

## Rainscaping 2

Course Introduction: <https://www.youtube.com/watch?v=1JCYRzi7Gol>

Rusty Schmidt's webinar (5/3/16): <https://www.youtube.com/watch?v=jx9g1vcNU44>

### Modules:

This course includes the following modules (click title to jump to module):

[6: Raingarden Soil & Size](#)

[7: Conveyance Systems](#)

[8: Raingarden Installation](#)

[9: Plant Selection](#)

## Soil Basics

\*See chapter 3 of the Raingarden textbook

How does soil affect the success of a project? Good question! The soil at your site is a key ingredient to rain garden success. As you prepare to install your rain garden, the first step is to assess the quality of the soil at the site. Whether you will amend the soil with compost or peat moss depends on what you find.

Assessment questions:

Is the soil loose or compacted?

Is it sandy and well-drained or clayey and poorly drained?

Is there topsoil or was it removed when the land was graded?

You will want to analyze your soil for infiltration and to match plant selections to it.

Soil types:



clay soil—sticks together



sandy soil—crumbles easily, allows for drainage



loamy soil—a mixture of sand, clay and organic matter  
crumbles easy, allows for drainage, and has nutrients for plants

If you want a more detailed analysis of your soil composition, you can submit a sample to the University of Minnesota's Soil Testing Laboratory. For \$17, they will analyze soil from residential yards and gardens. Learn more at: [soiltest.cfans.umn.edu](http://soiltest.cfans.umn.edu)

### **Percolation (or "Perc") Test**

A percolation test helps determine how well water infiltrates the site of a rain garden. The idea of the test is to determine the depth for a garden that will drain completely in 24 hours after a rain.



Here's how to conduct a Perc Test:

- 1) Find the approximate center of your rain garden.
- 2) Dig a hole 12 inches deep and 6 inches in diameter.
- 3) The soil surrounding the hole should be saturated (i.e., wet). So it's good to conduct perc tests after a rain. If not, fill the hole with water and soak the land surrounding the site with a garden hose.
- 4) Once the hole has drained, fill it completely with water. Come back to the site in several hours and measure the drainage. You are looking for at least ½ inch drainage per hour.

1 hr return measurement (in.) x 24 hrs = Rain garden depth

Example: ¼" X 24 hrs = 6" deep

Percolation Test	
Time	Depth
0 hours	
1 hour	
2 hours	
3 hours	
4 hours	

Is infiltration possible at this site? If not, you will need to rethink and adjust your plan.



## Conveyance Systems

Conveyance systems move water from its source to a rain garden. Gravity is a friend as it naturally moves water downhill. As a designer, you can assist gravity, directing water using these conveyance methods.



Rain chain—these decorative chains, which you attach to the ends of gutters, direct water down the chain. They function like downspouts, but they are more aesthetically pleasing and can add interest to a site.



Underground pipe—this system moves water through a downspout and into a drain box, which is joined to a pipe that stretches underground to the rain garden. This option is flexible and appropriate for a variety of sites, as pipes can be placed under grass, sidewalks, and driveways, for example.

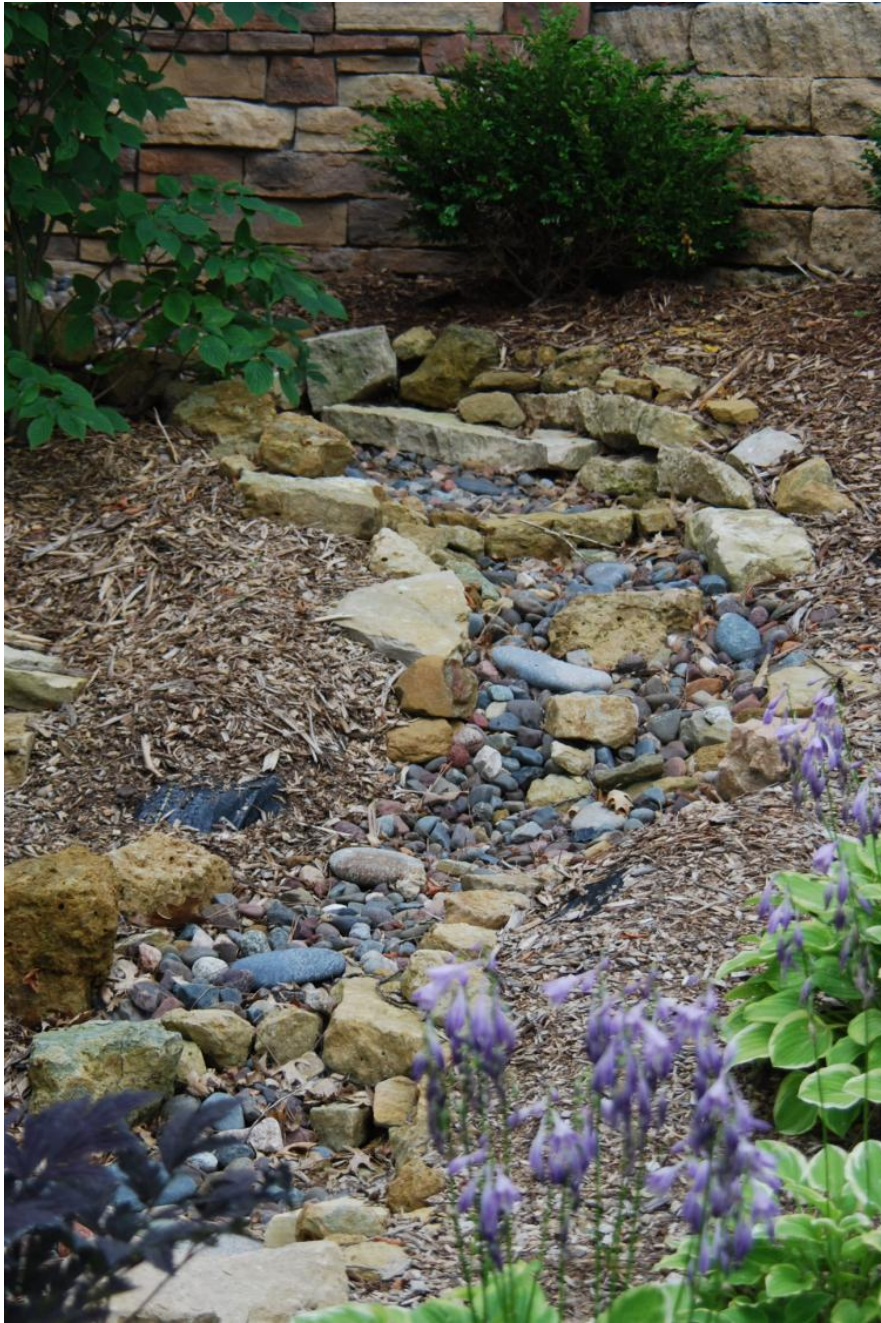


Grass swale—a flat, grassy channel slows water and allows for some infiltration as the water makes its way to the garden.



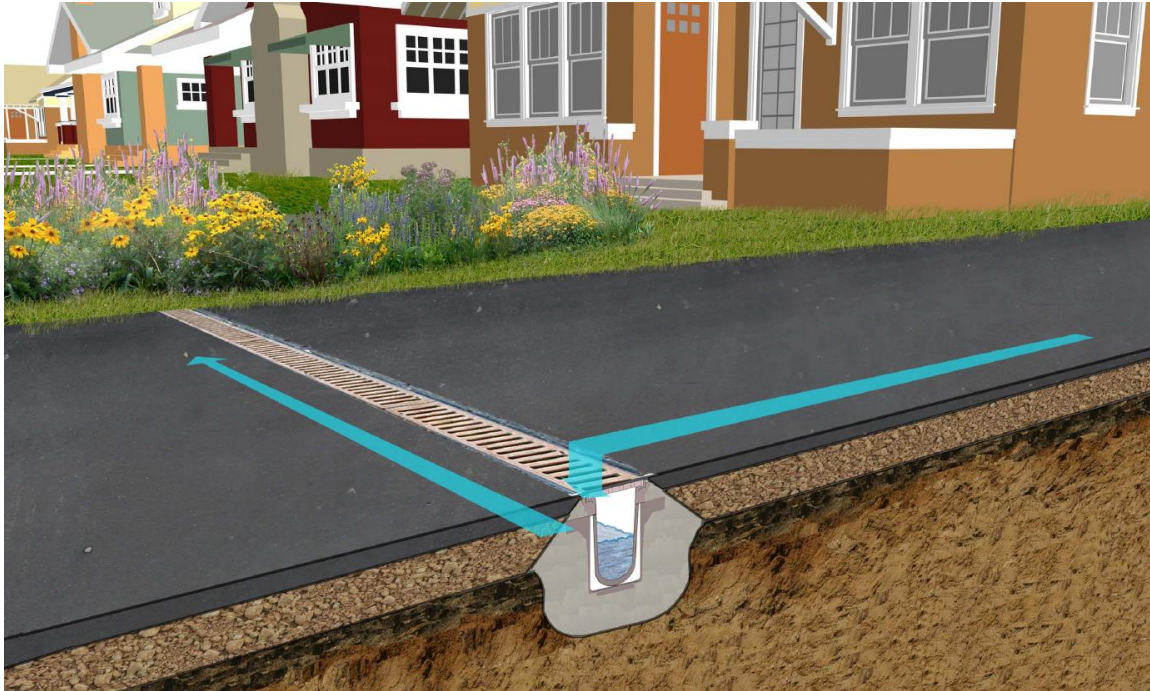


Creek bed—A dry creek bed, built at a slope, is an aesthetically pleasing way to channel water downhill to a rain garden. Some creek beds incorporate small waterfalls as an added feature.

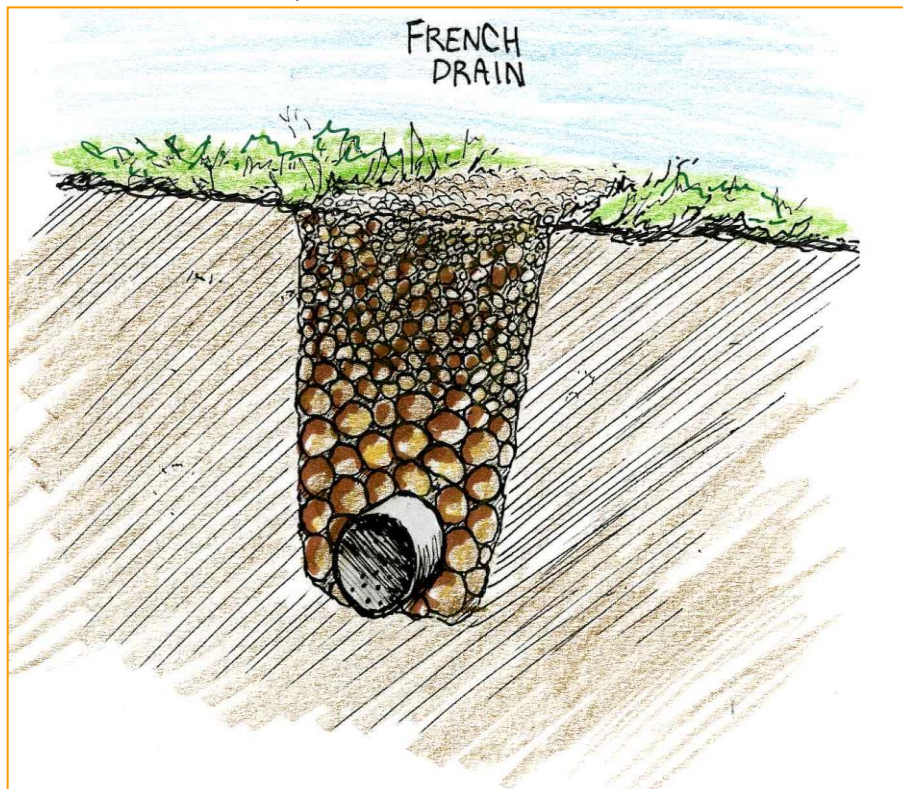




Trench or channel drain—this option helps move water from large stretches of pavement, such as a driveway or parking lot.



French drain—a French drain is trench, filled with gravel, that houses a perforated pipe. This option is used to move water away from foundations.



## Learning Activity—Option 1

Using details of what you know about conveyance systems, create a sketch to design a system for the following situation:

If water is entering a basement as it pools near the house, which conveyance systems would you consider to dry out the basement?

After sketching the system, create a materials list of what will be needed to construct this system. Then list the tools you will need to build the project. What kind of factors would make the project easier or harder to construct?

## Raingarden Design

Participants will review the process of locating raingardens, learn how big and deep raingardens should be, how to dig raingardens, and other details of the installation process. Class participants will conduct the calculations that are key to raingarden planning for three sites.

After last class, the students know approximately the location of the garden, however the questions now are how big and or deep does this garden need to be constructed? Using the previous class exercise with new information provided by the instructor, determine the size and depth of a garden.

How might these construction details make it necessary or advantageous to move the garden location?

How much work will it take to construct this garden? If labor seems excessive, how would the design be better if modified to a new location or shape?

How would you modify the raingarden- change size, location, orientation- to make it easier, cheaper, more effective, or a better fit for the location, budget and homeowner preference?

## Raingarden Installation

\*See chapter 4 of the Raingarden textbook

Once you've determined the location, size, and depth of your raingarden, it's time to install!

In addition to tools, the materials required include:

Compost—for soil enrichment





Plants—purchase plant sizes based on your budget. Larger plants establish the garden faster, but they are more expensive.



Double shredded hardwood mulch



Ready? Here are the steps for raingarden installation. Be sure to recruit volunteers to help—especially when installing a large garden with lots of plants.

Step 1: Layout the shape of your garden using rope.





Step 2: Remove existing turf.



Step 3: Dig, removing dirt to make the rain garden the depth you calculated for it. Make sure you have an entry point for the water and an exit point.





Step 4: Amend soil with compost or peat moss as needed.



Step 5: Prepare the soil for planting.





Step 6: Check your work, confirming the depth and level of the garden.



Step 7: Add mulch and then plant. Mulching first helps prevent soil compaction when walk on the garden to plant.



Here's a tip – Plant your biggest pot first and then use the empty pot to hold the mulch you are moving out of the way for the next plant. OR if you are planting with no help and you can limit the amount of foot traffic in the garden, you can plant first then mulch so long as you avoid compaction. If you do decide to plant first, a great tip is to plant the plant and tip the pot over the plant upside down. When you are done planting, the garden will look like a garden of upside down pots. Now you can throw the mulch over the top without the concern of burying plants, running them over, or losing plants. Once the mulch is done, pick up the pots for recycling.

## Plant Selection

\*See chapters 5, 6, and 7 in the Raingarden textbook

## Learning Activity

Bring a plant list into class to use that the basis for discussion and continued planning. You can create this list based on your own interests or find one online.

Many homeowners worry about the plants to include in their raingarden. They have many questions, so plan to spend time discussing their options.

- Can any plant be used?
- Will sight lines be an issue? Do you need to block a view or provide a view?
- What types of plants would you use to provide a living fence between neighbors?
- How about a tree or two? What are the issues in planting a tree and can you plant it in the bottom of the garden?
- Are there plants that you should never consider in a raingarden? Or only consider for specialty locations?
- Would you consider planting a raingarden under an existing large oak tree and if so, how would you design the garden?

Remember: you do not need to have the answers to all these questions during a site consultation. It's perfectly acceptable to take notes, do some research, and get back to the clients. In addition, working in tandem with a master gardener can help provide the content knowledge you might be lacking when it comes to plants. There are many resources available to you!

### Native Plants

Native plants are a good choice for raingardens because they:

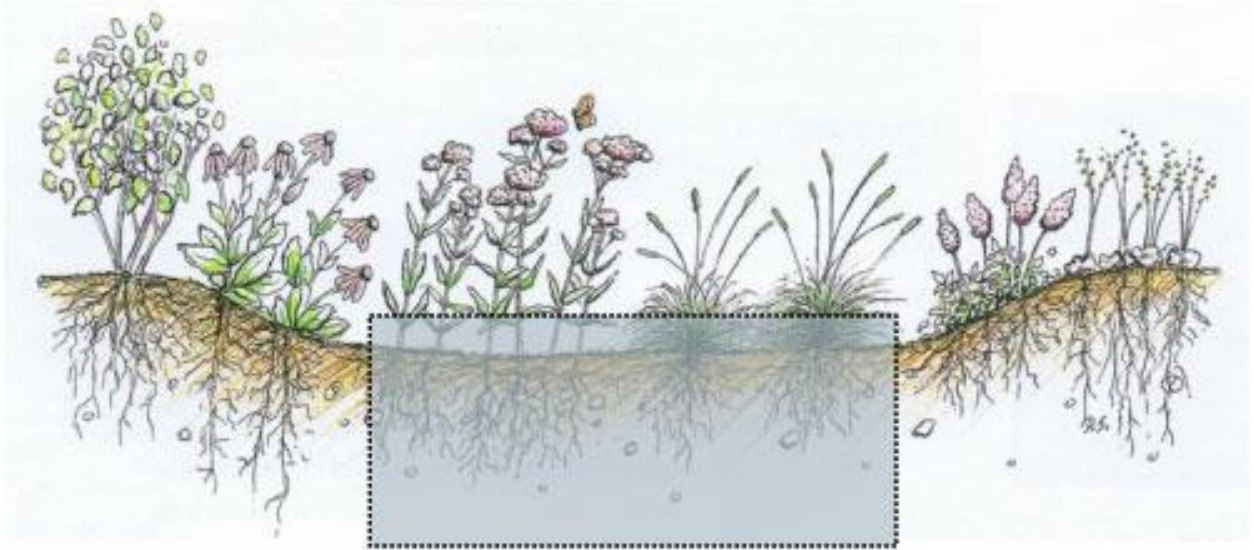
- are adapted to the local climate
- have deep roots that help them survive in the heat of the summer
- are disease resistant
- lose about one third of roots each year, creating small channels that help with water infiltration
- attract wildlife
- do not require water or fertilizer once they are established

Non-natives can also be appropriate for raingardens. In general, when looking for plants, consider these factors:

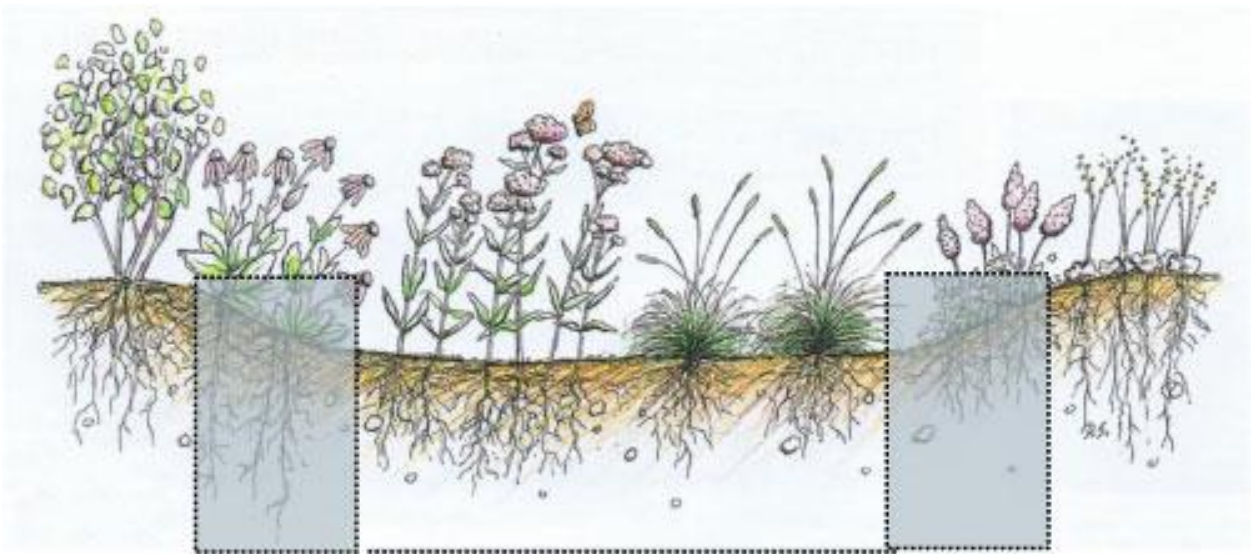
- Moisture variance



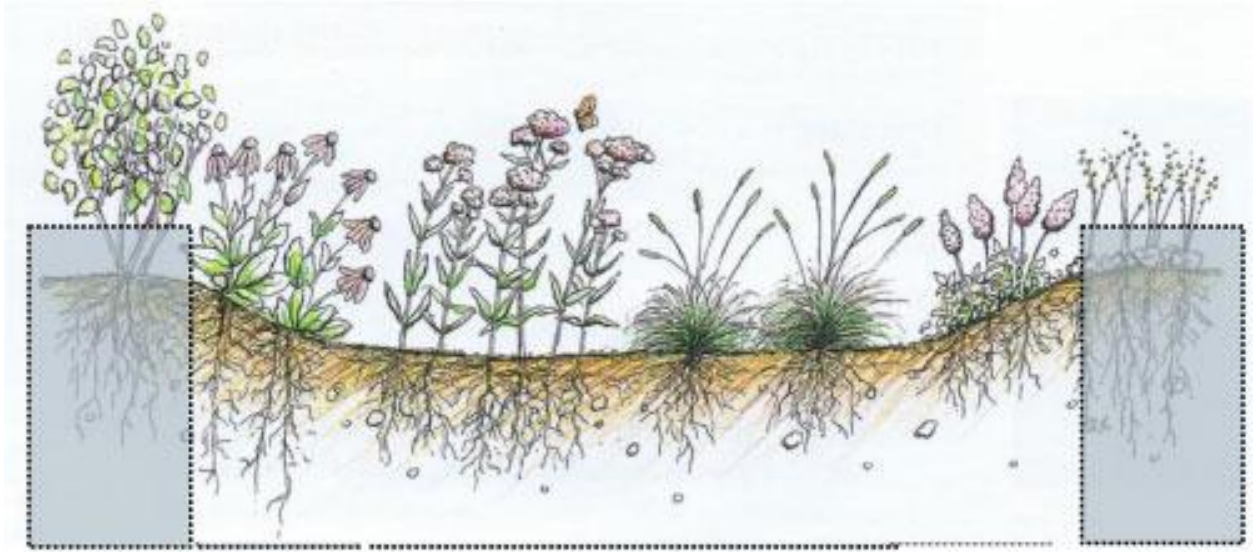
Moist Soil Conditions—Located at the bottom of the raingarden basin



Average to Moist Soil Conditions—Located on the sides of the raingarden



Average to Dry Soil Conditions—Located at the top of the raingarden



- Sun/Shade
  - Full sun = 6+ hours of direct, mid-day sun
  - Light shade = 4-6 hours of direct sun
  - Medium shade = 2-4 hours of direct sun
  - Full shade = less than 2 hours of direct sun, early or late in the day
- Soil drainage, pH, nutrient value
- Bloom Time and Color
  - Choose plants that will bloom in different seasons (spring, summer, fall), in order to keep garden in bloom throughout the year. Also consider how plant look in the winter, while dormant, to add interest during the winter.
- Height and Width
- Wildlife Value
- Purchase Availability

Participants will create their own plant list that is edited from the list they bring to the class.

Another resource: Metro Blooms raingarden information

<http://metroblooms.org/resources/raingarden-info/>