A Homeowner's Guide to RAIN GARDENS

A rain garden is a great way to add beauty to your landscape and improve water quality. A rain garden is a sunken garden bed that collects and treats water runoff from rooftops, driveways, parking lots, streets, and lawns. Water from redirected downspouts or paved areas can be directed to a rain garden, where plants and soil can soak up runoff from your property.

Why Plant a Rain Garden?

As our city grows, native habitats are replaced with impervious surfaces like roofs, roads, and parking lots. Impervious surfaces do not allow water to soak into the soil and actually increase the amount of stormwater flowing from developed areas. This can cause flooding, and strain the City's stormwater management system. Rain gardens collect and filter runoff onsite, which can reduce flooding, replenish groundwater, and help restore natural hydrology.

Rain gardens also improve water quality. As runoff flows over hard surfaces, it picks up pollutants like motor oil, pet waste, fertilizers, and pesticides. This dirty water flows into the stormwater system, ending up in local streams and the McKenzie and Willamette rivers. Nationwide, polluted stormwater is considered one of the biggest threats to water quality.

By installing a rain garden in your yard, you can reduce the amount of stormwater and pollutants coming from your property. Plants and soil organisms take up nutrients and break down pollutants cleaning the water before it infiltrates into the ground.

Rain Gardens Help Drinking Water

Did you know that about 90% of Springfield's drinking water comes from groundwater? By planting a rain garden on your property, you are helping to recharge (or replenish) the aquifer that supplies our wells. You can also help protect the quality of our drinking water by minimizing or eliminating the use of chemical pesticides and fertilizers in your rain garden. For more information about how to protect Springfield's drinking water or about the Springfield Groundwater Guardians team, contact Springfield Utility Board (SUB) at 541.744.3745.

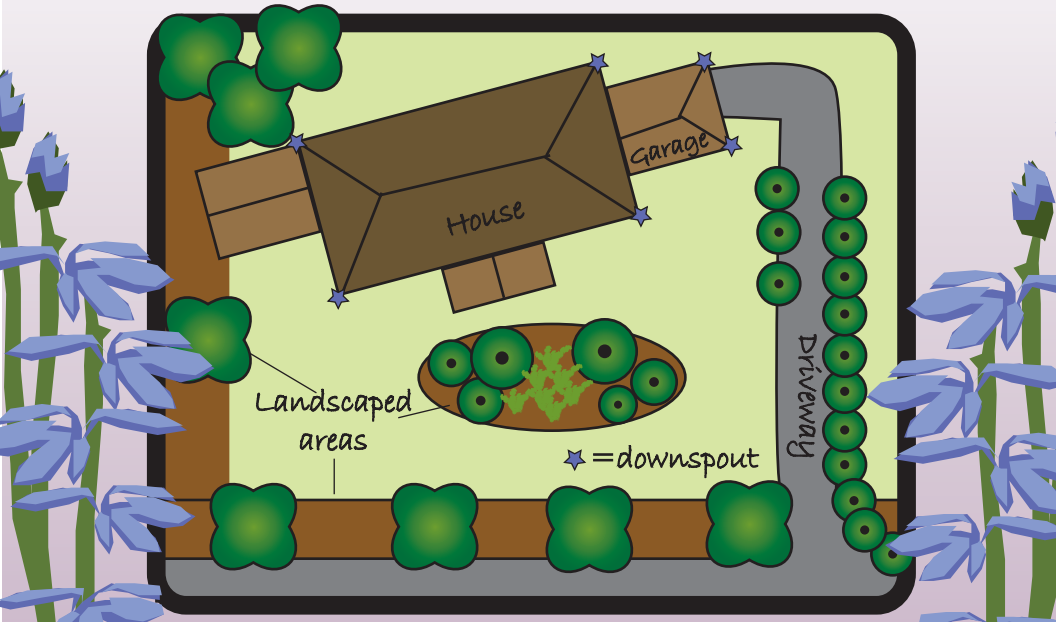
Step 1:
Locating a Rain Garden

There are several considerations that are important for successful rain garden placement.

First, determine what areas of your property could drain to a rain garden. Rooftops, driveways, patios, and grassy areas with compacted soils all produce runoff that a rain garden can collect and filter.

Sketch a site plan and mark the location of downspouts and paved areas.

Map where the rain garden could go – choose spots that are downhill of downspouts or paved areas. Depending on your site, you could capture all or part of the runoff from your property. Also consider that you could build more than one rain garden.



Make a sketch of your property to determine where you might place your rain garden.

Think Safety

Don't build a rain garden on steep slopes. Locating a rain garden on slopes greater than 10% causes instability and erosion. If the slope of the area is greater than 10%, seek technical assistance from a qualified engineer. If there is only a slight slope, add a berm on the downhill side of the garden to hold rain water.

Measuring Slope

Slope is a measure of a land gradient, typically expressed as a percent.

$$\text{percent slope} = \frac{\text{rise of slope}}{\text{length of slope}} \times 100$$

Tools needed: 2 stakes, string, level, measuring tape

Pound in a stake on the uphill side and one into the ground downhill. Tie a string between the stakes. Make sure the string is completely level. Measure the distance between the stakes (length of slope) and from the string to the ground on the downhill stake (rise of slope). Divide the rise of the slope by the length of the slope. Multiply by 100 to get percent slope.

Before You Dig

- Call 811 to locate all underground utilities. Do not locate rain gardens over gas, power, phone, or water lines.
- Locate rain gardens away from septic tanks, drain fields, & away from underground oil tanks.
- Do not build a rain garden in an area where water ponds. Make sure there is at least 3 feet between the bottom of the rain garden and the top of the groundwater table.
- Rain gardens must be at least 10 feet from building foundations (5 feet if down slope), 5 feet from property lines, and 2 feet from sidewalks. Make sure the rain garden is placed in an area down slope from structures.

Now that you've located a good spot for your rain garden, the next step is to test the soil and see how well it drains. It is important to have adequate drainage in your rain garden – it should drain completely within 24 hours.

Soil Drainage Test:

1. Dig a hole 24" deep and about 12" wide.
2. Fill the hole with water and let it drain.
3. Fill with water again.
4. Monitor how fast the water drains. If it drains within 24 hours, the soil has adequate drainage for a rain garden.
5. If the hole does not drain completely in 24 hours, try another location for your rain garden.

Note: If you encounter water while digging the hole, the groundwater table is too high for a rain garden at this location. If you run into bedrock or are unable to dig, the bedrock is too shallow to support a functional rain garden. Try another spot for your rain garden.

Dig a hole

Fill it with water

Wait for it to drain

Step 2: Designing a Rain Garden

Sizing the rain garden is the next step. The size of the rain garden should be at least 10% of the area that drains to it. For example, if the roof area draining to your rain garden is 500 square feet, the rain garden should be at least 50 square feet.

Roof area = 500 ft^2 x 0.10 = 50 ft^2

- Make sure you have enough space available for your rain garden. Remember, even treating part of your runoff onsite can improve water quality and restore hydrology. Installing more than one rain garden, or one larger garden, may allow you to collect and treat all of the runoff from your property onsite.

- The shape of the rain garden depends on your personal taste – round, square, or kidney shapes are popular choices.

- Next, determine how you will direct the water away from your house. Water can be transported from your downspout or driveway through a swale lined with plants or decorative rocks, or through a pipe. If you choose to use a swale to transport water, it should be lined within 5 feet of the building.

- Minimize erosion from water coming out of the pipe by placing rocks or a small pool at the inlet to the rain garden.

- When underground piping is installed, it must meet Oregon Plumbing Specialty Code and a plumbing permit and inspection are required. Contact the City of Springfield at 541.726.3753 for more information about the permit and inspection process.

- Plan where the rain garden will overflow to during large storm events. Make sure the overflow is directed away from buildings or neighboring property. The overflow can also be lined with rock, which will prevent erosion.

- Now that you have designed the structure of the rain garden, it's time to think about plants. Plants are an important part of your rain garden because they filter pollutants and soak up nutrients. They also prevent erosion and improve drainage, increasing infiltration and retention.

- Rain gardens provide habitat for birds and other species. Native plants are a great choice, and many ornamentals will also work well.

- Think about where the garden is located – Is it in the sun or shade? How will it blend into the other aspects of your landscape?

- Choose plants based on the different water levels in your garden. The bottom of the rain garden will have water in it frequently, so choose plants that can tolerate lots of water. Upland plants that are drought tolerant are best for the top of the garden. Also consider the size, shape, and foliage of the plants.

Step 3: Building a Rain Garden

- Outline the area of your rain garden with stakes and string.
- Moisten soil with water to make digging easier. Excavate the entire area of the garden with a shovel, gently sloping the sides. In quality soils that drain rapidly, remove only enough soil to create the desired ponding depth. If the soil is mostly clay and drains slowly, dig to about an 18-inch depth. Use a level to make sure the bottom is relatively flat. Try not to compact soils during construction.
- The finished rain garden depth should be between 6-12 inches. If needed, add a mix of soil, sand, and compost to the bottom.
- Lay out the pipe or swale that will deliver water to the rain garden. Test this to make sure it will transport the water effectively. If using a swale, line the part that is close to buildings.
- Lay out the overflow then plant your rain garden.
- Add mulch. This will help feed your garden and discourage weeds. Avoid using grass clippings as mulch, or anything that will easily float away.

Note: If disconnecting a downspout, wait until the plants in your rain garden have had a chance to grow roots and establish before you let water flow into the garden.

Lay it out

Dig

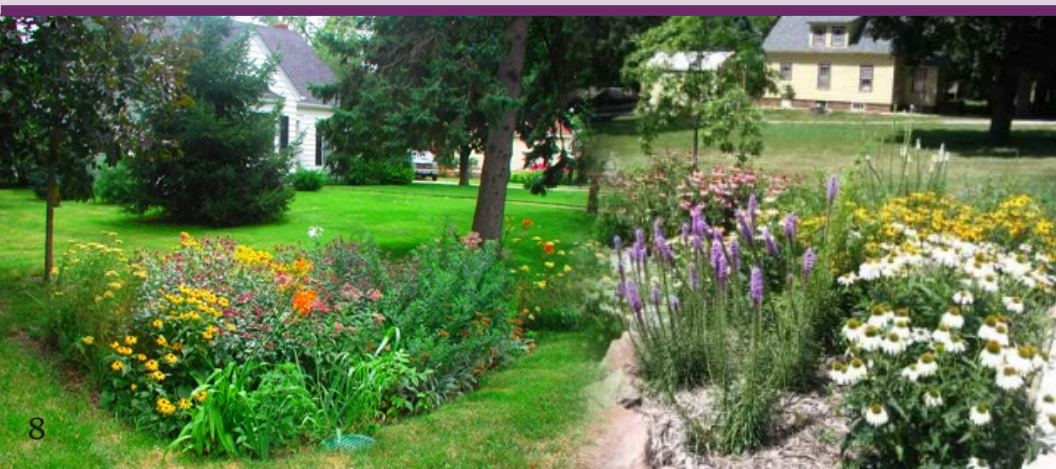
Plant

Step 4: Maintenance

- Plants in the rain garden need to be watered during the dry season for the first 1 – 2 years. Water deeply once a week to encourage root growth during dry months.
- Pull weeds by hand regularly.
- Avoid using herbicides and fertilizers in the rain garden.
- Remove sediment and debris as needed.
- Periodically check and make sure the rain garden is functioning. Be sure to check for erosion.
- Add compost or mulch a few inches deep as needed. Pea gravel or other rock mulch will not float away with rain or decompose.

Ready to plant your own rain garden? Remember to give us a call when you finish. To show our appreciation of your hard work, we have a Clean Water Gardens recognition package waiting for you! This is only available to Springfield residents.
Call us at 541.726.3694 or
email WaterResources@springfield-or.gov

ENJOY YOUR GARDEN!



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