

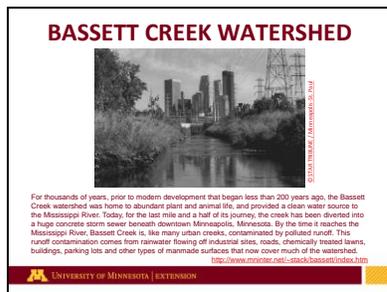
Rain Garden Presentation for Spring 2014 Library Classes

Slide 1



Welcome! I am _____, a Master Gardener with the University of Minnesota Extension Service.

Slide 2



- Think about this scene without all the buildings, roads, wires, etc.
- Bassett Creek flowed directly into the Mississippi River for thousands of years, until the last 1-1/2 miles was diverted into huge concrete storm sewer to accommodate the development of Minneapolis.
- As it flows to the Mississippi today it carries many contaminants with it, coming from the many man-made surfaces that cover much of the watershed.

Slide 3



This is what we'll cover today. By the time you leave, you'll know what a rain garden is, why it's beneficial for the environment and how to make one. I have handouts with lists of helpful web sites and on-line publications on rain gardens.

Slide 4



How many of you have heard of rain gardens before? They are a means to improve water quality, starting right in your own yard.

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WHAT IS A RAIN GARDEN?

- Gardens planted in a shallow depression that soak up rain water, mainly from your roof, but also from your driveway and lawn.
- Landscaped areas planted to native vegetation to replace areas of lawn.
- The gardens fill with a few inches of water and allow the water to slowly filter into the ground rather than running off to storm drains.

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City of Minneapolis - Creating your own Rain Garden

- First, “What is a Rain Garden”? Basically, a rain garden does just what its name implies: it’s a garden that recycles the rain.
- Ideally, rain should soak into the ground when it falls. But when it hits roofs, pavement and other impervious surfaces, it heads down the street to the storm drain instead, carrying pollution with it.
- A rain garden helps to keep the rain where it falls.

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PLANTS HELP RECYCLE THE RAIN

- Plant roots absorb water
- Water goes up the stem
- Leaf surfaces release moisture
- Water returns to the atmosphere as a vapor

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City of Minneapolis - Creating your own Rain Garden

- Plants play a role in rain gardens, too, through a process called “transpiration,” or sometimes, “evapotranspiration.”
- Here’s how it works:
- Plant roots absorb water from the soil.
- Plants pump the water up their stems to deliver nutrients to their leaves. This pumping action is caused by evaporation of water from leaf surfaces.
- The water returns to the atmosphere as a vapor, instead of as a liquid.
- So, transpiration is basically evaporation of water from plant leaves.
- Studies have shown that about 10% of the moisture in the atmosphere is released by plants through transpiration. The remaining 90% is mainly supplied by evaporation from oceans, seas, lakes, rivers, and streams.

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FUNCTIONS OF A RAIN GARDEN

- Diverts runoff from hard surfaces like driveways, roofs, streets, patios, walks
 - Water moves “sideways” – runs off pavement
- Keeps runoff on site
 - Instead of flowing untreated into storm sewers, streams, rivers and lakes
- Soil acts like a living sponge
 - Water moves “down” - into the ground

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City of Minneapolis - Creating your own Rain Garden

- Paved surfaces are at the root of the problem of water quality in urban areas. They increase storm water runoff.
- The runoff stays on the surface, instead of soaking into the ground. It moves sideways, not down.
- A rain garden stops the flow of water and keep it on-site.

Slide 8

BENEFITS OF A RAIN GARDEN

- Compared to a patch of conventional lawn, a rain garden allows about 30% more water to soak into the ground
- Recharges groundwater
- Helps prevent flooding
- Provides habitat/food for butterflies, birds and pollinators
- Beautifies a low spot in the yard
- Helps prevent water pollution

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City of Minneapolis - Creating your own Rain Garden

- We can’t control the rain, but we **can** control what it hits, where it goes, and how fast it goes.
- Paved surfaces aren’t the only problem in developed areas—lawns also create issues with runoff. A rain garden soaks up 30% more runoff than lawns.
- Water percolates down and recharges the water table, and that helps prevent flooding.
- As a bonus, rain gardens are pretty and attract butterflies and birds.

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HOW DOES A RAIN GARDEN HELP PREVENT POLLUTION?

- Holding back the runoff helps prevent sediments, salts, fertilizers and pesticides from washing off your yard, into storm sewers, and eventually into nearby streams and lakes.
- Reducing the amount of lawn cuts pollution from weed killers, lawn fertilizers and lawn mowers.
- The design of the rain garden and its vegetation trap sediment and hold soil in place.
- A typical city block generates 9 times more runoff than a woodland area.

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Polluted runoff contains sediments, salts, fertilizers, and pesticide residue. Microbes in the soil help to break down pollution in runoff.

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POLLUTED RUNOFF HARMS WATER QUALITY

- Flows into waterways untreated
- Harms fish and wildlife
- Kills vegetation
- Fouls drinking water supplies
- Makes recreation areas unsafe



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- Why should we care about polluted runoff? Well, polluted runoff becomes a water quality issue when it is released directly into rivers and lakes with any treatment.
- According to the Minnesota Pollution Control Agency, about 40% of Minnesota’s lakes and rivers are polluted. Runoff is responsible for 86% of the pollution.
- The illustration shows how rainwater flows off the roof of a house, onto the driveway, down the street, and into the storm drain. From there, it runs through the storm sewer and empties out directly into a river or stream.

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EVERY CURB IS A SHORELINE



- Grass clippings and leaves are the main source of phosphorus, which causes algae growth, in lakes and streams
- Rain gardens act as filters and remove:
 - 94% of sediment
 - 43% of phosphorus
 - 70% of nitrogen

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Every curb is a shoreline. You can do your part to protect water quality.

When you mow your lawn, try to keep the clippings from going into the street.

The University of Minnesota did a study that showed that most of the phosphorus in runoff came from leaves and grass clippings that washed into storm sewers and ended up in lakes and streams.

Rain gardens help filter out pollution. They remove sediments and excess phosphorus and nitrogen. Phosphorus causes green algae blooms in lakes and streams.

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How to Create a Rain Garden

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We’ve talked about why rain gardens are beneficial. Now we’ll talk about how to design one.

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DESIGN CONSIDERATIONS

- Location
- Soil
- Size and shape
- Plants

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Things to consider are where to locate the rain garden in your yard, what type of soil you have, how big to make it, and which plants thrive in rain gardens.

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LOCATION OF THE RAIN GARDEN



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- This drawing shows where a rain garden should go in a yard.
- The rain hits the roof, runs down the drain pipe, and flows down-slope into the rain garden.
- The plastic sleeve on the end of the downspout helps direct the rain toward the rain garden. You could dig a shallow rock-lined trench to the rain garden or use landscaped swales instead.
- If you don't want to mow around something on the lawn, you could connect the end of the downspout to a plastic pipe and bury it underground instead. The end of the pipe should empty into the rain garden.

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GO WITH THE FLOW

- Observe the drainage pattern in your yard
- Locate the garden:
 - in a natural low spot
 - near sidewalks, driveways or other paved surfaces
 - down-slope from roofs, gutters, downspouts, or the sump pump outlet
- Direct water into rain garden
 - swale, channel or buried plastic pipe

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- To find the right place for a rain garden, watch where the water flows in your yard the next time it rains.
- Does it flow into a natural low spot? Or does the run off your driveway into the alley or street?
- Or is there a section of roof where the rain pours off heavily?
- These are all good spots for a rain garden.
- Remember to direct the water away from the house and toward the rain garden using a swale, channel or a buried plastic pipe.

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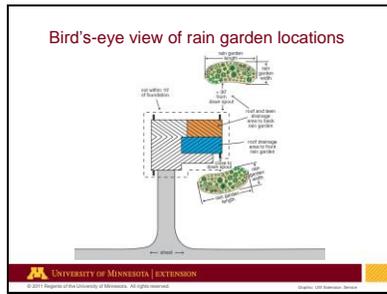
...WITH CAUTION

- Locate the garden:
 - at least 10 feet from the house foundation
 - at least 100 feet from private wells and 1,200 feet from public wells
 - DO NOT put them over a septic mound
 - avoid putting a rain garden near potential pollution "hot spots," such as industrial sites and gas stations

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These are some important factors to consider when locating your rain garden.

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This bird's-eye view of a house and driveway shows two possible locations for a rain garden:

- close to the downspout in the front yard
 - or more than 30 feet from the downspout in the backyard.
- Note that they are both a **minimum of 10 feet** from the foundation.

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THE SOIL MUST DRAIN!

- A rain garden is **NOT** a pond.
 - Rain water should soak in within 24-48 hours so the rain garden is dry between rainfalls.
- Perform a percolation test.
 - If fails, don't put a rain garden there
 - or amend soil
- "Rain garden soil mix"
 - 50-60% sand, 20-30% topsoil, 20-30% compost

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- It is very important that the soil in the rain garden drains. Remember: a rain garden is **not** a pond, with standing water.
- To test how well your soil drains, try a "percolation test." The soil should drain within 24 hours.
- If it doesn't don't put a rain garden there. Your soil is probably heavy clay or compacted soil, which does not drain as readily as sandy or loamy soil.
- If you have soil that doesn't drain, but still want a rain garden, you can amend the soil. One way is to amend the soil by adding compost, which helps makes the soil "looser" and more penetrable over time.
- A quicker option is to remove the clay or compacted soil in the area you select for a rain garden and replace it with "rain garden mix."
- Dig down to a depth of two feet and replace the soil to that depth. The ideal "rain garden soil mix" is 50-60% sand, 20-30% topsoil (**no clay**), and 20-30% compost.

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**PERCOLATION TEST –
DETERMINING THE INFILTRATION RATE**

- Fill an 8"x8"x8" hole with water, allow to drain, then fill again.
- Measure how long it takes for water to filter into soil.
- If the water level drops by ½" in 1 hour then your soil will handle 12" in 24 hours.
- Acceptable infiltration rate is at least ¼" per hour.
- Depth of rain garden should be the number of inches the water level drops in 24 hours, maximum 12".

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This 8"x8"x8" size is a guideline for the approximate size of the hole you dig.

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**ARE THEY A BREEDING
GROUND FOR MOSQUITOES?**

- No, mosquitoes need 7 to 12 days to lay and hatch eggs. Standing water in the rain garden will last for only a few hours after most storms.
- Mosquitoes are more likely to lay eggs in bird baths, storm sewers, and lawns than in a sunny rain garden.
- Also, rain gardens attract dragonflies, which eat mosquitoes!

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A common concern is that mosquitoes will use rain gardens to lay their eggs. Again, a rain garden is not a pond! If you follow the recommendations regarding the percolation test, you will not be creating a breeding ground for mosquitoes, but a haven for dragonflies and native pollinators.

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HOW BIG SHOULD THE GARDEN BE?

- No standard size
- Rule of thumb is 1/3 of drainage area
 - e.g., 170 sq. ft. (10' x 17') garden for 500 sq. ft. of drainage area
 - Rooftop area plus impervious surfaces
- Factors include slope, soil type, distance from runoff point
- Even a small rain garden is beneficial

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- So far, we've talked about a good location for your rain garden and what kind of soil is suitable. Now we'll talk about how big a rain garden should be.
- There are no hard-and-fast rules about rain gardens.
- If you want to control every drop of runoff from your property, please look through the formulas in an excellent University of Wisconsin Extension Service publication called, "Rain Gardens: A How-to Manual for Homeowners." It's on the handout that lists Rain Garden Resources.
- Factors in sizing a rain garden include slope, soil type, and distance from the runoff point.
- However, any size rain garden will help to control runoff. If you don't want to go through lots of measuring and calculations, you can use this **rule of thumb**: A rain garden should be about 1/3 the size of the drainage area.

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CALCULATING DRAINAGE AREA

Area of roof going to downspout



- Length of house 50 feet
- Width of house 40 feet
- $L \times W = 2000$ sq. ft.
- 2000 sq. ft. $\div 4 = 500$ sq. ft. draining to the rain garden

Graphic: UW Extension Service

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- The amount of water draining to a rain garden is determined by the size of the area being drained. This diagram represents a bird's-eye view of a rooftop. The area shown in yellow is going to one downspout, which will feed the rain garden. **Note: the formula is in the How-To Manual listed on the handout, so you don't have to write all of this down.**
- To determine the area that will be draining to the garden, measure the length of the house, which in this example is 50 ft.
 - Next measure the width (40 feet).
 - Multiply those together to get the total square feet. For this example, the house is 2,000 square feet in size.
 - Since only a fourth of the runoff from this roof will be going to this downspout, divide 2,000 by 4. The answer is that 500 square feet drain to the rain garden.
- Your home's rooftop may be more complex than this, but you can make an estimate as to what proportion of your roof each downspout drains.

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- After you've decided where to put the rain garden in your yard and how big to make it, the next step is to lay it out.
- A tip is to outline the areas with a garden hose or rope on the lawn. That will give you an idea of how it will look. Make it a pleasing shape, like a kidney bean, tear drop, or crescent. Curvy shapes are less formal and tend to lead your eye through the landscape.
- It is VERY important to call Gopher State One Call **before** you dig. Gopher State One will come to your property free of charge and mark the location of buried utility lines.
- Remove the sod and dig out a shallow saucer shape.
- Mound up the soil you dig out on the low end to form a small berm to keep water from flowing over the bottom edge.
- A grass filter strip along the top edge helps to slow down the momentum of the water.
- Place mulch after soil is in place to reduce compaction while planting. We'll talk more about mulch in a few minutes.

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- This illustration gives a bird's-eye view of a rain garden.
- The runoff is directed to the rain garden from the downspout.
- The water flows down a gentle slope.
- The soil berm at the lower end helps to keep the water in the garden.

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- These photos show how a rain garden is laid out at the edge of a shared parking lot behind some townhomes. The water naturally flows off the parking lot into the grassy area.
- The outline of the garden is marked with red spray paint. (You could outline it with a garden hose or a rope, instead.)
 - Then, the garden is dug out.
 - Plastic edging can be used to define the garden, but make sure that it is not raised up too high, or else the rain water will not be able to flow into the garden.

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RAIN GARDEN IN ACTION

- Parking lot runoff flows into the rain garden instead of into the street
- Runoff pools in the garden, then seeps into the ground



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This photo shows the rain garden seen in the previous slide, just after a storm. The rain garden is doing just what it should do: it's capturing the rainwater that flows from the parking lot. The water pools briefly, then gradually seeps into the ground. The water should soak in within a day.

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Plants for Rain Gardens

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Selecting plants that are right for rain gardens is important. Marsh milkweed is shown in this photo. It's native to Minnesota, tolerates wet soils, and is a favorite food for butterfly caterpillars.

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SELECT PERENNIAL PLANTS THAT

- Tolerate both wet and dry spells
- Tolerate de-icing salts (if near roads)
- Match up with soil and light conditions
- Native plants are the best choice for rain gardens

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Plants that can tolerate both wet and dry spells are best.

- Put plants that can tolerate a bit of standing water on their roots (or "wet feet") in the deepest part of the garden, such as blue flag iris, marsh milkweed, big bluestem, sedges, red-twigged dogwood, buttonbush, etc.
- Put plants that like moist, but not wet, soils on the slopes and toward the top.

Match up the plants with the light and soil conditions they prefer. Some plants prefer light shade and others do best in full sun.

Here are some tips:

- Use *plants* instead of *seeds*.
- Use perennials instead of annuals.
- The best time to plant is in the spring, so that plants can become established for a full season.
- If you're planting near roads and driveways, use plants that can tolerate deicing salt.
- You can use shrubs and small trees, too.

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MOISTURE ZONES IN A RAIN GARDEN



- **Upland-dry** – dry, well-drained soil
- **Upland-mesic** – soil is moist, but not wet
- **Wet** – soil is wet, occasionally standing water
- **Shallow water** – standing water most of the time

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Look at this picture of a springtime rain garden. You can imagine that the lower area of the rain garden will hold more rainfall for a longer period of time than the sloping sides. This is what we mean by moisture zones in a rain garden. If you look at the list of plants for Rain Gardens in the 30 Tough Sites book, you will find the plants categorized using these moisture zones. From experience, these zones are one of the most important factors in plant selection.

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NATIVE PLANTS HAVE ADVANTAGES

- Adapted to the climate and native pests
- Many native plants can tolerate wet soils
- Deep, extensive root systems
- Create a beautiful natural area for butterflies, birds, pollinators and other beneficial insects

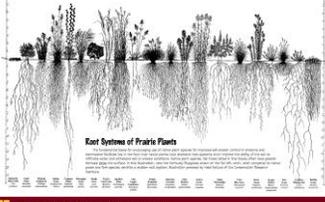


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- Hardy native species thrive in our ecosystem without chemical fertilizers or pesticides, and with little additional watering.
- They are adapted to our climate and the diseases and insects that they're likely to encounter.
- Also, many of them have long and extensive root systems that can reach deep into the soil for water during dry spells, helping them survive drought.

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ROOT SYSTEMS OF NATIVE PLANTS



Root Systems of Prairie Plants

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- Many of our native plants are prairie plants. This drawing shows how long the roots of prairie plants are.
- For example, Big Blue Stem, a popular ornamental grass, stands about 4 feet tall, but its roots go down 8 feet.
- By comparison, the roots a turf grass go down only 3 inches into the soil.
- You can see how these long plant roots help loosen the soil and form channels in the soil. Rainwater can easily follow the channels and soak into the ground.

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WILL A RAIN GARDEN FIT INTO MY NEIGHBORHOOD?

- You can create a garden with native plantings that doesn't look too wild or messy by keeping the edges tidy.
- Neatly trimmed shrubs, a crisp edge of lawn, stone retaining walls and other devices can be used to keep garden edges neat and visually appealing.
- Tall plants and grasses tend to flop, so if you want a neat silhouette, stick to shorter species.
- To keep native plants from growing too large, remember not to water them!
- Mass plantings help to keep the look more uniform.

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You may have concerns about how these gardens will look in your tidy suburban neighborhood.

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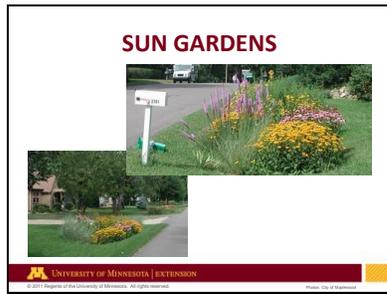


Rain gardens in Maplewood, MN instead of curbs and gutters

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- The city of Maplewood, a northern suburb of St. Paul, has been a pioneer in Minnesota in using residential rain gardens.
- In the 1990's, Maplewood decided to try rain gardens along a two-block residential street as an alternative to installing traditional storm sewers, curbs, and gutters.
- Most residents like this option better, and the rain gardens were cheaper than storm sewers.
- The rain gardens in Maplewood have been successful in handling intense storms.
- Maplewood is expanding the use of rain gardens in other parts of the city. Since 1996, Maplewood has installed over 300 residential rain gardens.

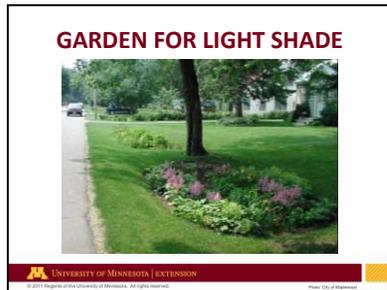
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These photos show rain gardens planted along a residential street in Maplewood in full sun.

These gardens have black-eyed Susan, liatris, and purple coneflower.

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This Maplewood rain garden is in light shade and uses traditional shade plants, like hosta and pink astilbe, instead of prairie plants.

This garden helps to infiltrate rainwater, too.

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- Rain gardens can mix water-loving shrubs with perennials.
- In this rain garden, American Highbush Cranberry tolerates wet feet and is planted in the lowest part of the garden, along with Marsh Milkweed.
- Annabelle Hydrangea, with its snowy-white flower heads, likes moist soil and is planted along the slope.
- Unlike daylilies that bloom only once, the Stella d'Oro daylily blooms again and again all summer long. And, it tolerates deicing salt, so it's a good choice for planting near a street.

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Homeowners in the Rushmore Drive neighborhood, south of Highway 13, east of Chicago Avenue and northeast of Crystal Lake, worked with the City of Burnsville to install 17 rain gardens in September 2003 to protect Crystal Lake from polluted runoff.

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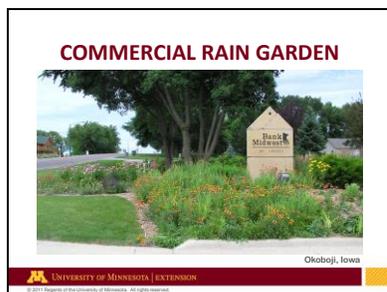


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Here is a photo of another rain garden on Rushmore Drive in Burnsville. As you can see, this one uses a retaining wall and runoff is directed into the rain garden from the sides. The beautiful crab apple tree certainly catches attention. Later in the summer, when the crab is no longer the center of attention, the beautiful blooms take over the show.

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This is a rain garden in the commercial setting we happened onto on a 2006 trip to Okoboji, Iowa. This bank almost completely filled its front “lawn” with a beautifully landscaped rain garden. We can start by creating rain gardens in our own yard, but encouraging their use in commercial/public settings can truly help make a difference. Besides, wouldn’t you love to visit a bank that gives you this pleasing display?

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MAINTENANCE

- Native plants, shrubs and small trees require less maintenance.
- Pull weeds especially the 1st year
- Water ~3 x a week until established and during dry spells
- Mulch - shredded hardwood won't float away
- Cut back or mow down
- Some thinning in later years as the plants mature

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Every garden requires *some* maintenance, especially when it's first planted.

Pulling and hoeing weeds is very important in the 1st year, so that they don't compete with the young plants.

Just like any newly planted perennials, your rain garden plants need water to get started. A good rule of thumb is to water new plants about 3 times a week, unless there is adequate rainfall during the week.

Mulch helps to keep weeds down and retain soil moisture.

- The best type of mulch to use in rain gardens is **shredded bark**.
- Wood chips are buoyant in water and tend to float away in heavy rain.
- Shredded bark stays put and won't float away.
- Cocoa-bean mulch smells great – like chocolate – but when it's wet, it can become moldy and unattractive.

Cut back or mow down the plants by late Winter, in order to give the plants to get re-started each Spring.

Some people like to let the dried plants standing in the garden for winter interest. It's okay, as long as they're healthy. Plants that have a disease should be removed from the garden and thrown out.

Regular garden maintenance is suggested, including some thinning in later years as the plants mature.

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ESTIMATED COST AND PLANTS NEEDED

- Do-it-yourselfers - about \$3 to \$5/sq. ft.
- Professionals - about \$10 to \$12/sq. ft.
- Plants needed for 300 sq. ft. garden
 - 100 for wet zones
 - 200 for upland zones

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The University of Wisconsin Extension Service estimates that the cost of installing your own rain garden is about \$3 to \$5 per square foot. **And most of that cost is for the plants.**

Plan to spend \$10 to \$12 per square foot if professionals install your rain garden. You are paying them for their design expertise and installation costs.

The City of Maplewood estimates that 300 plants are needed for a 300-square-foot residential rain garden: 100 for the low spots or "wet zones" and 200 for the plants on the slopes.

That estimate is based on spacing the plants a foot apart from one another. Of course, this changes if you are purchasing shrubs or plants that require spacing greater than 1 square foot.

If you plant a smaller garden, such as 5' x 10' (50 sq. ft.), then you'd have 50 plants spaced at 1-foot intervals. At \$3.00 per plant, that would cost about \$150 for plants for a 50 sq. ft. rain garden.

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HANDY RESOURCES

- Gopher State One Call – Call 811 Before you Dig
<http://www.gopherstateonecall.org/>
- Rain Gardens: A How-to Manual for Homeowners:
<http://clean-water.uwex.edu/pubs/pdf/rghmanual.pdf>
- Rain Gardens: A Household way to Improve Water Quality in Your Community:
<http://clean-water.uwex.edu/pubs/pdf/gardens.pdf>
- Blue Thumb—Planting for Clean Water—Rain Gardens:
<http://www.bluethumb.org/raingardens/>
- Best Plants for 30 Tough Sites—Rain Gardens:
<http://www1.extension.umn.edu/GardenYard-garden/landscaping/best-plants-for-tough-sites/docs/08464-rain-garden.pdf>

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The most important of these is Gopher State One Call!
The 2nd one is the how-to manual from the University of Wisconsin Extension mentioned in the presentation.

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MORE HANDY RESOURCES

- Rain Garden Network:
<http://www.raingardennetwork.com/about.htm>
- City of Maplewood, MN—Creating a Rain Garden in Your Yard:
<http://www.ci.maplewood.mn.us/DocumentCenter/Home/View/247>
- Friends of Bassett Creek:
<http://www.mninter.net/~stack/bassett/index.htm>
- Burnsville Rainwater Gardens:
<http://www.burnsville.org/DocumentView.asp?DIID=450>
- Minnesota DNR Native Plant Suppliers and Landscapers:
<http://www.dnr.state.mn.us/gardens/nativeplants/suppliers.html>
- Applied Ecological Services, Inc. – Build Your Own Rain Garden:
<http://www.appliedeco.com/Projects/Rain%20Garden.pdf>

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GREEN GARDENING

- Using Rain Barrels for Water Collection:
<http://rainbarrelguide.com/>
- University of Minnesota Extension Shoreland Education:
<http://www.extension.umn.edu/environment/shoreland/>
- University of Minnesota Extension Stormwater Education:
<http://www.extension.umn.edu/environment/stormwater/>
- University of Minnesota Extension Gardening Information—Lawns:
<http://www.extension.umn.edu/garden/yard-garden/lawns/>
- University of Minnesota Extension Gardening Information—Soils & Composting:
<http://www.extension.umn.edu/garden/yard-garden/soils/>
- University of Minnesota Sustainable Urban Landscape Information Series:
<http://www.sustland.umn.edu/>
- Minnesota Department of Agriculture Integrated Pest Management:
<http://www.mda.state.mn.us/plants/pestmanagement/ipm.aspx>

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RECOMMENDED READING

- "The Best Plants For 30 Tough Sites" by University of Minnesota Extension Master Gardeners
- "The Blue Thumb Guide to Raingardens - Design and Installation for Homeowners in the Upper Midwest" by Rusty Schmidt, Dan Shaw and David Dods
- "The Natural Water Garden: Pools, Ponds, Marshes & Bogs for Backyards Everywhere" from the Brooklyn Botanic Garden, guest editor C. Colston Burrell
- "Lakescaping for Wildlife & Water Quality" by Carrol Henderson
- "Landscaping with Native Plants of Minnesota" by Lynn M. Steiner
- "Invasive Plants of the Upper Midwest" by Elizabeth Czarapata

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The Best Plants for 30 Tough Sites has a 3-page list of rain garden plants.
The Blue Thumb Guide is an excellent resource, also containing a long list of plants with pictures.

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To review:

- A rain garden is a shallow saucer-shaped garden that is strategically located in your yard to catch rainwater before it flows into the street and into rivers and lakes.
- Check out your soil before deciding to install a rain garden. If your soil is too heavy and won't drain, you'll have to amend the soil or replace it with soil that drains properly.
- Make sure that the plants you use can tolerate wet soils, and put them where they like to grow, in full sun or in light shade.
- Try to make the rain garden the right size to catch the runoff from your property.
- By having a rain garden, you are making a personal contribution to cleaner water.

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Thank you for your kind attention and interest in rain gardens! I'm happy to take your questions . . .