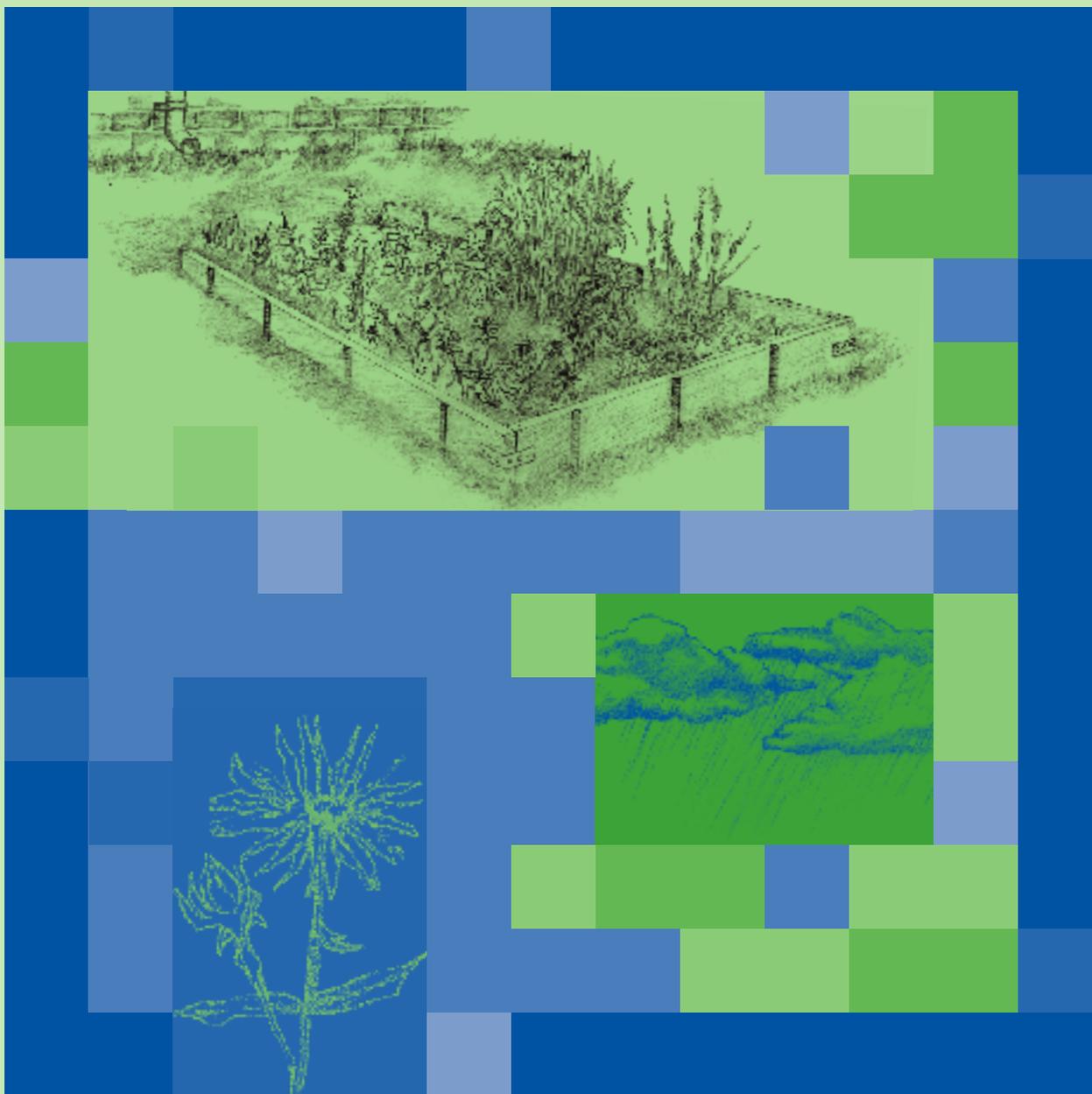


Build Your Own Rain Garden



CHESAPEAKE BAY FOUNDATION
Save the Bay

What Is a Rain Garden?

A rain garden is designed to catch rainwater and slow, decrease, and improve the quality of storm water runoff. A rain garden can take many different forms and, for the most part, is limited only by the resources and time you have to put into it. It can be large, complicated, and expensive—or small and relatively simple. Chesapeake Bay Foundation’s rain garden design, described here step-by-step, is inexpensive and easy enough for most students to complete with minimal help from adults. And while this rain garden project is specifically written with the schoolyard in mind, it would work just as well at a home, community center, religious center, or any other private property.

Scientists have found that nutrient and sediment pollution are the largest threats to water quality in the Chesapeake Bay watershed. Here is something you can do about it!

Why Create a Rain Garden?

Virtually every school has a substantial amount of impervious surface (area that rainwater cannot soak into) that affects the quality of storm water runoff. When rain lands on an impervious surface, it cannot soak into the ground and eventually enters a storm drain or a nearby creek. This excess water (called runoff) causes the soil in its path to erode more rapidly than it would naturally. Gravity then causes this runoff to flow downhill and into the closest stream or other waterway, carrying with it the sediment, pesticides, fertilizers, and other pollutants it encounters along the way. Rain gardens contain plants that intercept and slow down the storm water runoff and absorb or trap much of what it contains. Rain gardens also restore wildlife habitat by attracting creatures such as insects, butterflies, toads, and predators like hawks. Creating a rain garden also helps build environmental stewardship in students.



Getting Started

Getting started isn't as difficult as you might think. Just follow these steps:

- First, get a teacher or adult leader involved. Ask if he or she would be interested in helping you and your fellow students create a rain garden by providing advice, supervision, and support.
- Before you build anything on the school grounds, you will need to get the approval of the school administrators, such as your principal. It is also important to discuss your plans with the custodial staff at your school—they may even be able to help you with your project, and they will probably want to approve the exact location of your rain garden. Some schools have PTA members that are involved in making decisions about the schoolyard; if there are any such groups at your school, it would be a good idea to speak with them as well.
- Next, you will need to choose a location for your garden. This might be partly determined by your principal and/or maintenance staff. The most important aspect in choosing a good spot, however, is figuring out where the rain garden is needed most.

Choosing a Location

Deciding where to put your rain garden can be almost as much fun as building the rain garden itself. There are some great activities in the Chesapeake Bay Foundation's curriculum materials that can help you do this—copies of two activities, *Schoolyard Report Card* and *The Bay Starts Here*, are included in your packet. You might find it useful to complete one of these before you begin.

Your goal is to find places in the schoolyard where rainwater regularly runs off of an impervious surface, such as a parking lot, a downspout from the roof, a hardened footpath, or a basketball court. Where does that water go? *You should position your rain garden between the source of the rainwater runoff and the nearest waterway or storm drain.* A great way to really see what happens to runoff on your campus is to walk the school grounds while it's raining—just remember to wear a raincoat!



Choosing Your Plants

One factor that will determine how much money you will need is the plants you choose to put in your rain garden. Depending on the time of year when you are building your rain garden, you may either use potted plants or seed. You can seed your rain garden any time after the last frost in the spring or before the first frost in the fall. Normally, you should use potted plants only if you will be building your rain garden in the summer, when seeds would have trouble growing. The U.S. Fish and Wildlife Service booklet *Native Plants for Wildlife Habitat* is an excellent resource for choosing which plants to put in your rain garden. Ernst Conservation Seeds Company also offers a native seed mix that is perfect for use in your rain garden. Both the *Native Plants* booklet and the Ernst seed mix chart are provided in this packet.

Whatever plants you choose, they should be able to withstand periods of heavy water along with times when there isn't much moisture at all. Because native plants are accustomed to the conditions in your area, by using native plants you will greatly increase the chance of your garden's survival. Native plants are also great for attracting local wildlife.

Funding Your Project

Once you have received permission from the right people, figured out where you want to place your rain garden, and determined what sorts of plants you will use, you're almost ready to start building. But first, you will need materials, like lumber, tools, soil, and plants to complete your rain garden, and

these materials cost money. There are many ways to get funding for all of the things you will need to build your rain garden. For example, you could hold a fundraiser at your school, or you could ask your principal if there is money in the school's budget. You could also write a grant requesting money from an organization like the Annapolis, Maryland-based Chesapeake Bay Trust.

However you decide to raise the money for your rain garden, you will need to have a good idea of how much your supplies will cost. Your actual costs will depend on the size of your rain garden and the plants you choose. The materials list below will help you estimate how much money you will need. A blank version of this budget is provided on the inside back cover of this guide.

(Note: The prices below are estimates. Actual costs may vary.)

Materials List

- three sections of 2x12 #1 treated pine (lengths depend on the size of the rain garden you plan to build)—about \$15.00 for one eight-foot board
- ten two-foot long sections of steel reinforcing bar (rebar)—about \$10.00
- two stainless steel elbow brackets with four 1.5 inch stainless steel wood screws— about \$15.00
- screwdrivers and a hammer—about \$20.00
- shovels and rakes—about \$100.00
- topsoil (how many bags you will need depends on the size of your rain garden)—about \$3.00 for a 40 lb. bag
- mulch or straw—about \$3.00 for a 40 lb. bag or \$5.00 for a bale of straw
- sand—about \$5.00 for a 20 lb. Bag
- plants—last but not least, plant costs will vary greatly depending upon the quantities and varieties you choose

Build Your Own Rain Garden Sample Materials Budget

Material	Quantity	Price Each	Total Price	Source
2 x 12 #1 treated pine board	3	\$15.00	\$45.00	Hardware store
2 foot steel rebar	10	\$.96	\$9.60	Hardware store
Stainless steel elbow brackets w/screws	2	\$7.00	\$14.00	Hardware store
40 lb. Bag topsoil	4	\$3.00	\$12.00	Donated by Nice Guy Landscaping Co.
20 lb. Bag sand	1	\$5.00	\$5.00	Donated by Nice Guy Landscaping
40 lb. Bag mulch	1	\$3.00	\$3.00	Donated by Nice Guy Landscaping
Straw bale	1	\$5.00	\$5.00	Donated by Sally's Dad
Screwdriver	1	\$4.00	\$4.00	Borrow from Janitor
Hammer	1	\$12.00	\$12.00	Borrow from Janitor
Shovels	3	\$20.00	\$60.00	Borrow from home
Rakes	2	\$10.00	\$20.00	Borrow from home
Total			\$189.60	
			+ costs of plants and flowers	

These prices are just estimates and will vary, depending on where you buy them. You may not need to **buy** everything on this list, and you may decide that you need items not included here. Your budget will also depend on the kinds of plants you decide to use, how many, and what size garden you design! And remember, if you are able to borrow materials, or have them donated, you can subtract them from the actual cost of the project. In other words, the total in this sample budget is \$189.00, but the group only needs to raise \$68.60 because many of the items have been donated or borrowed!

One more thing: don't forget to include the costs of your plants and flowers!

Building Your Rain Garden

Once you have chosen your site, selected your plants, received permission, and collected all of the materials you will need, you're ready to start building and planting your rain garden!

1. Decorate Your Boards

Before you start building, you may want to decorate the sides of your 2x12 boards. You can paint pictures of the plants you will grow, of the animals that might use your rain garden for habitat, or maybe even a picture story



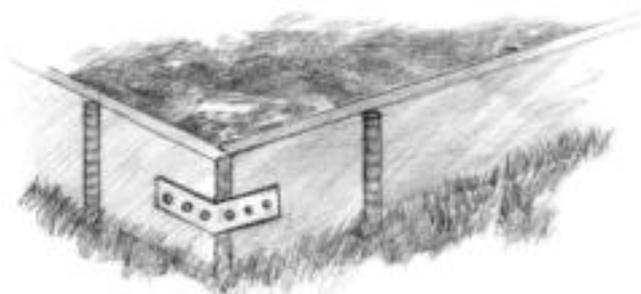
showing how a rain garden helps to keep our streams and rivers clean. If you decide to paint on your 2x12 boards, make sure they dry completely before you proceed any further.

2. Dig Your Rain Garden

To determine how large an area to dig, outline the area that you want your rain garden to cover with the 2x12 boards to get an idea of your garden's size. Use your shovels to dig up the top layer of dirt and grass inside the outline you made with the 2x12 boards. Turn the soil over so you can't see the grass—*this is a very important step*. If you don't turn the grass over it may grow up through your rain garden and compete with your native plants for water and nutrients. Use your shovels to break the big clumps of dirt apart. This will make it easier for your native plants to take root. If runoff is heavily focused into your rain garden, you may want to place some gravel at the source of the runoff so young plants do not wash away.



3. Build the Frame



The frame, built with the 2x12 boards, will provide a wall to keep your soil and plants in the rain garden. The bottoms of the boards should be buried about one or two inches in the ground to keep the soil inside the rain garden from coming out underneath.

The frame needs to be fairly level, so you will have to adjust how deep the boards are buried in the ground depending on the slope of the earth where you build your rain garden. Use the stainless steel elbow brackets and screws to fasten the corners of the boards together. Then use the two-foot long sections of steel reinforcing bar (rebar) to stabilize the boards. Have an adult help you hammer the rebar pieces into the ground up against the boards of the frame. Alternate the pieces of rebar on the inside and then the outside of the frame every two to three feet. Hammer them down so they are below the top of the frame. You will then need to fill in the frame with topsoil up to a few inches from the top of the boards.

4. Plant Your Rain Garden

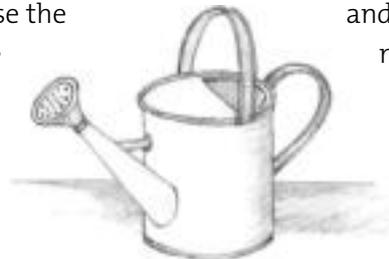
Now you are ready to put your plants or your seed in the rain garden. If you are using potted plants, you will need to dig holes in the soil of the rain garden deep and wide enough to hold the roots of the plant. Spread your plants around so they cover the whole rain garden. Be very careful not to compact the soil in your rain garden while you are doing this. If the soil gets too packed down, your plants will have trouble rooting. If you are using seed, mix the seed with an equal amount of sand first and then broadcast it evenly around the whole rain garden. Whether you use potted plants or seed in your rain garden, be sure to put down a layer of mulch, like pine bark strips or straw. The mulch will keep in moisture and protect your plants/seeds from weeds. Finally, water the rain garden thoroughly.



5. Maintain and Care For Your Rain Garden

Now that you have successfully planted your rain garden, all you have to do is take care of it so it will do what it is supposed to do. Because the native plants you chose can tolerate periods of dry weather, you won't need to water your rain garden

unless it doesn't rain for a long time (two to three weeks). Weeds will probably grow in your rain garden and you will need to pull them out so they do not compete with your plants. This can be done about once a month.



Congratulations! You've just built your very own rain garden and you know how it will help protect our streams and rivers from storm water runoff and restore wildlife habitat. So if someone asks you, "What is a rain garden?" you can tell them *and* show them.



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