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## 2.4 BUILDING THE RAIN GARDEN

Once the size and location of the garden has been determined, it's time to start building the rain garden. The following sections describe the needed tools, rain garden shapes, routing water to the rain garden, how to remove existing lawn turf, digging and leveling the rain garden, setting the slope and constructing a berm.

### 2.4.1 Tools

These tools may be useful when constructing the rain garden. Power tools can make the work easier, but are not essential.

- Tape measure
- Shovel
- Trowel
- Rake
- Carpenter's level
- Stakes or marking flags
- String
- Downspout Extender (optional)
- Power Tiller (optional)
- Landscape Rock (optional)



Before you do any digging, remember to call 811 at least 48 hours in advance to have underground utilities located. It's the law!





## 2.4.2 Removing Lawn Turf

Many rain gardens are constructed in existing lawns. The time and effort it takes to dig out the garden can be reduced by removing the sod first. Sod removal machines are available for rent at some nurseries and tool rental facilities, but a shovel and some hard work can be just as effective. If removed carefully, the turf grass could be reused for patching bare spots around the lawn.

As an alternative, you can cover the lawn where the rain garden will be located with black plastic, several layers of newspaper or any disposable material that will block sunlight. Over a period of about a week, the grass will die and it can then be tilled to create the rain garden soil. This can even be done in the fall so that the area is ready for garden preparation in the spring. Using this method, it is not necessary to remove the lawn turf.

## 2.4.3 Excavating the Garden

Begin by digging into the ground and removing the existing soil from the area where the garden will be located. You will need to dig down to at least the depth calculated in Section 2.2.2. The garden area should be uniformly deep and have a flat, level bottom.

Now is the time to decide if you want to add some organic material such as compost, biosolids or sand to the garden area. Adding organic material can help plants get a strong start by giving them some additional nutrients. It will also help to add more air to the soil and more spaces between soil particles. If existing soil is to be amended or replaced with a higher quality soil mixture (soil amendment), it will be necessary to over-excavate the rain garden and backfill with the new soil.

First, determine how many inches of soil you would like to add to your garden. A minimum of two to three inches of soil is recommended in order to allow for improved root growth. Next, dig the rain garden area to the depth you calculated

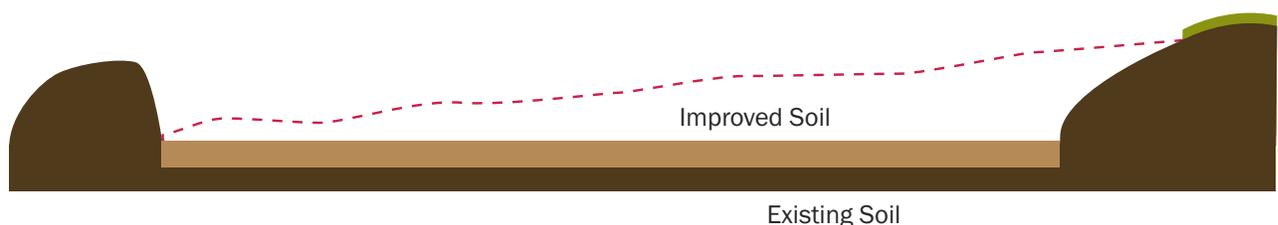


Figure 5. Over-Digging to Add Organic Material

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in Section 2.2.2 then dig down an additional two to three inches to loosen the soil in the bottom of the garden. Remove about half of this loosened soil so that the garden is about an inch to an inch and a half deeper than it will ultimately be. Incorporate organic material by mixing it with the loosened soil in the bottom of the garden area or fill the garden area with the new soil so that the surface of the soil is at the depth calculated in Section 2.2.2. An example is shown in Figure 5.

Once you have dug out the entire garden area and added any soil amendments, use a tiller, shovel or hoe to loosen the soil that may have become compacted as you walked over it. This will help to promote deep root growth and infiltration of water.

You can check to see if the bottom is level by laying a board across the garden floor and moving the board around to find high and low spots. You can add back soil to fill in low spots and remove additional soil to level out high spots. The excess soil can be used to make a berm around the garden area to help contain rain water runoff. Excess soil can be placed along the downhill edge and sides of the rain garden.

You may contact Fort Wayne City Utilities for more information about soil amendments.

#### 2.4.4 Developing Rain Garden Slopes

You have just dug out the footprint of your rain garden. Within this footprint, you will need to develop the side slopes of the garden. The sides of the garden should gently slope downward toward the interior of the garden. If the ultimate desired depth for the garden is four inches, the side slopes should be about three times the depth or about 12 inches long (Figure 6). You may need to add some soil to build up these slopes. Because different plants may be more or less tolerant of very wet conditions, you can place plants that like drier soil higher up on the slopes and plants that like more water in the deeper part of the garden.

Figure 6. Sloping the Sides of a Rain Garden

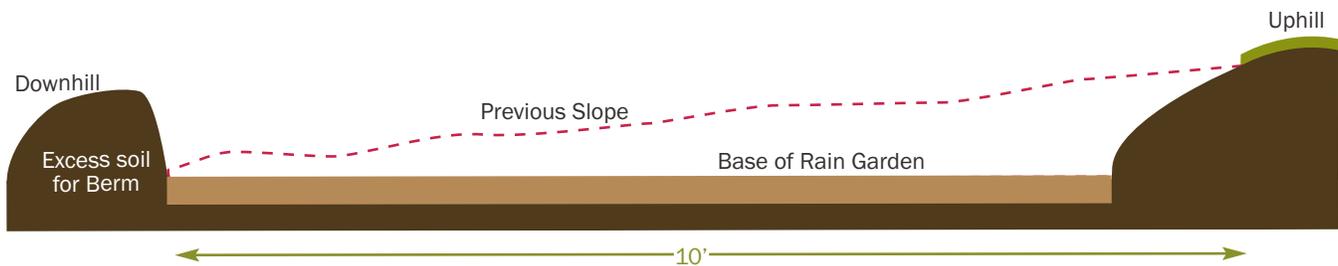




### 2.4.5 Building the Berm

If you are creating a rain garden on a slope, the soil that is removed from the garden location can be used to create a berm on the downhill side. This will create a shallow mound that will hold water in the garden. Extend the berm out and allow it to gradually taper around the sides of the garden. In a flatter yard, you may need to create a berm around the entire garden to help contain water inside.

The berm must be compacted so that it will support the weight of water in the garden. This will also help prevent the berm from eroding if water in the garden overflows. Use a hand tamp to compact the soil for the berm. Grass seed should be planted, or leftover turf grass from the original excavation should be planted on the berm as soon as possible to limit the amount of erosion from the slopes. The berm can also be covered with mulch to help hold it in place.



### 2.4.6 Testing the Garden

Before you begin planting the garden, it is important to test the area that you have prepared to ensure that it will absorb water as required. Take the time to fill the garden completely with water. Fill the garden with water using a hose, and let the water entering the garden run across rocks or some other material that will diffuse the water to avoid causing erosion. Fill the garden to the point where it is about to overflow. Wait 24 hours and check the garden to see how much water has been absorbed.

After 24 hours, there should be very little standing water. However, the garden will be very wet. If you find standing water puddles, these probably indicate low spots in the garden. Check the depth and add soil back to fill the low spots so that they are no deeper than the maximum garden depth that you calculated in Section 2.2.2.

If the garden has not emptied, call City Utilities for suggestions before you begin planting.

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## 2.4.7 Plant Installation

Plant materials are available in a variety of forms. Grasses and flowers come in seeds, pots and plugs. Seeds are not recommended for rain gardens because they take several growing seasons to fully establish and they may be washed away in a heavy rain event. Potted plants come in various sizes and are more expensive, but will bloom sooner and give a more established look to the garden. If deep cell plugs are available, they are recommended for use in a rain



garden. Plugs are small cone-shaped pots that usually come in packs of six to twelve. Plugs often establish more successfully and are more economical when purchased in bulk.

When you are ready to plant, set out all the plants for your rain garden in the desired location. Check the spacing, and don't be afraid to move

things around if necessary. Remember that even though the plants are small right now, they will grow and eventually fill out their space. Do not overcrowd the plants because their root systems will compete and more aggressive plants could overtake smaller plants. You should have purchased one plant for every 1.5 feet of rain garden area. Each plant should be given the recommended spacing indicated on its tag. If not, a good rule of thumb is to allow one foot of space around smaller plants and four feet of space around larger plants. Appendix D shows plant growth over time in photographs from planting in April through August. As seen in the photographs, plants will grow very quickly. Make sure to stick the pot tags in the soil next to each plant. Consider planting flowers in groups so that similar plants are located near each other, rather than scattering them around the rain garden individually. This helps when weeding, making it easier to know which plants are weeds and which are “keepers”.

When planting, minimize how much you walk through the rain garden in order to avoid compacting the soil. Start at one end of the rain garden and work your way to the other end. Put down some mulch to walk on if necessary and move



the mulch when you are ready to plant there. Keep these tips in mind when planting:

- Keep the plants moist before planting.
- Gently loosen the root ball of the plant before planting.
- Dig a hole twice as wide as the root ball and deep enough so that the root ball is completely covered by soil when the hole is re-filled.
- Loosen the dirt in the hole so the sides and bottom are not compacted. Compacted soil will restrict root growth.
- Refill the space around the plant and gently press the soil around the roots to minimize air spaces.
- Water the plants well after planting.



Once the plants are in the ground, mulching keeps them cool and moist and reduces weeds. Keep in mind that the rain garden will periodically be submerged and that many varieties of wood mulch will float. Use a three-inch thick layer of coarse, double shredded hardwood mulch to reduce this potential.



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A few finishing touches will help to create order and beauty and set the rain garden apart from its surroundings:

- A berm, landscape edging or row of plants can be used to set the garden off from the yard and provide an edge to guide the lawn mower.
- You may want to add items such as a bench, garden gnome, gazing ball, bird bath, sculpture or decorative rock to make your garden reflect your personality and create a sanctuary that you will enjoy.

## 2.5 MAINTENANCE

### 2.5.1 Watering

The rain garden is intended to receive and absorb rain water runoff. But because young plants are especially susceptible to stressors such as dry soil, you will need to water the rain garden plants regularly until the plants are established. This usually takes one or two growing seasons. About one inch of water per week is needed, so a slow trickle of water from the hose for 30 minutes each week is usually sufficient. After the plants are established, you should not have to water them except during prolonged dry periods.



Mature plants can tolerate standing water better than young, small plants. During the first couple of years after the garden is planted you may need to allow some rain water to escape from the rain garden, especially during extended rainy periods. To do this, some of the water that has been directed to the garden may be temporarily routed in a different direction. Another option is to cut a notch in the berm on the downstream

end of the rain garden so less water is held in the garden. Once the plants are larger and better established, you can re-route the water back into the rain garden or fill in the notch cut.