

A Few Common Native Rain Garden Plants



GRASSES

- Big Bluestem (*Andropogon gerardii*) - 0
- Blue-joint Grass (*Calamagrostis canadensis*) *
- Fowl Manna Grass (*Glyceria striata*) *
- Indian Grass (*Sorghastrum nutans*) - 0
- Little Bluestem (*Schizachyrium scoparium*) 0
- Prairie Cordgrass (*Spartina pectinata*) *
- Prairie Dropseed (*Sporobolus heterolepis*) - 0
- Switchgrass (*Panicum virgatum*) * - 0
- Virginia Wild Rye (*Elymus virginicus*) - 0

SEDGES

- Burr Sedge (*Carex grayii*) - 0
- Crested Sedge (*Carex cristatella*) *
- Fox Sedge (*Carex vulpinoidea*) * - 0
- Frank's Sedge (*Carex frankii*) * -
- Pointed Oval Sedge (*Carex tribuloides*) *
- Porcupine Sedge (*Carex hystericina*) *
- Riverbank Tussock Sedge (*Carex emoryi*) *
- Tussock Sedge (*Carex stricta*) *
- Yellow Fox Sedge (*Carex annectans xanthocarpa*) - 0

TREES/SHRUBS (many trees will work well in or near a rain garden, consult a professional for recommendations.)

Small (Under 30 Feet)

- Alder (*Alnus incana*)
- American Bladdernut (*Staphylea trifolia*)
- American Hornbeam (*Carpinus caroliniana*)
- Buttonbush (*Cephalanthus occidentalis*)
- Gray Dogwood (*Cornus racemosa*)
- Hawthorn Species (*Crataegus*)
- Paw-Paw (*Asimina triloba*)
- Red-Osier Dogwood (*Cornus sericea*)
- Silky Dogwood (*Cornus amomum*)
- Spicebush (*Lindera benzoin*)
- Serviceberry (*Amelanchier*)

Medium (30 to 50 Feet)

- American Arborvitae (evergreen) (*Thuja occidentalis*)
- Black Willow (*Salix nigra*)
- Ohio Buckeye (*Aesculus glabra*)
- River Birch (*Betula nigra*)

Large (50 to 120 Feet)

- Bald Cypress (*Taxodium distichum*)
- Bur Oak (*Quercus macrocarpa*)
- Eastern Hemlock (*Tsuga canadensis*)
- Pin Oak (*Quercus palustris*)
- Red Maple (*Acer rubrum*)
- Shellbark Hickory (*Carya laciniosa*)
- Swamp White Oak (*Quercus bicolor*)
- Sycamore (*Platanus occidentalis*)

SYMBOL KEY

- * Areas that may stand in water over 24 hours
- Areas that always drain within 24 hours
- o Areas that drain in less than 1 hour after a rain event

WILDFLOWERS (FORBS)

- Autumn Sneezeweed (*Helenium autumnale*) - 0
- Blue Flag (*Iris virginica shrevei*) * - 0
- Boneset (*Eupatorium perfoliatum*) - 0
- Bottle Gentian (*Gentiana andrewsii*) - 0
- Cardinal Flower (*Lobelia cardinalis*) * - 0
- Culver's Root (*Veronicastrum virginicum*) - 0
- Dense Blazing Star (*Liatris spicata*) - 0
- Flat-topped Aster (*Aster umbellatus*) - 0
- Foxglove Beardtongue (*Penstemon digitalis*) - 0
- Golden Alexanders (*Zizia aurea*) - 0
- Golden Ragwort (*Senecio aureus*) - 0
- Great Blue Lobelia (*Lobelia siphilitica*) * - 0
- Hollow Joe-Pye Weed (*Eupatorium fistulosum*) - 0
- Marsh Milkweed (*Asclepias incarnata*) *
- Monkeyflower (*Mimulus ringens*) * - 0
- Mountain Mint (*Pycnanthemum virginianum*) - 0
- New England Aster (*Aster novae-angliae*) - 0
- Pink Turtlehead (*Chelone obliqua*) - 0
- Purple Coneflower (*Echinacea purpurea*) 0
- Queen of the Prairie (*Filipendula rubra*) - 0
- Riddell's Goldenrod (*Solidago riddellii*) - 0
- Shining Aster (*Aster firmus*) - 0
- Showy Black-Eyed Susan (*Rudbeckia fulgida speciosa*) - 0
- Smooth Ironweed (*Vernonia fasciculata*) - 0
- Smooth Penstemon (*Penstemon calycosus*) - 0
- Spotted Joe-Pye Weed (*Eupatorium maculatum*) - 0
- Swamp Aster (*Aster puniceus*) -
- Sweet Black-Eyed Susan (*Rudbeckia subtomentosa*) - 0
- White Turtlehead (*Chelone glabra*) -
- Wrinkled Goldenrod (*Solidago rugosa*) - 0

The Hoosier Heartland RC&D Council and its partnering organizations are equal opportunity providers and employers. We are a 501c3 not-for-profit organization that works to teach people how to care for, improve and protect their natural resources in a way that improves the area's economy, environment, and quality of life in Central Indiana.

6041 Lakeside Boulevard, Indianapolis, IN 46278 - (317) 290-3250 - www.hhrcc.org

Want More Information?

Soil & Water Conservation Districts and County Extension Service in Boone, Brown, Hamilton, Hancock, Hendricks, Johnson, Marion, Monroe, Morgan, and Shelby Counties. To locate an office near you, go to: <http://www.iaswcd.org> or <http://www.ces.purdue.edu/counties.html>

Other great resources: Williams Creek Consulting, Inc. — www.williamscc.com; Spence Restoration Nursery, Inc. — www.spencenursery.com; USDA-Natural Resources Conservation Service — www.in.nrcs.usda.gov; National Plants Database — <http://plants.usda.gov>; Indiana Native Plants & Wildflowers Society — www.inpaws.org

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Provided to you by:

Build your own Rain Garden



A *Rain Garden* is a shallow landscaped area in your yard planted with wildflowers, grasses, shrubs, and other native vegetation.



A *Rain Garden* collects rain water from your roof, driveway, sidewalks or lawn, and filters it by dissipating the water through soil and plants before it enters a storm drain, pond or stream. Rain Gardens are dry between precipitation events.



A *Rain Garden* can be your personal contribution to cleaner water and an improved environment!

1 Site Requirements

- The site must be 10 feet from structures (home, shed, patio, etc.) that could be damaged by soil moisture.
- The site can not be over a septic field.

Ideally, your site should be

- Full to partial sun.
- Quick draining soil of high organic content. See Step 2.
- Close to the source of runoff.
- Flat or bowl-shaped to minimize digging during construction of your garden.
- An existing site where water naturally pools after rain events, *but dries up in 24 hours*. It can also be a site that receives water from an impervious surface (roof, patio, driveway) by way of a swale or drainage pipe.**

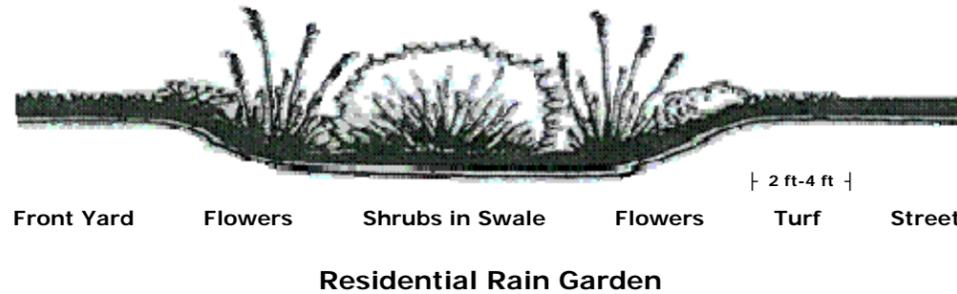


6 Installation and Maintenance

- Plant choice is important for your site. Install recommended rain garden plants (trees, shrubs, sedges, grasses, wildflowers). See back page for ideas.
- Group the same plants together in clumps of at least 3 for best effect.
- Use grasses to help support flowers as they grow taller.
- Install and care for plants as you would in other new landscaping. Plants will need to be watered until growth is established. Remember, all plants need water in drought conditions.
- Rain gardens may require weeding until plants are of sufficient size to out-compete weeds. Use a mulch of your choice to keep weeding to a minimum. Be aware that some mulches will float more than others. It is also recommended to label your new plantings to avoid confusion with weeds.
- Keep the trash and sediment out.
- If your rain garden has a subsurface drain it will require additional maintenance. Consult a professional.**
- Remember, native plants do not require fertilizer, herbicides or pesticides.

2 Soil Infiltration

- Dig a hole the size of a coffee can and saturate the soil with water. The best time to complete this activity is late winter to early spring.
- Fill the hole with water and measure the depth, returning in 4 hours to measure again.
- The difference in water depth after 4 hours should be equal to or exceed 1 inch. If the difference is less than 1 inch, seek professional assistance before building your rain garden.
- This step is very important because some areas of Indiana have high water tables and poor drainage. Check your county soil survey for more information.



5 Excavation

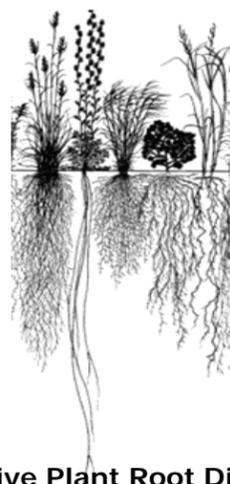
- Call 1-800-382-5544 two days before you dig to locate any underground utilities.
- Remove the existing sod or plants.
- Dig a 6 inch depression (or bowl) with a level bottom. Build a small berm *opposite* the side of water entry using soil excavated from the garden. Allow a low point for water over 6 inches deep to escape.
- Some rain gardens may require a subsurface drain pipe. Consult a professional.**
- Adding soil amendments, such as organic matter and/or sand, can improve the drainage, especially in clay soils.

3 Size Calculation

- Measure the area of the impervious surfaces (roof, concrete, patio) that will drain to the rain garden.
- Most rain gardens are about 4 to 8 inches deep.
- For a rain garden that is 6 inches deep, multiply the impervious surface area by 25% to determine the size of your garden.
- Observe your garden after rain events. The garden needs to drain within 48 hours. If it doesn't, make adjustments to the size, overflow area, density and type of plantings, or the amount of runoff being sent to the garden.

4 Design

- Select the shape and the dimensions that are appropriate for the area you need.
- Select appropriate numbers of native plants for the located site.
- Remember, this is your garden, so pick plants that you find attractive.
- A rock wall or other edging can be used to define the rain garden's boundaries, but it is important that it is placed in a location that will not interfere with water flow.
- Rain gardens are designed to be dry between storm events. With proper drainage, mosquito larvae will not be a problem.



Native Plant Root Diagram

** Some sites may require more extensive planning to address topography and drainage. Consult a professional such as a civil engineer or landscape architect. Contact your county's Soil and Water Conservation District office for additional assistance and/or recommendations for consultants.



Build Your Own Rain Garden

Preplanning, Design and Construction

The first item to remember is the purpose of the Rain Garden (RG)—which is to capture some stormwater and allow the soil and garden plants to soak it up. The process returns stormwater back to the water table and to the plants where it is expelled into the atmosphere. Both processes help to cleanse the stormwater and reduce the amount of water going to storm sewers, ponds, rivers and floodplains. This process is directly opposite of the normal urban situation in which we channel water off our lot, temporarily store the water in wet or dry ponds and quickly transfer it to a river or stream. Rain Gardens attempt to mimic the natural hydrologic cycle when wetlands, prairies and woodlands soaked up the water until they were full. The excess water moved slowly to the streams and rivers. Water moved a lot slower than it does today.

Pre-Planning for Your Rain Garden

Remember the purpose of the Rain Garden and that will help you make good decisions.

- **Site the Rain Garden near the point of runoff water:** The Rain Garden needs to be located near the points of water runoff. These can be downspouts from your house or garage, patio surface, driveways or other hard surfaces. If you are uncertain how the water flows, view the situation during a hard rainstorm. Creating a shallow channel in the yard or extending the downspouts with pipe are two common ways to direct the rain water into the Rain Garden if the existing topography is not appropriate.
- **Site the Rain Garden away from foundations and septic systems:** Remember the Rain Garden will collect and disperse the water into the ground. This shallow pond should not be too close to the house (10' away is a good distance) and not over a septic field. If you have a wet basement or crawl space this should be corrected before installing a Rain Garden. If the soils stay wet and soggy for an extended period of time then your location for the RG may not be appropriate.
- **Build the Rain Garden in a sunny site:** Many of the vigorous blooming plants like full to partial sun. These plants will provide more color and diversity to the garden. The sun will also help dry up the soggy soils. You can build a Rain Garden in a shady location but the plants will be less showy, fewer plants are available for selection, and the site will stay damp for a longer period of time. Pick a sunny site if possible.
- **Check for Utilities:** After you have decided on a site you will need to check and make sure no utilities are under the ground. In Indiana, call 811 or 800-382-5544 at least two working days before you plan to dig. The utility company will mark the lines on your property. You should also consider other lines that you own such as:
 - ⇒ Water lines for irrigation
 - ⇒ Electrical lines for outside lighting or other uses
 - ⇒ Invisible fence
 - ⇒ Gas lines for external grills or lamps

Some of these can be easily relocated but you need to be aware and plan for that. When you are done, make a simple utility map of your property to make planning easier for the next project.

Designing Your Rain Garden

Designing your RG involves several steps:

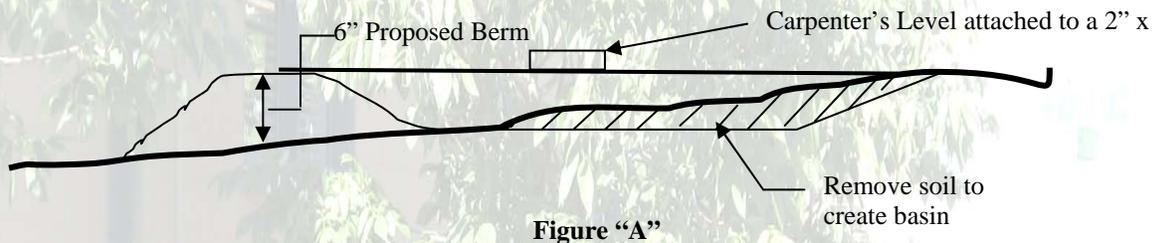
- Determine the size and depth—See the tip sheet called: “Suggested Methods to Size a Rain Garden”
- Selecting Plants—See the tip sheet called: “Plant Selection and Planting Schemes”
- Determining the layout—Once you know the size of the garden you can use a garden hose or rope to form the shape in your lawn. This helps to visualize the size and finalize the shape and location. The RG will have a bowl shape with sloping sides and a flat bottom. The sides should be stable, but still need to be moderately steep to facilitate water storage. A 3 to 1 side slope is recommended. (For each foot of rise the slope would extend 3'. For a 6” deep RG the slope would be 18” long.)



Preplanning, Design and Construction (cont.)

Designing Your Rain Garden (cont.)

For a typical lot with a level yard the bowl will be dug out to create the water storage. If your lot has sloping topography you can build a berm or dam on the downhill side and trap the water into a bowl shaped pool. (See figure "A") This requires less digging but more careful layout. You will need to measure the amount of drop to determine the height of the dam and how much soil to remove to attain the necessary depth. A carpenter's level attached to a 10-14' long 2" x 4" will help determine the amount of drop in the yard. After you have decided on your layout you can consider other components that will make your RG look better and be easier to maintain. Stones or sculpture can be added to give a finished look. Edging around the garden prevents grass from creeping into the garden and gives it a professional appearance.



Constructing Your Rain Garden

With the planning completed you can prepare for construction. Spring construction and planting is best for buying plants, preparing the soil and keeping the new plants moist. You can also watch for plant sales from garden and plant organizations like Master Gardeners and Indiana Native Plant and Wildflower Society.

Construction of the rain garden can take 8-10 hours. Baking flour, rope or string can be used to mark the outline of the garden. A glyphosate herbicide can be used to kill the grass or a sod cutter can be rented to remove the sod. Most of the soil from digging the basin can be made into a berm on the downhill sides of the RG—away from the house. Making short landscape berms keeps the excess soil close to the digging and eliminates having to haul it away. Make sure you do not block the flow of incoming water into the basin. Shallow ditches or swales can be cut into the yard to direct the water from a downspout or patio into the RG. Plastic tile buried below the ground is another good way to direct the water from a downspout to the RG. Rock or stone may be needed where the water enters the garden to prevent erosion.

As the water builds up in the basin we want it to flow out of the basin and away from the house. Make sure that a 5' wide strip of ground at the low end remains unchanged to permit water to flow out of the basin. Rain Gardens using a small dam to hold water will need to be built to prevent water from backing up towards the house.

A rotor tiller is a great tool to condition the soil for final raking, shaping and planting. If the soil needs to be amended to improve growing conditions or infiltration (see "What You Need to Know about Your Soil") you will need to remove another 4-6" of soil from the RG basin. Compost and/or sand can be added in 1" layers. After a 1" layer of compost or sand is added thoroughly mix the soil with a rotor tiller and go through the process until the basin is built up to the designed level. Once the soil is prepared you can do a final test before planting. Saturate the site with a sprinkler and fill the basin with your garden hose. Monitor the water and make sure it soaks into the soil in 24 hours. If the basin is still holding water after 24 hours then you may want to consider making the basin shallower, amending the soils, adding drain tile or reducing the amount of water if that is possible.

After the water test the RG is ready to plant. Plugs or potted plants are recommended for the garden. A 2 3/4" planting auger powered by an electric drill can speed up the planting process. Most of the native plants can be placed 12" apart as they are the primary mechanism to return water to the ecosystem. Mulch between the plants with course shredded hardwood mulch to hold moisture and reduce weed pressures. Edging, rocks, and other landscaping items can be used to make your RG have a finished look.

Build Your Own Rain Garden

Suggested Methods to Size a Rain Garden

This guide recommends building a Rain Garden that will hold 1" of rain water collected from the impervious area and allowing it to soak into the ground within 24 hours. This method will utilize the drainage area, infiltration rate and Rain Garden depth to determine the appropriate size of your Rain Garden.

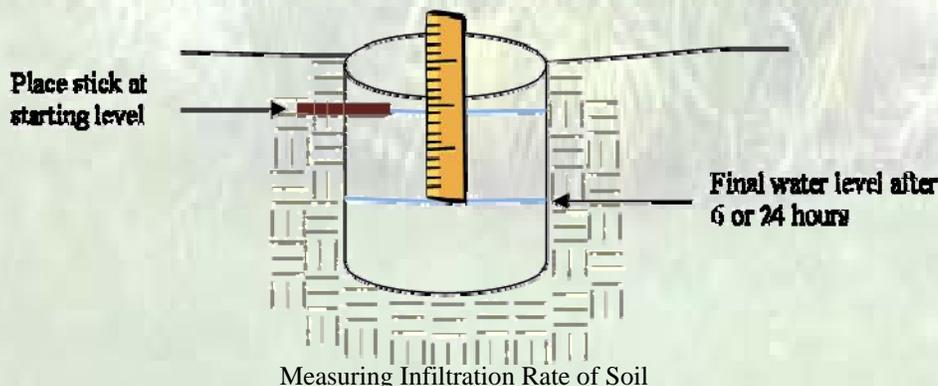
Step #1 is to determine the drainage area. Water collects and runs off areas of your roof, driveway, patio or other hard surface. You will need to evaluate what part of the roof or other surface drains to the proposed Rain Garden. Make sure you are measuring the horizontal area from the ground and not the surface area of the roof. If you are measuring a roof do it from the ground. Measure the number of feet from gutter to the peak of the roof and measure the width of roof that drains to the downspout.



Example: This house has a simple roof. There is a gutter that collects the roof water from the peak and ridge on the front of the house. You would need to measure from gutter to peak which is "W" and from the end of the house to the ridge line which is "L". The drainage area is $W \times L$. Take your measurements in feet to get an answer in square feet.

Step #2 is to measure the infiltration rate of your soil. Dig an 8" circle 8"-10" deep in the location of the proposed Rain Garden. Saturate the soil by running a garden hose several times during a day to fill the hole and saturate the surrounding soil. This is best done in the spring when the rains have naturally moistened the soil. The next day fill the hole nearly to the top. Mark the top of the water with a stick in the side of the hole. After six hours measure the drop of the water by measuring between the stick and the top of water. Take this measurement in inches and multiply by 4. This will be your infiltration rate

for 24 hours. (Inches of drop in 6 hours $\times 4 =$ inches of drop in 24 hours) If the level has changed less than one inch after 6 hours, wait a full 24 hours from the time you initially filled the hole and measure the total drop. This measurement will be the amount of water that can soak into the ground in 24 hours (one day). No multiplication is need.



Measuring Infiltration Rate of Soil



Suggested Methods to Size a Rain Garden (cont.)

Step #3 is to determine the depth of the Rain Garden. It is recommended that the Rain Garden should be free of water after 24 hours. The depth of your pond should not be any deeper than your soil's infiltration rate/day. If the infiltration is 5 inches/day then make the rain garden no more than 5 inches deep. It is generally recommended not to exceed a depth of 8 inches even if your infiltration rate/day exceeds 8 inches/day. A depth of 6" to 8" is generally recommended for most Rain Gardens with soils that have an infiltration rate of 8 inches/day or more.

Step #4 is a simple calculation to determine the area of the Rain Garden.

Drainage Area/Depth of Rain Garden = Area of Rain Garden

Example: Drainage area of the roof = 12 ft. x 15 ft. = 180 sq. ft.
The infiltration rate was measured at 5 inches/day
A depth of 4 inches was selected for the rain garden
180 sq. ft. divided by 4 = 45 sq. ft.

After you have determined the size of the Rain Garden you can decide what shape to build it. A 45 sq. ft. Rain Garden could be a square 7' by 7' or rectangle 5' by 9' or an 8' circle. For odd shapes, graph paper can be handy. Using the graph paper, make each square one foot by one foot. Draw the design on the graph paper and count the squares to determine the area.

Problem Soils

Some soils are so densely compacted or have a persistent high water table that water will not drain out of the test hole. These soils are not suitable for a Rain Garden unless conditions are modified. The homeowner has several choices. He can decide not to build a Rain Garden, try another location or improve the soil drainage. The "What You Need to Know About Your Soil" tip sheet describes the process of amending the soil or adding drain tile for a Rain Garden. Contact the Soil and Water Conservation District in your county to get professional advice on how to improve the soil and add tile drainage.

Build Your Own Rain Garden

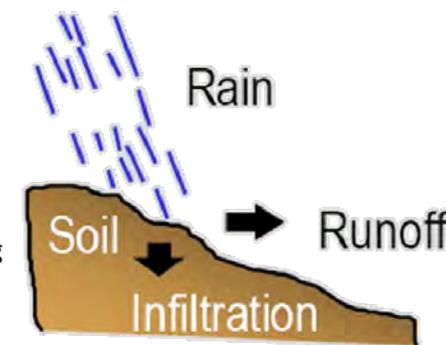
What You Need to Know About Your Soil

A rain garden is a shallow depression that collects rain water from roofs, driveways, sidewalks or lawns, cleans it by dissipating the water through soil and plants, and allows it to soak into the ground rather than run off.

Learn About Soils in Your Area

Rain gardens work by allowing storm water to infiltrate into the ground, instead of allowing all of the water to runoff your site. Infiltration is the process by which water on the ground surface soaks into the soil. The rate of infiltration depends largely on the site's soil structure. You will need to find out what soil types are on your property in order to design and build a properly functioning rain garden.

Begin by locating a soil map and soil descriptions for your property. This can be done by contacting your county's Soil and Water Conservation District (SWCD) or USDA Natural Resources Conservation Service (NRCS) office. Or, if you have access to the internet, you can quickly get information from the Web Soil Survey (WSS) <http://websoilsurvey.nrcs.usda.gov/app>. Enter your address and use the AOI map tool to select an "area of interest." After you have selected an area of interest, there are options to click on near the top of the page to show soil properties, suitabilities and limitations, capabilities, and more for your property.



Examine Soils at your Rain Garden Site

Understanding how your soils work is a key element to proper rain garden construction and the best way to do that is to examine them and perform a simple test. This step is very important because some areas of Indiana have high water tables and poor drainage which will affect the proper functioning of your rain garden.

First, get your hands dirty. If you have natural undisturbed soils in your yard, the topsoil layer will contain a deep (6 to 12 inches), fairly loose root zone. You will need to examine your existing soil and consider whether it is loose or compacted. Sandy or loamy soils are usually well-drained – the soil will tend to be crumbly and break apart easily in your hand. Clayey soils are poorly drained – the soil will stick together in heavy dense clods when you dig it up and press it in your hand.

Second, do a "percolation" test to see you how well water soaks into the soil at your site. Dig a hole the size of a coffee can and saturate the soil with water. Fill the hole with water and measure the depth. Return in 4 hours and measure again. The difference in the water depth after 4 hours should be equal to or exceed 1 inch. If the difference is less than 1 inch, you will want to seek professional assistance before building your rain garden. The best time to complete this activity is late winter to early spring. Make sure that two days before doing any digging or excavation, you call "811" to have your underground utility lines properly identified and marked.

Where to Go for Assistance:

- The Soil and Water Conservation District or Natural Resources Conservation Service office in your county will be able to help provide soils information. Some SWCDs may also be willing to provide an on-site visit.
- Your county's Extension Service office can provide information and answer questions on many subjects related to rain gardens.
- A qualified professional contractor or landscape service can also be hired to help you evaluate your site and/or build your rain garden.

Remember... Rain gardens should not be installed less than 10 feet from a building, in areas with steep slopes, or areas that are shallow to bedrock.



What You Need to Know About Your Soils (cont.)

Potential Soil Conditions You May Encounter

Professional assistance may be needed to help you evaluate and recommend solutions to overcome drainage and soil conditions.

Areas That Do Not Drain Well After a Rain

Do not put a rain garden in areas that do not drain well, especially where water tends to pond for several days after a rain. The ponding is evidence that you may have soils that have a seasonal high water table, high clay content or are compacted, and therefore a very slow infiltration rate (less than 4 inches per day). Unless the area can be gravity drained with a tile drain to a proper outlet, the site is not considered a good site for a rain garden and could be a breeding spot for mosquitoes. The soils map and soil description information will help you identify the potential for these types of soils on your property.

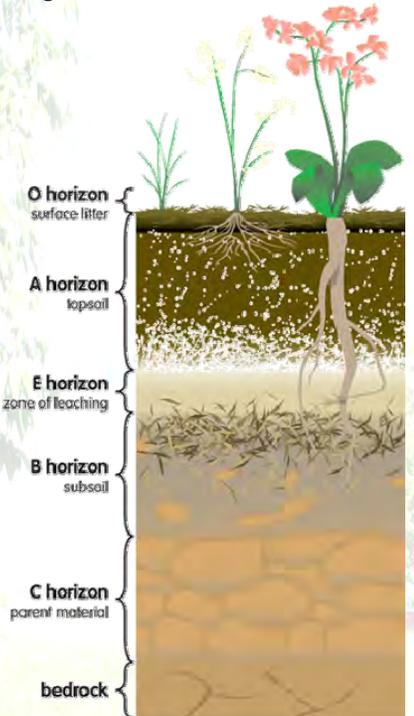
Areas That Drain Very Fast After a Rain

In this case, the site is usually very sandy and may not hold enough moisture for plants to grow well. If the source of water for the rain garden has many pollutants, there may also be a concern for ground water contamination. You may need to seek assistance to evaluate if you can improve the water holding capabilities of the soils. Adding compost or top soil will add organic content and improve the water holding capacity of the soil. The plant selection for the rain garden should be modified by replacing the water loving plants in the bottom to plants that like drier conditions.

Sites That Have Had Major Earth Moving and Alteration Prior to Residential Construction

In many residential yards, the natural topsoil was stripped away when the lot was graded for construction, leaving compacted subsoil with little organic matter. If your yard was graded and

disturbed at any time during the building process, you will probably see a very shallow root zone with a sharp color transition to a dense subsoil layer when you examine your soils. Digging a test hole in these compacted soils can be quite difficult. Depending on the altered conditions, water flow through the soil may be very slow. Your soil may also have a pH level unsuitable for rain garden plants. An amendment such as iron sulfide, lime, or compost may be needed. Digging deeper inspection holes (a post hole digger is a good tool) and examining your soil can provide additional insight to the soil conditions. Your county's Extension Service office has information about where soil tests are available at nominal costs and simple pH test kits are available at most garden stores. Removing the existing soil and replacing with better soil and installing a drain tile may be required to have a rain garden on this type of site.



Fertilizer

If your soil drained well when you ran your infiltration test (more than 8 inches per day), and the garden contains some topsoil, you probably don't need to add much in the way of soil amendments. Most native plants do not need soil amendments or fertilizer. This is especially true for many of our Midwest prairie species. When planting natives, fertilizing the garden can actually encourage the growth of weeds that compete with the native species. However, some native species, and many horticultural varieties, do have more particular soil or nutrient requirements. For example, many woodland plants tend to like highly organic soil. In those cases, adding organic matter such as compost will be beneficial. But before adding any fertilizer for specific plant selections, sample your soil by doing a soil test. Based on the results of the soil test, you

may need to add lime or sulfur to moderate your soil pH for the rain garden plants. Organic matter left on the surface will also encourage earthworm activity and improve drainage.

After You Excavate, Check Infiltration One More Time

After preparing the rain garden bed, and prior to planting, it is a good idea to re-check the infiltration rate in the garden. If a significant amount of soil was removed from the site there may have been changes in the soil make up that can affect drainage. To do this, use your garden hose to fill the garden with water. Let it drain once, and then fill it up a second time. Watch it to make sure it drains in 24 to 48 hours. If the garden does not drain fast enough, it is much easier to rework the soil and fix things before the garden is planted. If the garden drains properly, go ahead and plant before the soil dries out. That will be better for the plants and help keep their roots moist. If the garden does not drain properly you need to consider additional actions such as drainage, soil amendments, or seeking professional help.

Build Your Own Rain Garden

Plant Selection & Planting Schemes

A Rain Garden is a shallow depression that collects rain water from roofs, driveways, sidewalks or lawns, cleans it by dissipating the water through soil and plants, and allows it to soak into the ground rather than run off.

Determine the amount of water and sunlight your garden will receive

The kinds of plants you choose for your Rain Garden will depend on the site conditions in your yard. Rain Gardens can be planted in either sun or shade; select plants that will tolerate the light conditions of your Rain Garden site. Some species will tolerate both full sun and full shade, while others will only thrive in one condition or the other. Consult the back of this sheet for sunny and shady species suggestions.

The wetness of the rain garden is also an important factor to consider. Rain Gardens will have periods when they are dry and periods when they are wet. The lowest area will remain wet longer than the higher areas. Choose plants based on their wetness tolerance and place them in the garden accordingly. See the back of the Rain Garden brochure for information on plant species' water tolerance.

You can use perennials, grasses, trees and shrubs in Rain Gardens, so there are lots of plant choices. Choose plants that you find appealing and will enjoy having in your yard. Consider the style of your existing landscape plantings when selecting plants to allow your Rain Garden to blend into the rest of your yard.

Be sure to include sedges and grasses in your garden. These not only give structure to the garden when the flowering plants are not in bloom, but their fibrous roots continually die, adding organic matter to the soil and leaving behind root channels that increase infiltration. Grasses also help support the flowering plants as they grow. Consider the mature height of the plants when designing your garden. Many native species grow quite tall.

Select a few key species and plant multiples of those plants, rather than having one plant of many different species in your garden. Group your plants for best effect and repeat groupings throughout the garden to create a more structured look.

Native vs. Exotic

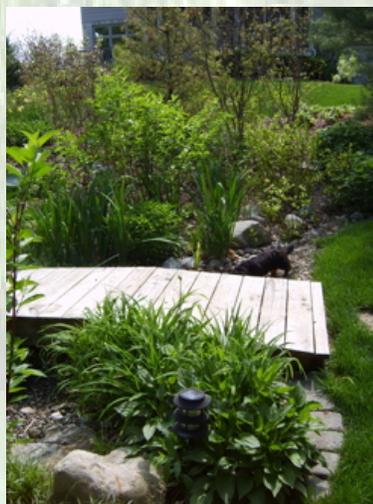
Rain Garden plants should be able to withstand both wet and dry soil conditions. Native plants are perfect for Rain Gardens because they are already adapted to the extremes in temperature and precipitation we can experience in Indiana. Native plants, once established, do not require supplemental water except in extreme drought conditions. They also do not need pesticides or fertilizers. In addition, the root systems of established native plants grow very deep and help to improve infiltration, water retention, and drainage of the garden over time. All of these features of native plants help improve water quality, which is one of the main reasons to build a Rain Garden.

Native plants also provide habitat for our local wildlife. When you plant a Rain Garden with natives, you will invite song birds, butterflies, and other native animal and insect species to your yard, improving biodiversity and the health of our environment.

You can use exotic species, but keep in mind that native plants are the work horses in rain gardens. Exotic species will also require more attention as weather conditions fluctuate.

Rain Gardens can be incorporated into any landscape style

Once you have determined the location and size of your Rain Garden, decide on a shape that fits into your



landscape and is appealing to you. Any shape will work as long as the side of the garden downstream from the water source is bermed to allow the runoff to collect in the garden. Use a garden hose or extension cord to layout the shape of the garden, adjusting the shape as needed to meet the size required to capture your runoff.

Rain Gardens may be perceived as unkempt in comparison to more manicured landscape plans.

Consider adding a bird bath, trellis, or bench in the drier areas of the garden to give the impression of an intended planting.



Plant Selection & Planting Schemes (cont.)

Plants for partly shady Rain Gardens

Sneezeweed (<i>Helenium autumnale</i>)	Burr Sedge (<i>Carex grayii</i>)
Smooth Penstemon (<i>Penstemon calycosus</i>)	Palm Sedge (<i>Carex muskingumensis</i>)
Foxglove Penstemon (<i>Penstemon digitalis</i>)	Golden Alexanders (<i>Zizia aurea</i>)
Wrinkled Goldenrod (<i>Solidago rugosa</i>)	Golden Ragwort (<i>Senecio aureus</i>)
Culver's Root (<i>Veronicastrum virginicum</i>)	Blue Flag Iris (<i>Iris virginica shrevei</i>)
Cardinal Flower (<i>Lobelia cardinalis</i>)	Monkey Flower (<i>Mimulus ringens</i>)
Great Blue Lobelia (<i>Lobelia siphilitica</i>)	Wild Columbine (<i>Aquilegia canadensis</i>)
Brome Hummock Sedge (<i>Carex bromoides</i>)	Bottle Gentian (<i>Gentiana andrewsii</i>)

More information on plant characteristics, such as height and color, can be found at the websites listed below.

Sources of Native Plants & Information

Indiana Native Plant and Wildflower Society
<http://www.inpaws.org>

Indiana Wildlife Federation
<http://www.indianawildlife.org>

JFNew <http://www.JFNew.com>

Spence Restoration Nursery (wholesale only)
<http://www.spencenursery.com>

Contact your local Soil & Water Conservation District for additional information.

Plants for bird and butterfly Rain Gardens

Stiff Goldenrod (<i>Solidago rugosa</i>)	Golden Alexanders (<i>Zizia aurea</i>)
New England Aster (<i>Aster novae-angliae</i>)	Smooth Aster (<i>Aster laevis</i>)
Smooth Penstemon (<i>Penstemon calycosus</i>)	Common Milkweed (<i>Asclepias syriaca</i>)
Mountain Mint (<i>Pycnanthemum virginianum</i>)	Cardinal Flower (<i>Lobelia cardinalis</i>)
Purple Coneflower (<i>Echinacea purpurea</i>)	Blue Flag Iris (<i>Iris virginica shrevei</i>)
Dense Blazing Star (<i>Liatris spicata</i>)	Switchgrass (<i>Panicum virgatum</i>)
Prairie Dropseed (<i>Sporobolus heterolepis</i>)	
Yellow Fox Sedge (<i>Carex annectans xanthocarpa</i>)	
Showy Black-Eyed Susan (<i>Rudbeckia fulgida speciosa</i>)	

Plants for low-stature Rain Gardens (1-3 feet tall)

Yellow Fox Sedge (<i>Carex annectans xanthocarpa</i>)	Meadow Sedge (<i>Carex granularis</i>)
Brome Hummock Sedge (<i>Carex bromoides</i>)	Burr Sedge (<i>Carex grayii</i>)
Palm Sedge (<i>Carex muskingumensis</i>)	Frank's Sedge (<i>Carex frankii</i>)
Tufted Hair Grass (<i>Deschampsia caespitosa</i>)	Blue Flag Iris (<i>Iris virginica shrevei</i>)
Prairie Dropseed (<i>Sporobolus heterolepis</i>)	Bottle Gentian (<i>Gentiana andrewsii</i>)
Smooth Penstemon (<i>Penstemon calycosus</i>)	Golden Ragwort (<i>Senecio aureus</i>)
Foxglove Penstemon (<i>Penstemon digitalis</i>)	Golden Alexanders (<i>Zizia aurea</i>)
Mountain Mint (<i>Pycnanthemum virginianum</i>)	
Showy Black-Eyed Susan (<i>Rudbeckia fulgida speciosa</i>)	



Trees and Shrubs

Buttonbush (<i>Cephalanthus occidentalis</i>)	River Birch (<i>Betula nigra</i>)
Red-Osier Dogwood (<i>Cornus sericea</i>)	Bald Cypress (<i>Taxodium distichum</i>)
Spicebush (<i>Lindera benzoin</i>)	Bur Oak (<i>Quercus macrocarpa</i>)
Downy Serviceberry (<i>Amelanchier arborea</i>)	Pin Oak (<i>Quercus palustris</i>)

Plant lowest area with species that can tolerate being wet for 24-48 hours.

Plant higher areas with species that can tolerate being wet for less than 24 hours.

Important: Do not transplant native plants from the wild to your yard or plants from your yard into wild areas, as this may introduce unwanted or invasive species.

Plants to Avoid

These plants are considered invasive species.

- Purple loosestrife (*Lythrum salicaria*)
- Reed canary grass (*Phalaris arundinacea*)
- Common reed (*Phragmites australis*)
- Buckthorn (*Rhamnus cathartica*, *R. frangula*)
- Cattails (*Typha angustifolia*, *T. latifolia*)

Photo credit: Robert H. Mohlenbrock. USDA SCS. 1989. *Midwest wetland flora: Field office illustrated guide to plant species*. Midwest National Technical Center, Lincoln. Courtesy of USDA-NRCS Wetland Science Institute.



Build Your Own Rain Garden

Maintenance

A rain garden is not much different than any flower garden when it comes to maintenance, depending on the types of plants you put into it. Using native plants adapted to your local climate makes maintenance of a rain garden somewhat easier than a typical flower garden. Because native plants are adapted to the growing conditions, animals and insects in an area, they do not need fertilizer and pesticides to survive and look good. In fact, fertilizing natives creates more top growth and less root growth. The roots are what do the work underground to help improve soil infiltration.

Watering and weeding are very important during the first year to establish the new plants. In general, new transplants need about an inch of rainfall or water per week. You will need to water the young plants during dry spells. Take care not to overwater and rot the roots.

During the first year you will need to review your plants and replace where needed. You should evaluate which plants are doing well and which are not. Soil wetness will be the big factor. Your soil may be drier or wetter than anticipated and the plants selected may have responded well or died. Based on your observations you may choose to change plants to better fit the soil conditions.



The photos to the left represent a rain garden after planting was completed.

The photos to the right are the same rain garden one year later.





Maintenance (cont.)

Also, during the first year you will want to monitor how your rain garden is functioning. Most rain gardens will be placed near the house where you can watch it fill up with water. Make sure the water is not backing up too close to the house and the overflow is working properly. Check to see that the ponded water has soaked into the soil within 24 hours. Modifications to the overflow can be made if water depth is not correct.

Remove weeds as soon as possible so they do not have time to get established and produce seed. Maintain a 3" to 4" layer of mulch to suppress weeds. Mulch helps prevent soil erosion and keeps the soil moist which helps new plants get off to a good start and reduces your need to water in the early stages. We recommend using organic mulch, such as shredded wood as opposed to inorganic materials like stone. Organic mulches will enrich and improve the soil as they decompose. Avoid using large-sized mulch (bark chips) which tends to float when it rains.

The first few years, you should inspect your rain garden for signs of erosion. If water is entering the garden in one or more concentrated spots (through a swale or pipe, for example), those areas may need to be reinforced with some stones to buffer and protect the soil, mulch, and plants.

Label your plants when you put them in so you can identify them and differentiate them from weeds the following spring. Labels also help educate others about rain garden plants.

After a couple of growing seasons, your plants should be well established. The maturing native grasses, sedges, rushes, and wildflowers should be thick enough to suppress weeds, but you may have an occasional weed to pull. If you have planted native species, they will be able to handle fluctuations in rainfall; however, you may need to water during longer drought periods.

Dead plant stems and leaves can be cut back in the fall, or left through the winter to provide wildlife cover and seeds. Depending on the plant and the size of your rain garden, you can use pruners, shears, a weed whacker, or mow them down. A hedge trimmer works well on tall grasses. If you leave the dead plant material to decompose in the garden, be sure to chop it up with a lawn mower. Alternatively, add the clippings to your compost pile.

If your rain garden has trees or shrubs, you may need to prune them to remove dead or diseased branches and maintain shape or size. Fallen leaves could be left to mulch the garden (although you may want to run them over with a lawn mower once or they may form a mat), or can be removed for a cleaner appearance. If your rain garden has a drain, be sure to keep it clear of leaves and other plant material. Also, be sure to check it occasionally to be sure rodents have not nested or caused any damage.



Rain Garden during the winter. Photo by Jessica Norcross, Hendricks County Soil & Water Conservation District., 2011