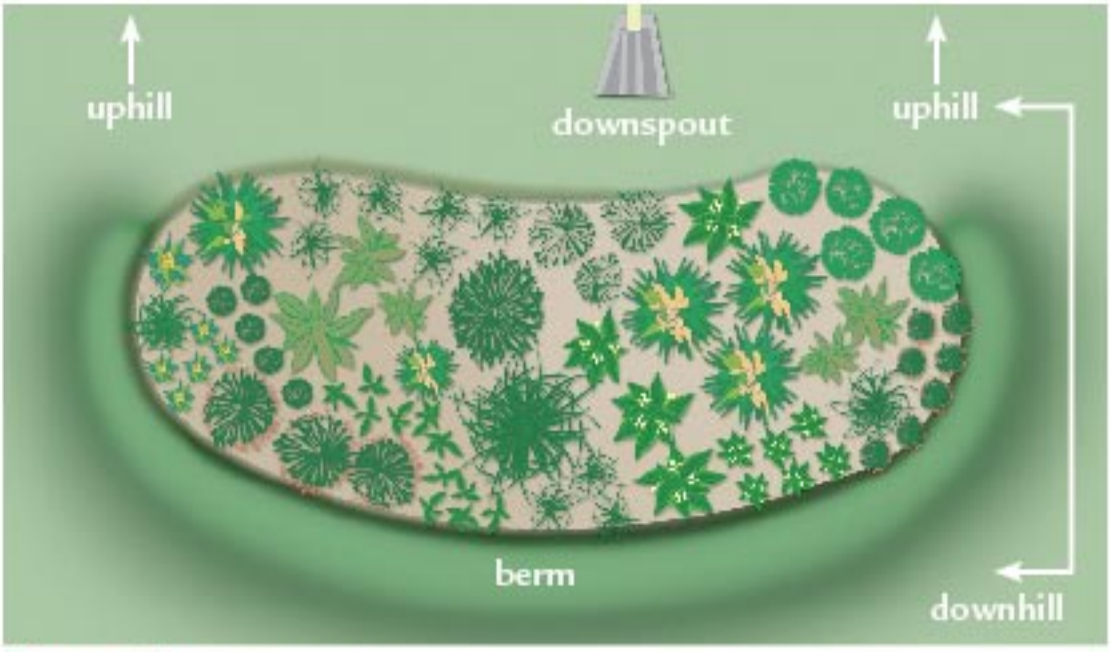


Figure 5 **The top of the downhill part of the berm should come up to the same elevation as the entry to the rain garden at the uphill end.**

Building the rain garden berm

Water flowing into the garden will naturally try to escape over the downhill edge. A berm is critical to help hold the water inside the garden.

The berm is a wall across the bottom and sides of the rain garden. The berm will need to be highest at the downhill side. Up the sides of the rain garden, the berm will become lower and gradually taper off by the time it reaches the top of the rain garden. Figure 5 shows how the berm should look.

On a more gradual slope, there should be plenty of soil from excavating the garden to use for a berm. On a steeper slope, most of the soil from the uphill part of the garden will be used to fill the downhill half, and additional soil may have to be brought in for the berm. After shaping the berm into a smooth ridge about a foot across, tamp it down to compact the soil. It is important to have a strong, well-compacted berm. The berm should have very gently sloping sides; this helps to smoothly integrate the garden with the surrounding lawn and also makes the berm much less susceptible to erosion.

To prevent erosion, cover the berm with mulch or plant grass. Use straw or erosion control matting to protect the berm while the grass becomes established.

If you don't want to lay sod or mulch over the berm, you can also plant drought-tolerant vegetation or winterize the berm with rye grass.

Note: If the downspout is a few feet from the entry to the rain garden, make sure the water runs into the garden by either digging a shallow grass swale or attaching an extension to the downspout.

Leveling the rain garden

One way to check the level of the rain garden is to just "eyeball" it. To do it more accurately, follow these steps:

- When the whole area has been excavated to about the right depth, lay the 2x4 board in the garden with the carpenter's level sitting on top. Find the spots that aren't flat. Fill in the low places and dig out the high places.

- Move the board to different places and different directions, filling and digging as necessary to make the surface level.

- When the rain garden is as level as you can get it, rake the soil smooth.

Step Three

Planting and Maintenance

Planting the rain garden is the fun part! A number of planting designs and lists of suggested plants are included in Appendix A. Use these for ideas, but don't be afraid to be creative. There is no single best way to plant a rain garden.

Anyone who has ever done any gardening will have no problem planting a rain garden, but a few basic reminders are listed below.

1 Select plants that have a well-established root system. Usually one- or two-year-old plants will have a root system that are beginning to circle or get matted. Nursery-propagated plants are best, and three or four types of plant should be enough.

2 Make sure to have at least a rough plan for which plants will be planted where. Lay out the plants as planned 1 foot apart or appropriate distance in a grid pattern, keeping them in containers until they are actually planted to prevent drying out before they get in the ground.

3 Dig each hole twice as wide as the plant and deep enough to keep the crown of the plant level with the existing grade (just as it was in the cell pack or container). Make sure the crown is level and then fill the hole and firmly tamp around the roots to avoid air pockets.

4 Apply mulch evenly over the bed, about 2 inches thick, but avoid burying the crowns of the new transplants. Mulching is usually not necessary after the second growing season unless the mulched look is desired.

5 Stick plant labels next to each individual grouping. This will help identify the young native plants from non-desirable species (weeds) as you weed the garden.

6 Be sure to water the plants an inch of water per week. Water immediately after planting and continue to water twice a week (unless it rains).

A rectangular-shaped rain garden, located in a narrow side yard between two homes.

Tips for rain garden design and planting

◆ While rain gardens are a highly functional way to help protect water quality, they are also gardens and should be an attractive part of your yard and neighborhood. Think of the rain garden in the context of your home's overall landscape design.

◆ When choosing native plants for the garden, it is important to consider the height of each plant, bloom time and color, and its overall texture. Use plants that bloom at different times to create a long flowering season. Mix heights, shapes and textures to give the garden depth and dimension. This will keep the rain garden looking interesting even when few wildflowers are in bloom.

◆ When laying plants out, randomly clump individual species in groups of three to seven plants to provide a bolder statement of color. Make sure to repeat these individual groupings to create repetition and cohesion in a planting. This will provide a more traditional formal look to the planting.

◆ Try incorporating a diverse mixture of ferns, rushes, and grasses with your flowering species. This creates necessary root competition that will allow plants to follow their normal growth patterns and not outgrow or out-compete other species. In natural areas, a diversity of plant types not only adds beauty but also creates a thick root system, there will be less change in species location from year to year and weeds will naturally decline.

◆ Don't forget to mulch. Composted yard debris and leaves are best. Mulch helps keep your soil moist, suppresses weed growth, stabilizes soil temperatures and reduces erosion and soil compaction.

◆ Finally, consider enhancing the rain garden by using local or existing stone, ornamental fences, trails, garden benches, or additional wildflower plantings. These will help give the new garden an intentional and cohesive look and provide a feeling of neatness that the neighbors will appreciate.

Maintaining your rain garden

Weeding will probably be necessary for the first year or two, as with a new garden. Remove by hand only those plants you are certain are weeds. Try to take the weeds out roots and all.

Weeds may not be a problem in the second season, depending on the variety and tenacity of type of weeds present.

By year three and beyond, your rain garden plants will begin to mature and will out-compete the weeds. Occasionally, weeding isolated patches might still be needed.

After each growing season, the stems and seed heads can be left for winter interest, wildlife cover and bird food.

Once spring arrives and new growth is 4 to 6 inches tall, cut all tattered plants back. If the growth is really thick, hand-cut the largest plants and then use a string trimmer to mow the planting back to a height of 6 to 8 inches. Dead plant material can also be removed with a string trimmer or weed whacker (scythe) and composted or disposed of as appropriate.

Appendix A

Plant Material

Sizing and spacing the rain garden

Plant spacing in a rain garden is dependent on a number of variables. The templates are designed assuming that perennials will be either quart or #1 size, shrubs will be no larger than a #3 and that trees will have no greater caliper than 1 inch at time of planting.

Many plants will tolerate the conditions of a rain garden better if they are installed relatively small and have the time to adapt as they grow. This is particularly crucial with woody plants; mature specimens are not appropriate for installation unless they have been growing in similar conditions prior to installation.

Although the spacing in the templates varies due to the particular plants selected, a rule of thumb for perennials is 1 inch on center (o.c.) for a quart and 18 inches o.c. for a #1 (aka 1 gallon). Shrubs that are in a #1 or #2 should be spaced 3 to 4 feet o.c. depending on foliage spread; if #3 shrubs, they should be spaced according to typical planting distance

recommendations for any installation. In all cases, plant the shrub material so that 1/8 of the root ball is above the soil planting medium so that when the 2 inches of mulch is installed around the plants, the rootball is not covered by much mulch.

Trees are typically spaced at a 15 to 20 feet o.c. interval to facilitate their health as they grow. This means that when using trees, the materials under the trees will need to be tolerant of very sunny conditions. Ideally, they will be both sun and shade tolerant or will need to be replaced a few years after installation with shade tolerant species.

Rain garden plant material and templates

The next few pages are example plant lists for sun and part shade and various templates for different types of rain gardens. There are also layouts for different type of homes to determine which garden would be best for your property.

Suggested Plants For Your Rain Garden

Perennials, Grasses and Ferns • Part Shade/Shade

Scientific Name	Common Name	Description	Sun Tolerant
Ajuga reptans	Carpetbugle	Many cultivars, evergreen groundcover, purple flowers, up to 10" tall in flower, foliage hugs the ground	x
Ageratina altissima	White Snakeroot	Tough plant prefers basic soils	x
Amsonia tabernaemontana	Bluestar flower	3' tall, blue summer flowers, butterfly plant	x
Aquilegia canadensis	Columbine	Reddish flowers, 12-18" tall, freely reseeds	x
Arisaema triphyllum	Jack-in-the-Pulpit	Spring emerging dramatic perennial, red fall fruit	
Aruncus dioicus	Goatsbeard, female form	Large billowing clouds of white, up to 4' tall	x
Asarum canadense	Wild Ginger	Deciduous groundcover, edge plant, heart shaped leaves, up to 8" tall	
Asclepias tuberosa	Butterfly Weed	Bright orange summer flowers, Monarch butterfly larval food	x
Aster novae-angliae	New England Aster	Large billowing clouds of blue-purple flowers in the fall; several cultivars available	x
Botrychium virginianum	Rattlesnake Fern	1-2' shady, moist soil	
Carex glaucodea	Blue Wood Sedge	Flowers brown to reddish. Alternative to liriope	
Carex pensylvanica	Sedge	Grassy foliage, yellow-green flowers, spreads	
Ceratostigma plumbaginoides	Leadwort	Plumbago blue flowers, semi-evergreen, needs good drainage, very drought tolerant	x
Chasmanthium latifolium	Upland Sea Oats	Grassy foliage, attractive seedheads all winter long, habitat plant	x
Cimicifugua racemosa	Black Cohosh, Black Snakeroot	White flowers, wand-like appearance, 2-3' tall	
Dennstaedtia punctilobula	Hay-Scented Fern	1-3' open sunny moist soil, covers large areas	x
Dicentra eximia	Evergreen Bleeding Heart	Ferny foliage 8" tall with pink spring flowers, 8-10" tall	
Echinacea purpurea "Razzmatazz"	Razzmatazz Purple Coneflower	Very showy flowers, double form, summer dark pink flowers, butterflies	x
Elymus canadensis	Canada Wild Rye	Sunny	x
Elymus hystrix	Bottlebrush Grass	Upright, fine texture	x
Elymus virginicus	Virginia Wild Rye	1-5.5' tolerates wide range of conditions	
Eupatorium purpureum	Joe-Pye Weed	2-6.5' high flower Jul-Oct., pink, purple cream	x
Gentiana andrewsii/clausa	Bottle Gentian	Blue upright flowers, butterflies like this	
Geranium maculatum	Spotted Geranium	Pink spring flowers	x
Hemerocallis	Daylily	Spring/summer orange	x

Continued: Perennials, Grasses and Ferns • Part Shade/Shade

Scientific Name	Common Name	Description	Sun Tolerant
Helenium autumnale	Yellow Sneezeweed	Yellow flowers, upright	
Heuchera americana	Alumroot	Evergreen, low foliage, straight species has red/pink flowers (AKA Coralbells), many cultivars	
Iris cristata	Dwarf Crested Iris	Edger, 8-10" tall, light purple early spring flowers	x
Iris fulva	Copper Iris	One of the Louisiana Iris parents, orange late spring flowers, linear foliage, tolerant of wet and dry conditions	x
Iris prismatica	Slender Blue Flag	Linear form, blue late spring flowers	x
Iris siberica	Siberian Iris	Several color cultivars, spreading iris, very tolerant of a range of conditions, spring bloom, "Caesar's Brother" is a darker purple cultivar	x
Iris versicolor	Northern Blue Flag	Tolerant of very wet and drier conditions, medium blue flowers	x
Liatris pilosa	Grass-Leaf Blazing Star or Busy	Purple 1-3.5'	x
Liatrus spicata "Kobold"	Gayfeather or Blazing Star	Purple form of linear flowering perennial, summer flower, clump foliage 12" tall, best in the drier portions of a raingarden	x
Lilium superbum	Turk's Cap Lily	Orange, tall summer flowering bulb	x
Liriope spicata	Creeping Lilyturf	Evergreen, spreading linear groundcover, 12" tall with purple summer flowers	x
Lobelia cardinalis	Cardinal Flower	Long bloom time	x
Lobelia siphilitica	Great Blue Lobelia	Blue summer flowers, sun exposure in mountains OK, needs shade in warmer zones and lower elevations, fragrant	x
Mertensia virginica	Virginia Bluebells	Spring ephemeral, blue flowers, plant with Arum or other fall interest plant such as a late starting Hosta	
Monarda didyma "Marshall's Delight"	Bee Balm	Bright pink flowers, 2-3' tall, mildew resistant, needs half day of sun	x
Monarda fistulosa	Wild Bergamot	1-5.5' pink to purple flowers nut-like fruit	x
Narcissus naturalizing types	Daffodils	Some cultivars such as "Ice Follies" and "Thalia" seem to tolerate wet winter conditions better than others; if you are planting in the upper zones of the garden, plant freely	x
Oenothera fruticosa	Sundrops	Spreading semi-evergreen groundcover, bright yellow flowers in spring	x
Penstemon digitalis	Foxglove Beardtongue	2-3' tall white flowers	x
Penstemon laevigatus	Eastern Smooth Beardtongue	2-3' tall white flowers	x
Phlox divaricata	Woodland Phlox	Semi-evergreen, spreading, 8" tall, flowers 12" tall, fragrant	
Phlox stolonifera	Creeping Phlox	Various cultivars, evergreen groundcover, pink or blue flowers	
Phlox subulata "Emerald Cushion Blue", "Emerald Cushion Pink" or "Candy Stripe"	Thrift, Creeping Phlox	Blue, pink or pink and white striped spring flowers on evergreen mat of foliage, fine texture, butterflies like it	x
Polemonium reptans	Jacob's Ladder	Can be variegated, blue flowers, decidous ground cover	

Continued: Perennials, Grasses and Ferns • Part Shade/Shade

Scientific Name	Common Name	Description	Sun Tolerant
Polygonatum biflorum	Solomon's Seal	Upright shade perennial, 3' tall, yellowish green foliage	
Rudbeckia hirta	Black-Eyed Susan	Annual form of Black-Eyed Susan, state flower of Maryland	x
Sisyrinchium	Blue-Eyed Grass		x
Solidago sempervirens	Seaside Goldenrod	Yellow late summer flowers	x
Solidago juncea	Early Goldenrod	1-4' yellow	x
Symphyotrichum novae-angliae	New England Aster	1-6' violet capule	x
Thalictrum polygamum	Tall Meadowrue	Airy white flowers on 3' stems, delicate texture	x
Tiarella cordifolia	Foamflower	Spring upright white flowers, 8-12" tall, groundcover	x
Tradescantia virginiana	Spiderwort	Long blooming perennial, several color cultivars, 18"-30" tall, reblooms if cut back after first flowering	x
Tripsicum dactyloides	Gamma Grass	Clumping arching small grass, fall inflorescence	x

Shrubs • Part Shade/Shade

Scientific Name	Common Name	Description	Sun Tolerant
Callicarpa americana	Beautyberry	Inconspicuous in winter, bright purple fall fruit, yellow fall color, arching-upright form, coarse texture	x
Cephalanthus occidentalis	Buttonbush	Summer white flowers, coarse texture, likes wet feet	x
Cercis canadensis	Eastern Redbud	Other cultivars OK, pink spring flowers, nitrogen fixer, needs excellent drainage	
Clethra alnifolia	Sweet Pepperbush	6-12' white/pink flowers, very fragrant	
Cornus amomum	Silky Dogwood	Shrubby dogwood, white flowers, upright form, birds like fruit, red fall color, gray winter bark	x
Cornus sericea	Redosier Dogwood	Red twigs in the winter and yellow fall leaf color, white flowers; there is a yellow cultivar, winter fruit for birds	x
Gaylussacia baccata	Black Huckleberry	Low growing shrub, white flowers	
Hydrangea arborescens	Smooth Hydrangea	White summer flowers, upright, 3-4' tall, cut back in late spring, blooms on new wood; "Annabelle" is a tried and true cultivar	x
Hydrangea quercifolia "PeeWee"	Dwarf Oakleaf Hydrangea	Very drought tolerant, white summer flowers, red fall color, coarse texture	x
Hypericum densiflorum	St. Johns Wort	Yellow flowers 1.5-6', blooms small but dense	x
Ilex glabra "Nana" or "Densa"	Dwarf Inkberry	Fine texture, evergreen shrub, takes shearing well	x
Ilex glabra "Shamrock"	Shamrock Inkberry	Fine texture, evergreen shrub, takes shearing well, wildlife plant	x
Ilex opaca	American Holly	Many cultivars, grows in sun and shade, evergreen, wildlife plant, screening	x
Ilex verticillata	Winterberry	Needs one male for every 6 females [ie "Afterglow" (female) and "Jim Dandy" (male)], showy winter red fruit, wildlife plant	x

Continued: Shrubs • Part Shade/Shade

Scientific Name	Common Name	Description	Sun Tolerant
Itea virginiana "Henry's Garnet"	Henry's Garnet Virginia Sweetspire	Medium size arching shrub (3-5' tall and wide), white spring flowers, burgundy red fall color, dark red winter stems, butterfly and bird plant	x
Kalmia angustifolia	Sheep Laurel	Evergreen, similar to Mountain Laurel but shorter	x
Kalmia latifolia	Mountain Laurel	Needs good drainage, evergreen, white flowers in late spring	x
Kalmia latifolia	Dwarf Mountain Laurel	Needs good drainage, evergreen, white flowers in late spring; Tiddlywink buds are redder with pronounced dots on flowers than the white flowering "Elf" form	x
Lindera benzoin	Northern Spicebush	Yelllow flowers scarlet berries 6.5 to 16'	
Myrica pensylvanica	Northern Bayberry	Fine-medium texture, birds like this, evergreen, fragrant	x
Rhododendron atlanticum	Coastal Azalea	Fragrant white flowers in April, reblooms, makes colony, native to sandy soils, grows in part sun-sun and can tolerate wet feet	
Rhododendron "Herbert"	Herbert Azalea	Orchid purple flowers in spring, fragrant	
Vaccinium corymbosum	Highbush Blueberry	White or pink flowers, blue to black berries	x
Viburnum acerifolium	Mapleleaf Viburnum	Mauvey fall color, maple shaped leaves, white flower	x
Viburnum carlesii	Korean Spice Viburnum	Fragrant white flowers in spring, glossy medium texture foliage, bird favorite	x
Viburnum dentatum	Arrowwood	Upright medium texture, white spring flowers, blue fruit	x
Zenobia pulverulenta	Dusty Zenobia	Evergreen, glaucous foliage, white flowers, "Woodlander's Blue" is on available cultivar, medium shrub	x

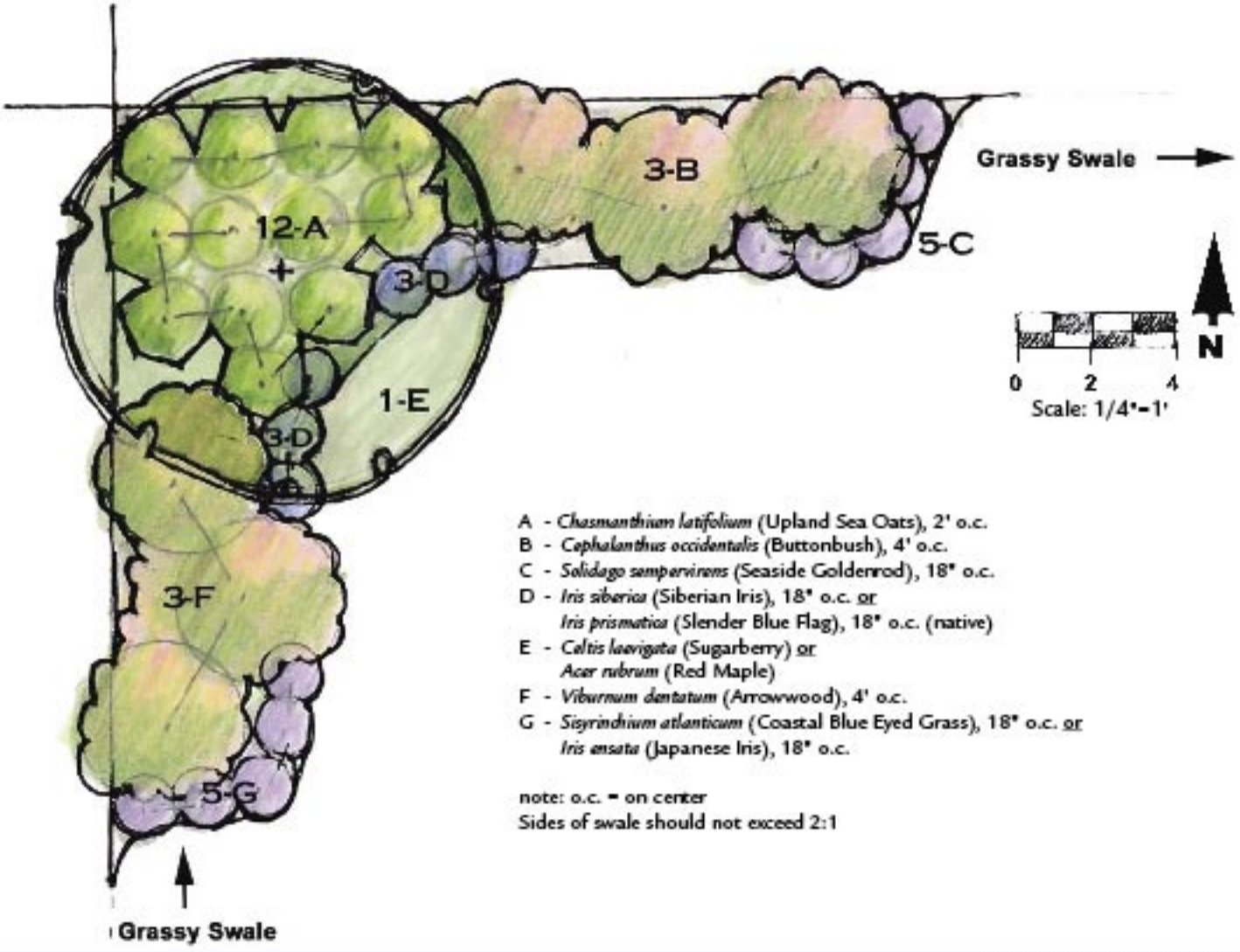
Trees • Part Shade/Shade

Scientific Name	Common Name	Description	Sun Tolerant
Acer rubrum	Red Maple	Many cultivars available, great fall color and fast growing canopy tree	x
Amelanchier canadensis	Serviceberry, Shadblow	White flowers in spring, red-orange fall color, birds like fruit, gray winter bark	
Betula nigra "Heritage" or "Dura-Heat"	Heritage or Dura-Heat River Birch	Salmon and gray exfoliating bark, pendulous habit	x
Carpinus caroliniana	American Hornbeam	Understory tree, yellow fall color, smooth gray bark	
Celtis laevigata	Sugarberry	Upright, smooth gray bark, shade tree	x
Chionanthus virginicus	Fringetree	White spring flowers, yellow fall color, gray winter bark; females make olive like drupes	x
Cornus alternifolia	Alternate-Leaf Dogwood	Understory tree/shrub, white spring flowers, red fall color	
Cornus florida	Flowering Dogwood	Many cultivars available, white spring flowers, red fall color and red fruit, only suitable for well drained situations	
Hamamelis virginiana	Witchhazel	Yellow flowers, yellow-orange-red fall color	
Nyssa aquatica	Swamp Tupelo	Coastal areas and south of Washington DC only	x

Rain Garden Templates

The following rain garden templates are courtesy of the Low Impact Development Center.
More templates are available at:
www.lowimpactdevelopment.org/raingarden_design/templates_SunCoast.htm
www.lowimpactdevelopment.org/raingarden_design/templates_ShadeCoast.htm

Corner Rain Garden
150 SF · Full Sun
Coastal Plain · All Zones



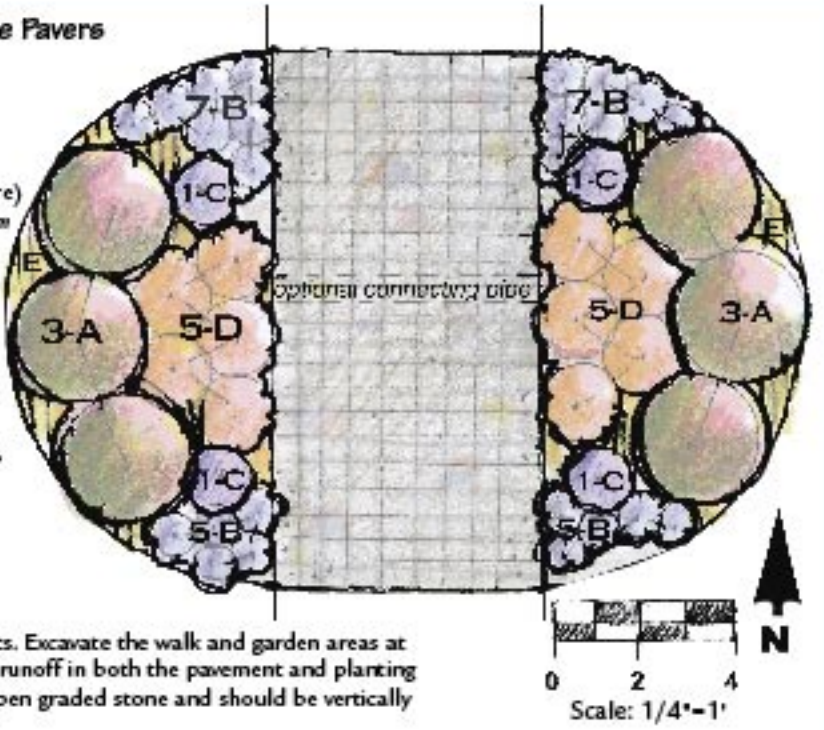
A - *Chasmanthium latifolium* (Upland Sea Oats), 2' o.c.
B - *Cephalanthus occidentalis* (Buttonbush), 4' o.c.
C - *Solidago sempervirens* (Seaside Goldenrod), 18" o.c.
D - *Iris siberica* (Siberian Iris), 18" o.c. or
Iris prismatica (Slender Blue Flag), 18" o.c. (native)
E - *Celtis laevigata* (Sugarberry) or
Acer rubrum (Red Maple)
F - *Viburnum dentatum* (Arrowwood), 4' o.c.
G - *Sisyrinchium atlanticum* (Coastal Blue Eyed Grass), 18" o.c. or
Iris ensata (Japanese Iris), 18" o.c.

note: o.c. = on center
Sides of swale should not exceed 2:1

Plant garden templates courtesy of the Low Impact Development Center · More templates available at www.lowimpactdevelopment.org

Entry Rain Garden Flanking Walk with Permeable Pavers

113 SF garden, 72 SF pavers · Full Sun
Coastal Plain · All Zones



Choose one kind of plant for each letter

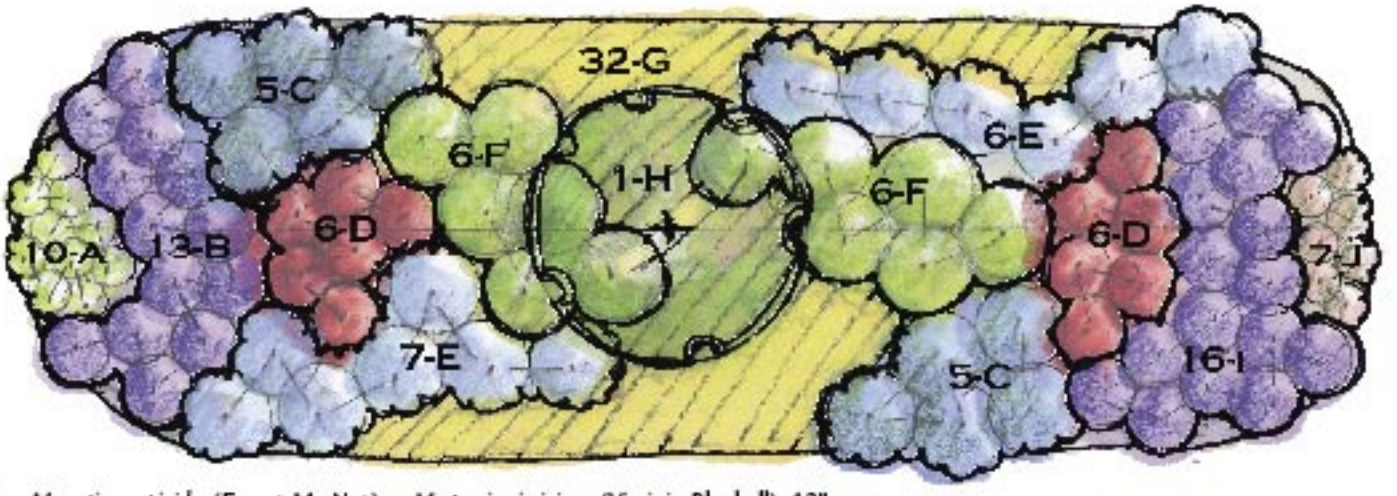
A - *Itea virginiana* "Little Henry" 3' o.c. (Dwarf Virginia Sweetspire) or *Ilex glabra nana* (Dwarf Inkberry; keep clipped) or *Tripsacum dactyloides* (Gamma Grass)
B - *Phlox subulata* "Emerald Cushion Blue" 12" o.c. (Creeping Phlox) or *Iris cristata* (Dwarf Crested Iris)
C - *Liatris spicata* "Kobold" (Gayfeather) or *Echinacea purpurea* "Razzmatazz" (Purple Coneflower)
D - *Aster novae-anglia* "Purple Dome" 2' o.c. (Purple Dome New England Aster) or *Asclepias tuberosa* (Butterfly Weed) or *Hemerocallis* "Happy Returns" (Dwarf Hybrid Daylily, yellow, reblooming)
E - *Narcissus* "Thalia" or "Ice Follies," 4" o.c., total 30 bulbs (White Daffodils)

note: o.c. = on center

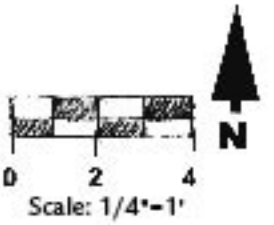
Direct water into the garden from adjacent turf and downspouts. Excavate the walk and garden areas at the same time and install all soil improvements for treating the runoff in both the pavement and planting areas as the same time. The paver area will be underlain with open graded stone and should be vertically separated from the rain gardens with a curb.

Butterflies Swale Low-Maintenance Rain Garden

250 SF · Part Shade/Shade · Coastal Plain



A - *Myosotis scorpioides* (Forget-Me-Not) or *Mertensia virginiana* (Virginia Bluebell), 12" o.c.
B - *Gentiana andrewsii* (Bottle Gentian) or *Aster cordifolius* (Blue Wood Aster), 18" o.c.
C - *Amsonia tabernaemontana* (Blue-Star Flower)* 2' o.c.
D - *Lobelia siphilitica* (Great Blue Lobelia), 18" o.c.
E - *Phlox divaricata* (Woodland Phlox), 2' o.c.
F - *Aruncus dioicus* (Goatsbeard), 2' o.c.
G - *Elymus hystrix* (Bottlebrush Grass), 15" o.c. or (52) *Ajuga reptans* (Carpetbugle), 12" o.c.
H - *Aesculus parviflora* (Bottlebrush Buckeye)
I - *Aster cordifolius* (Blue Wood Aster) or *Tradescantia virginiana* (Spiderwort), 18" o.c.
J - *Viola papilionacea* (Common Blue Violet), 12" o.c. or *Dicentra eximia* (Hardy Bleeding Heart)

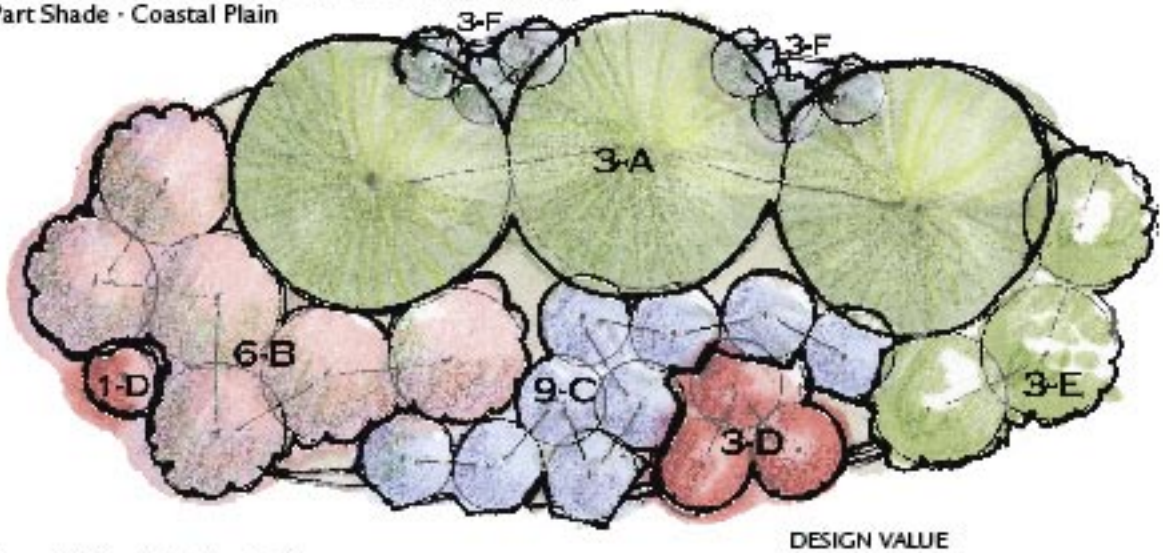


note: o.c. = on center
* needs half day of sun for best flowering; if deep shade, substitute a fern e.g. *Polystichum acrostichoides* (Christmas Fern)

Plant garden templates courtesy of the Low Impact Development Center · More templates available at www.lowimpactdevelopment.org

Red, White and Blue Low-Maintenance Border Rain Garden

200 SF · Full Sun/Part Shade · Coastal Plain



PLANT CHOICE

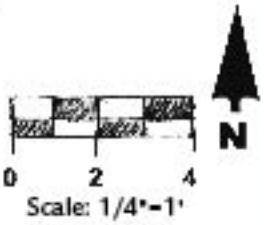
A - *Vaccinum corymbosum* (Highbush Blueberry), 6' o.c. or
Viburnum carlesii (Korean Spice Viburnum) or
Viburnum dentatum "Blue Muffin" (Compact Arrowwood)
B - *Zenobia pulverulenta* (Dusty Zenobia), 3' o.c.
C - *Amsonia hubrechtii* (Blue-Star Flower), 2' o.c.
D - *Lobelia cardinalis* (Cardinal Flower), 2' o.c. or Asclepias tuberosa (Butterflyweed), 2' o.c.
E - *Hydrangea quercifolia* "Pee Wee" (Dwarf Oakleaf Hydrangea), 3' o.c., or
Hydrangea arborescens (Smooth Hydrangea), 3' o.c.
F - *Iris versicolor* (Northern Blue Flag), 18" o.c.

DESIGN VALUE

White, Blue, Red

Blue
Red
White/Red

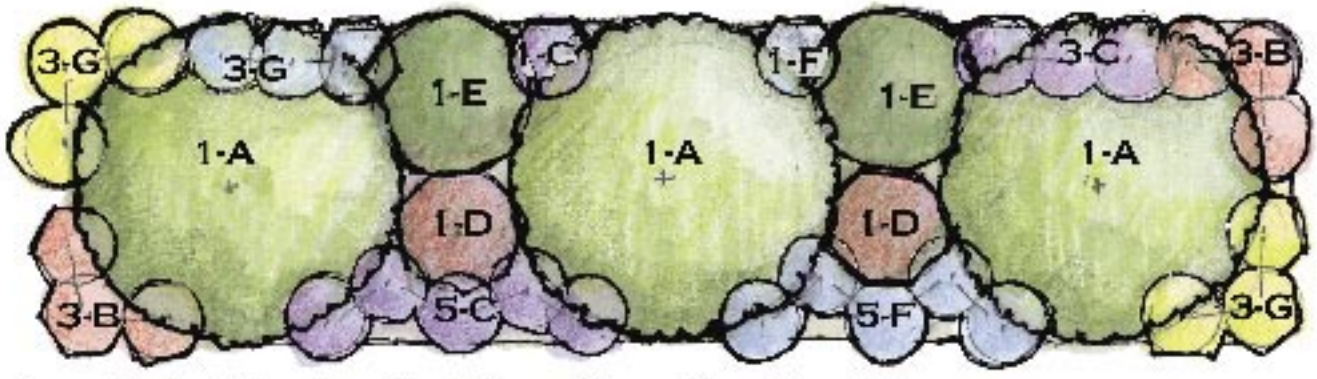
Blue



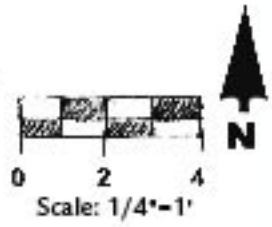
note: o.c. = on center

Screening Rain Garden

256 SF · Partial Shade/Shade
Coastal Plain · Zones 5b-8a



A - *Ilex opaca* (American Holly, various cultivars), 10' o.c. or *Illicium parviflorum* (Anisetree)**
B - *Aquilegia canadensis* (Columbine), 2' o.c.
C - *Tradescantia virginiana* (Spiderwort), 2' o.c. or *Polemonium reptans* (Jacob's Ladder), 2' o.c.
D - *Kalmia angustifolia* (Sheep Laurel) or *Leucothoe fontanesia* "Compacta" (Compact Drooping Leucothoe) or *Myrica pensylvanica* (Northern Bayberry)*
E - *Ilex glabra* "Shamrock" (Inkberry)
F - *Tiarella cordifolia* (Foamflower), 1' o.c. (use 4 plants for every one shown) or *Astilbe* "Deutschland" 2' o.c.
G - *Polystichum acrostichoides* (Christmas Fern), 2' o.c. or *Woodwardia areolata* (Netted Chain Fern), 2' o.c.

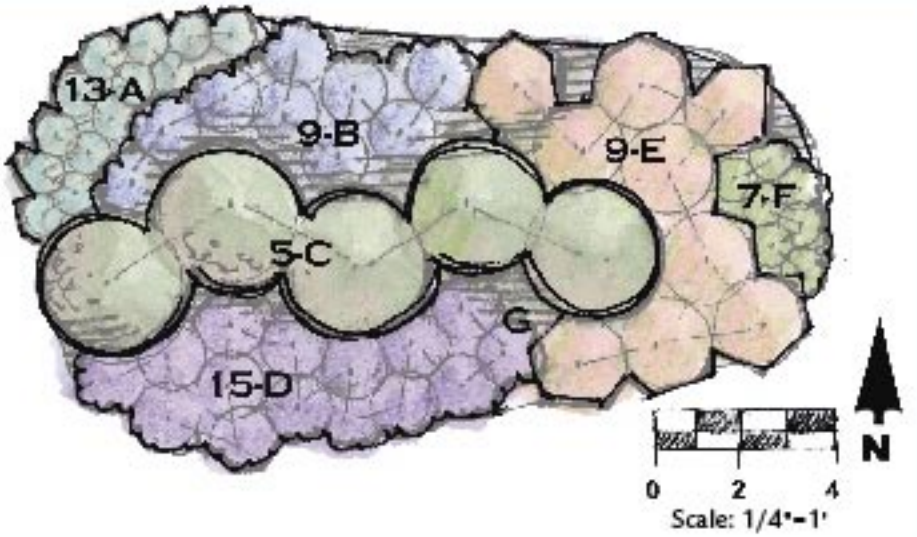


note: o.c. = on center * Needs partial sun/shade, not full shade ** Zone 7 (and sheltered Zone 6) and warmer

Plant garden templates courtesy of the Low Impact Development Center · More templates available at www.lowimpactdevelopment.org

Divider Rain Garden

130 SF · Part Shade/Shade
Coastal Plain · Zones 5a-7b

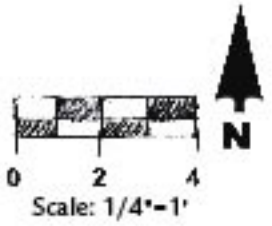


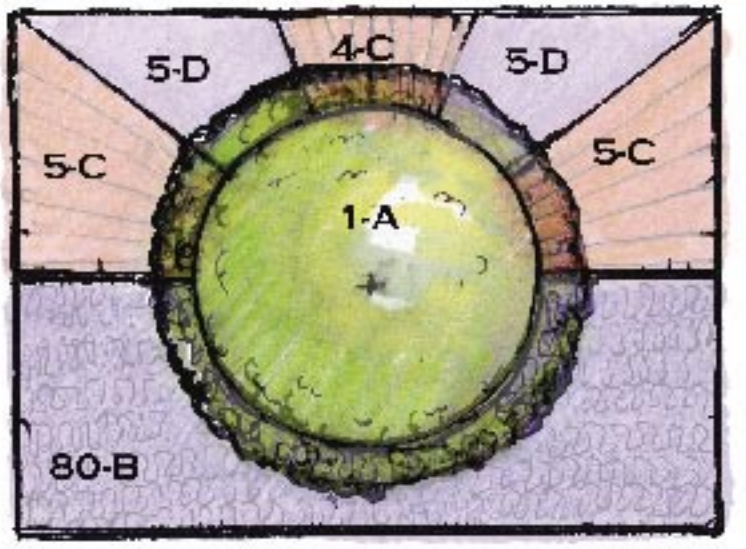
A - *Tiarella cordifolia* (Foamflower), 12" o.c.
B - *Cimicifuga racemosa* (Black Cohosh), 18" o.c.
C - *Rhododendron atlanticum* (Coastal Azalea), 3' o.c.
D - *Tradescantia virginiana* (Spiderwort), 18" o.c.
E - *Polygonatum biflorum* (Solomon's Seal), 2' o.c.
F - *Viola labridorica* (Labrador Violet), 12" o.c.
G - *Narcissus* naturalizing type (Daffodils), 4" o.c.

note: o.c. = on center
note: G indicates daffodils
4" o.c., total 200 bulbs

One Nice Tree

192 SF 16'x12' · Full Sun
Coastal Plain · Zones Vary





POSSIBLE PLANTS

A - *Magnolia grandiflora* "Little Gem" (Dwarf Southern Magnolia)
Betula nigra "Little King" (Dwarf River Birch)
Nyssa aquatica (coastal areas and S. of Wash. DC only) (Swamp tupelo)
Ilex verticillata (Winterberry) (plant 1 male and 1 female in the same hole) or *Ilex decidua* (Possumhaw) (male and female)

B - *Ajuga reptans* (Carpetbugle), 12" o.c.
Ceratostigma plumbaginoides (Leadwort), 12" o.c.
Oenothera fruticosa (Primrose), 12" o.c.
Liriope spicata (Liriope), 12" o.c.

C - *Iris fulva* (Copper Iris), 18" o.c.
Iris versicolor (Blue Flag Iris), 18" o.c.
Iris siberica (Siberian Iris), 18" o.c.

D - *Iris* La. Hybrid (Louisiana Hybrid Iris, many colors), 2' o.c.
Amsonia hubrechtii (Bluestar), 2' o.c.

DESIGN VALUE

For fragrance, evergreen (zone 6b-8)
Interesting winter bark (zone 5B-8)
Interesting form and fall color (zone 7a-8)

Attractive fruit, wildlife value (zone 5a-7b; *Ilex decidua* OK zone 6 and warmer)
Groundcover, evergreen, purple flowers (all zones)
Groundcover, semi-evergreen, blue flowers (all zones)
Native groundcover, yellow flowers (all zones)
Evergreen/semi-evergreen, blue flowers (all zones)
Native wetland iris, orange flowers (all zones)
Native wetland iris, blue flowers (all zones)
Iris which spreads, white or purple flowers (all zones)
Wetland iris, purple, mauve, yellow or blue flowers (all zones)
Fine texture, blue flowers, yellow fall color (all zones)

note: o.c. = on center

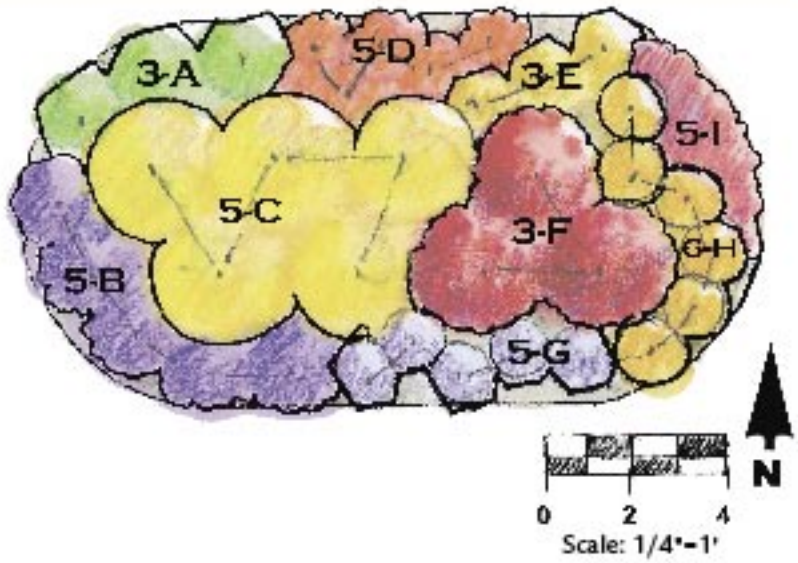
Plant garden templates courtesy of the Low Impact Development Center · More templates available at www.lowimpactdevelopment.org

Herbaceous Perennials Rain Garden

130 SF · Tall and Bold Summer-Fall Rainbow
Part Shade/Shade · Coastal Plain · All Zones

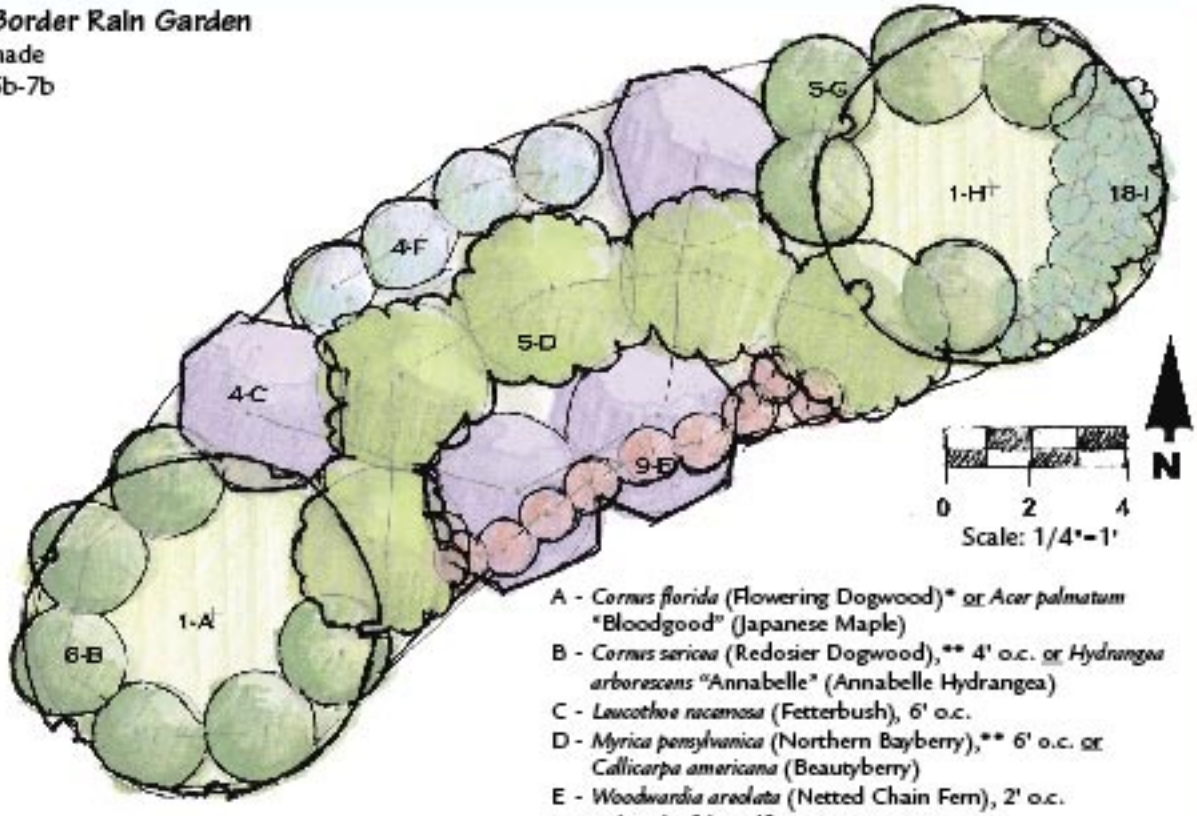
A - *Polygonatum biflorum* (Solomon's Seal), 2' o.c.
B - *Penstemon laevigatus* (Eastern Smooth Beardtongue), 2' o.c.
C - *Cimicifuga racemosa* (Black Snakeroot), 3' o.c.
D - *Scenecio aureus* (Golden Ragwort),* 18" o.c.
E - *Tradescantia virginiana* (Spiderwort), 18" o.c.
F - *Helenium autumnale* (Yellow Sneezeweed)* or *Thalictrum polygamum* (Tall Meadowrue) or *Hosta* "Sum and Substance," 3' o.c.
G - *Arisaema triphyllum* (Jack-in-the-Pulpit), 18" o.c.
H - *Lilium superbum* (Turk's Cap Lily), 18" o.c.
I - *Aquillegia canadensis* (Wild Columbine), 18" o.c.

note: o.c. = on center
* *Asclepias tuberosa* (Butterfly Weed) OK if half day of sun
** Needs part sun



Trees and Shrubs Border Rain Garden

550 SF · Part Shade/Shade
Coastal Plain · Zones 5b-7b



note: o.c. = on center
* This end of the garden should be slightly higher than the "H" end so that the dogwood/maple are not sitting in water after a rain event
** Partial shade or deciduous shade OK, not full shade

A - *Cornus florida* (Flowering Dogwood)* or *Acer palmatum* "Bloodgood" (Japanese Maple)
B - *Cornus sericea* (Redosier Dogwood),** 4' o.c. or *Hydrangea arborescens* "Annabelle" (Annabelle Hydrangea)
C - *Leucothoe racemosa* (Fetterbush), 6' o.c.
D - *Myrica pensylvanica* (Northern Bayberry),** 6' o.c. or *Callicarpa americana* (Beautyberry)
E - *Woodwardia areolata* (Netted Chain Fern), 2' o.c.
F - *Kalmia latifolia* "Elf" or "Minuet," 3' o.c.
G - *Clethra alnifolia* "Ruby Spice," 4' o.c.
H - *Chionanthus virginicus* (Fringetree)
I - *Polystichum acrostichoides* (Christmas Fern), 18" o.c.

Plant garden templates courtesy of the Low Impact Development Center · More templates available at www.lowimpactdevelopment.org

Appendix B

Simple Soil Tests

Two small tests can ensure your soil can handle a rain garden

1. Percolation test

This simple procedure can determine your soil's porosity, or infiltration rate — how fast water drains into your soil.

◆ Dig a hole about 6 inches deep where the rain garden is to go and fill the hole with water. If the water takes more than 24 hours to soak in, the soil is not suitable for a rain garden.

Or...

◆ Remove both ends from a 46-ounce can (like a large juice can). Mark a line 2 inches from the bottom end. Pound the can 2 inches deep into the soil, so that the line is level with the ground surface. Pour one quart of water into the can. Time how long it takes to drain into the soil. Refer to the table below to determine your soil's porosity and drainage conditions.

Drainage Time	Soil Porosity	Drainage Conditions
Less than 4 minutes.	Excellent percolations and air circulation.	This soil offers the best drainage conditions for planting a rain garden.
4 to 10 minutes.	Somewhat compact or dense soil.	Acceptable drainage for a rain garden but slower; may need to aerate or augment soil.
Over 10 minutes.	Overly compact or dense.	Very poor drainage. This soil offers the most challenging conditions. Must augment soil, mill, and aerate.

2. Test for clay

The amount of clay in your soil can affect drainage. Take a handful of soil and dampen it with a few drops of water. After kneading the soil in your fingers, squeeze the soil into a ball.

If it remains in a ball, then work the soil between your forefinger and thumb, squeezing it upward into a ribbon of uniform thickness. Allow the ribbon to emerge and extend over the forefinger until it breaks from its own weight. If the soil forms a ribbon more than an inch long before it breaks, and feels more smooth than gritty, the soil is not suitable for a rain garden.

The soil map on line at http://websoilsurvey.nrcs.usda.gov/app/ or http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx is a starting point for assessing what type of soil you might find in your yard.

However, the soil on a small plot of yard can be very different from the soil indicated on the map. Use the simple soil test described here for a more accurate representation of the soil in the possible rain garden location.

A frosted rain garden in autumn.

More information about sampling and testing lawn and garden soil can be obtained at the Worcester Soil Conservation Service at 410-632-0939, ext. 3.

Rain Gardens

A How-To Manual for Homeowners

Your Personal Contribution to Cleaner Water

This manual is a product of the Town of Ocean City, Maryland, and the Maryland Coastal Bays Program. Funding sources are the Critical Area and Stormwater Management Mitigation funds and Implementation Grant from the Maryland Coastal Bays Foundation.

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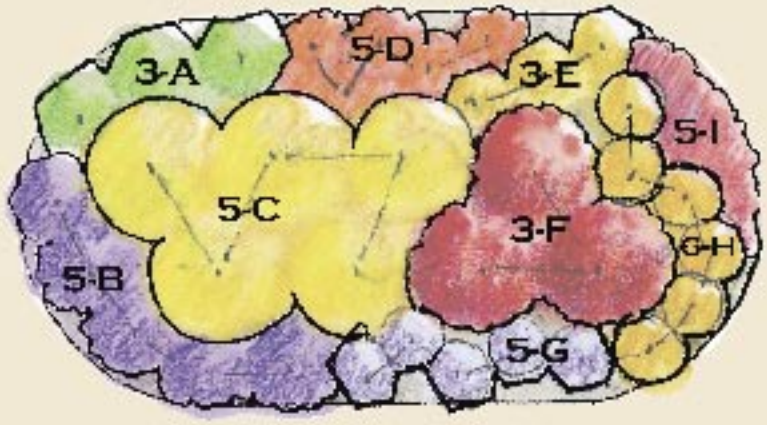

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