

Protecting our Streams Through Landscaping

Presenter: J. Meiring Borchers

Home Repair Resource Center

HouseMender University Presentation

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Agenda



- Cuyahoga County Board of Health.
- Stream degradation, flooding and erosion
- How to install Rain Gardens
- Use of Native Plants
- Benefits of Native Plants
- Type of Garden
- General Cost of Garden
- Before the Dig
- Placing Plants
- Plants not to use
- Native Plants for your Rain Garden



Riparian areas, streams & wetlands act as sinks for stormwater and its pollutants.

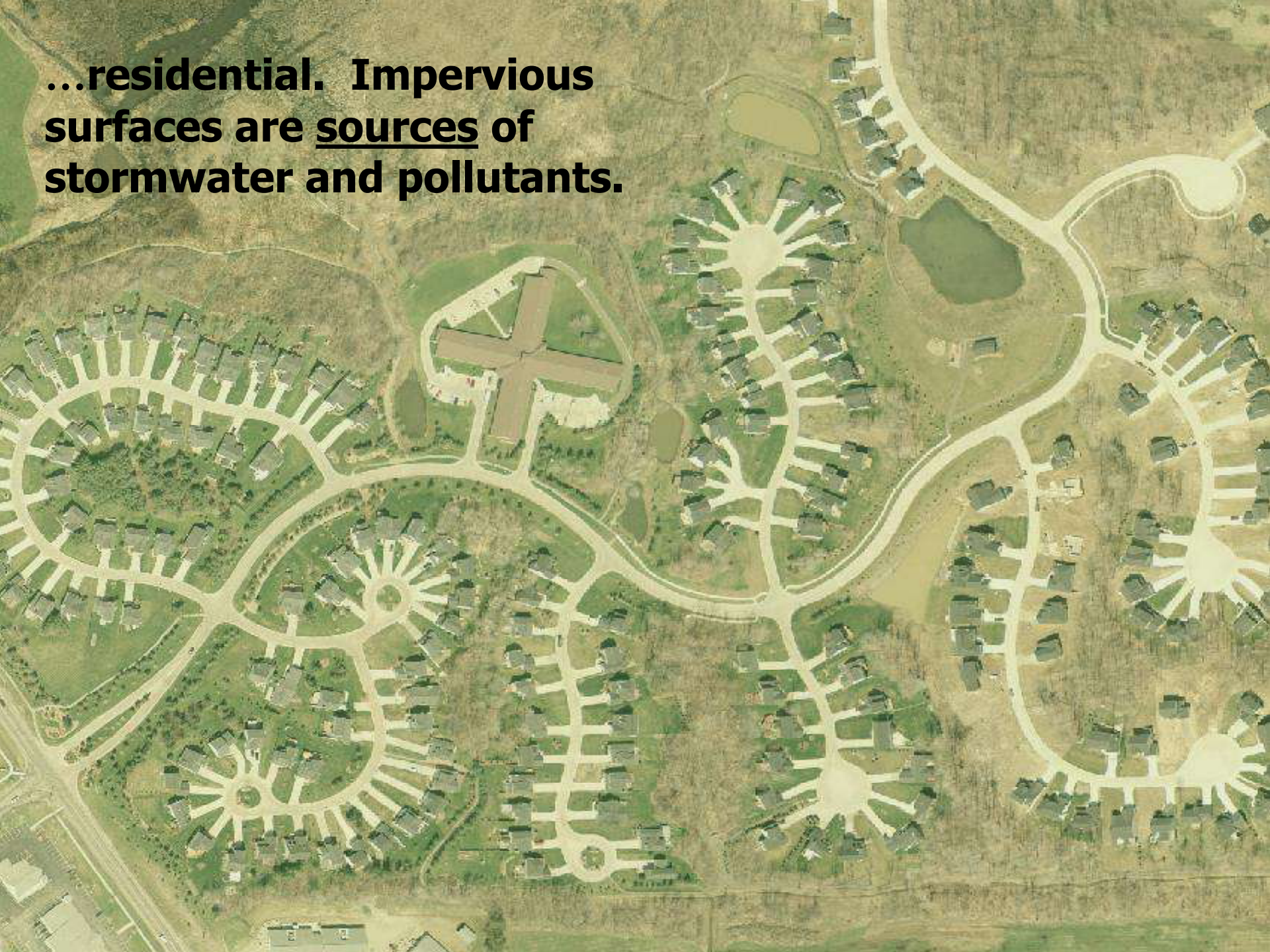
As sinks, these landscape areas provide FREE flood and erosion control and water quality protection services to communities.



As communities develop, riparian areas, streams, and wetlands are replaced with hard (impervious) surfaces, both commercial and...



...residential. Impervious surfaces are sources of stormwater and pollutants.



Traditional approach has resulted in quality & quantity problems.



Impervious cover and building in riparian areas and wetlands increases flooding and flood impacts.





Increases the severity of stream bank erosion.

- **Risk to structures**
- **Expensive repairs**
- **Sediment pollution**

**3 acre
residential
zoning**

**“We could
walk across
9 years ago”**



Traditional Stormwater Management

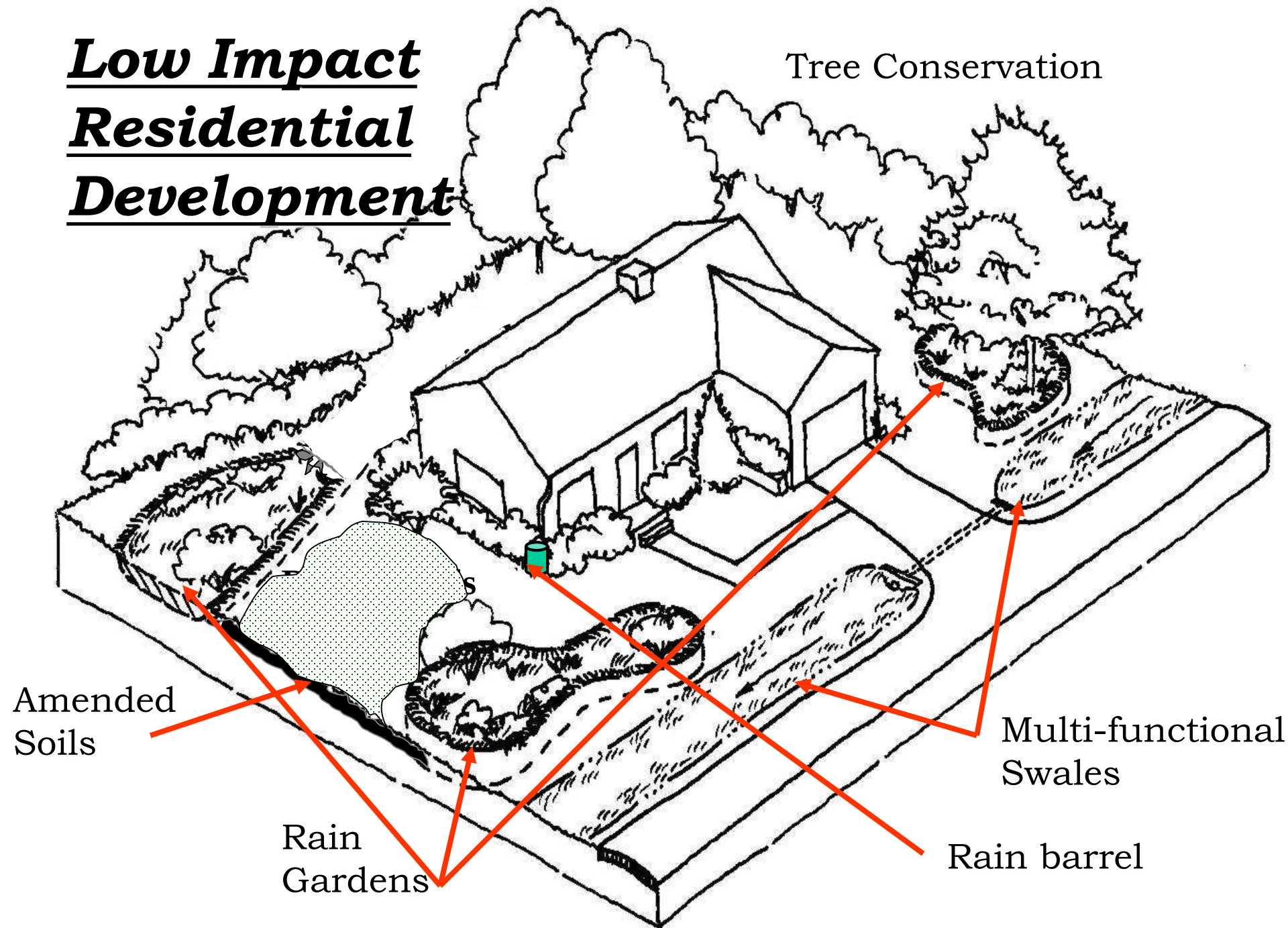
Centralized, efficient
control of large
floods. Uses curb
and gutter systems
leading to storm
water basins.

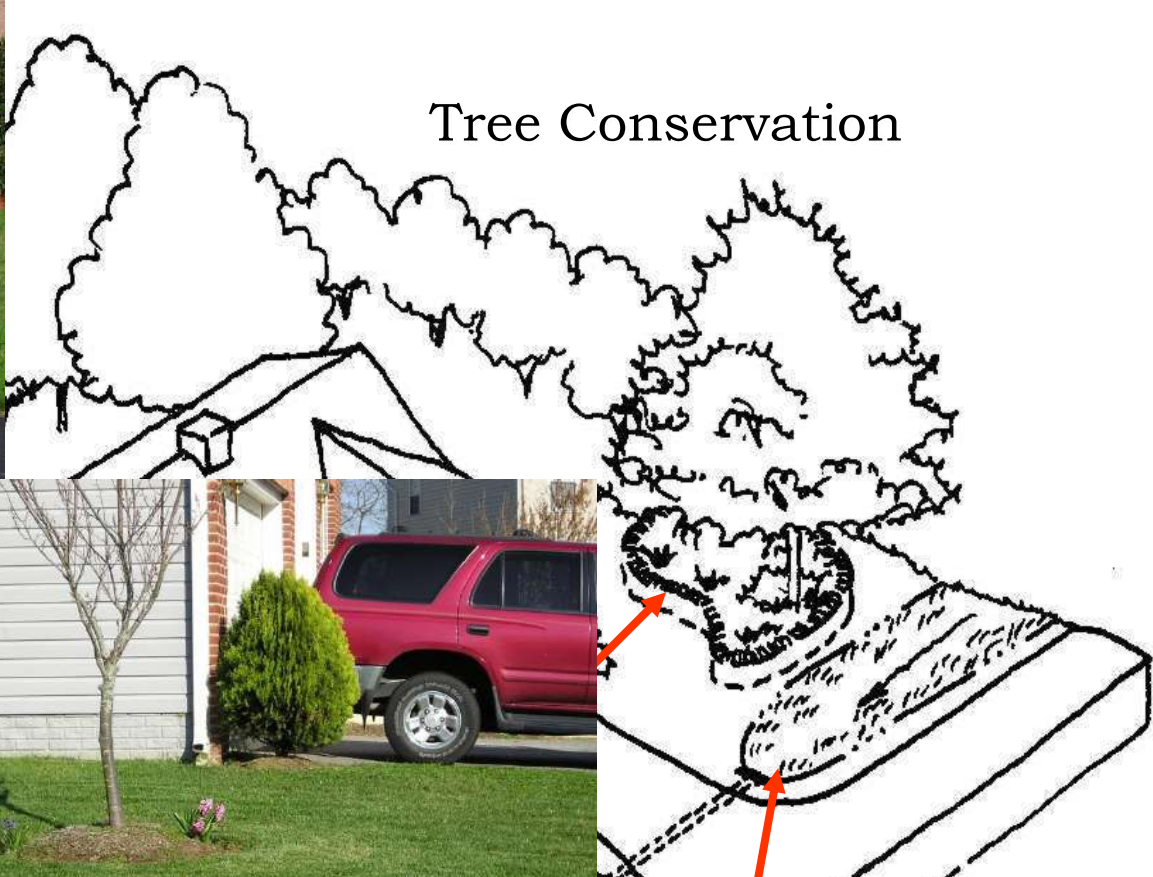




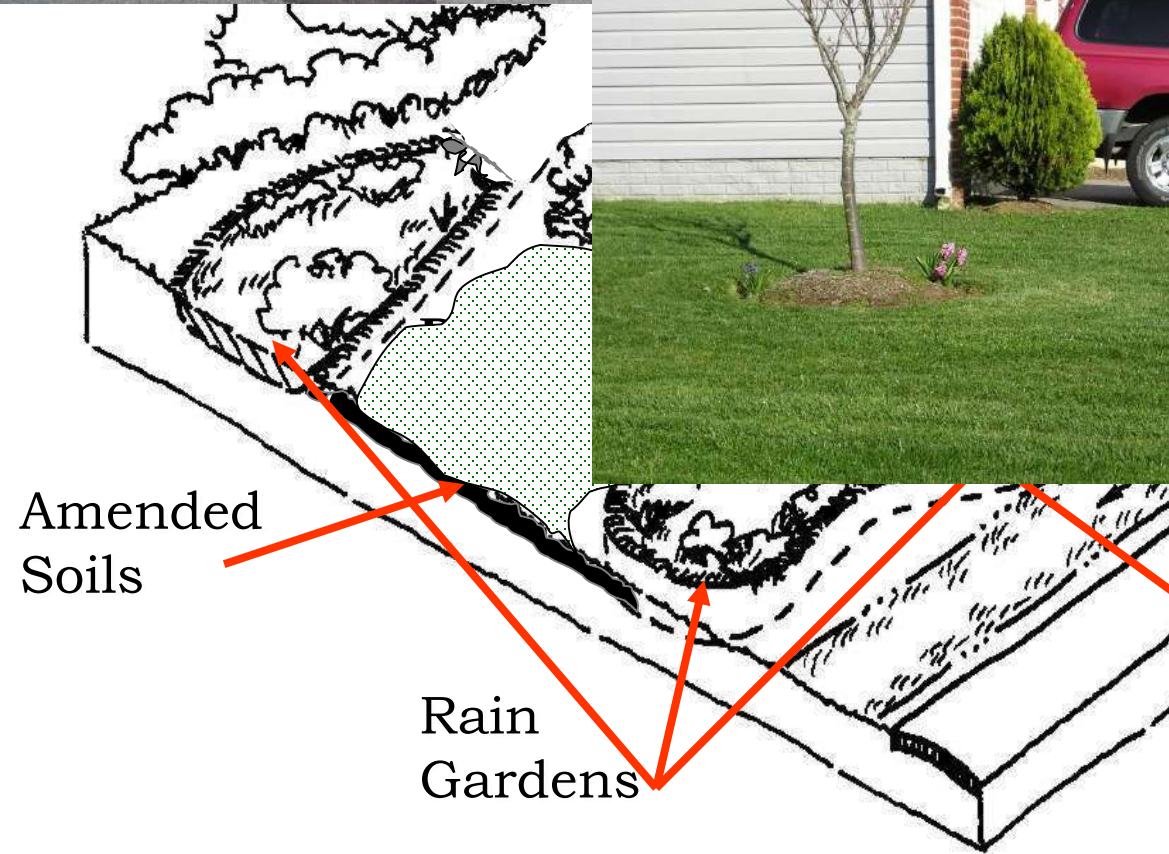
Traditional stormwater basins:
Hold large storms. Do little to
control small, more frequent
storms that cause erosion and
nuisance flooding.

Low Impact Residential Development





Tree Conservation



Amended
Soils

Rain
Gardens



What Can You Do on Your Property?

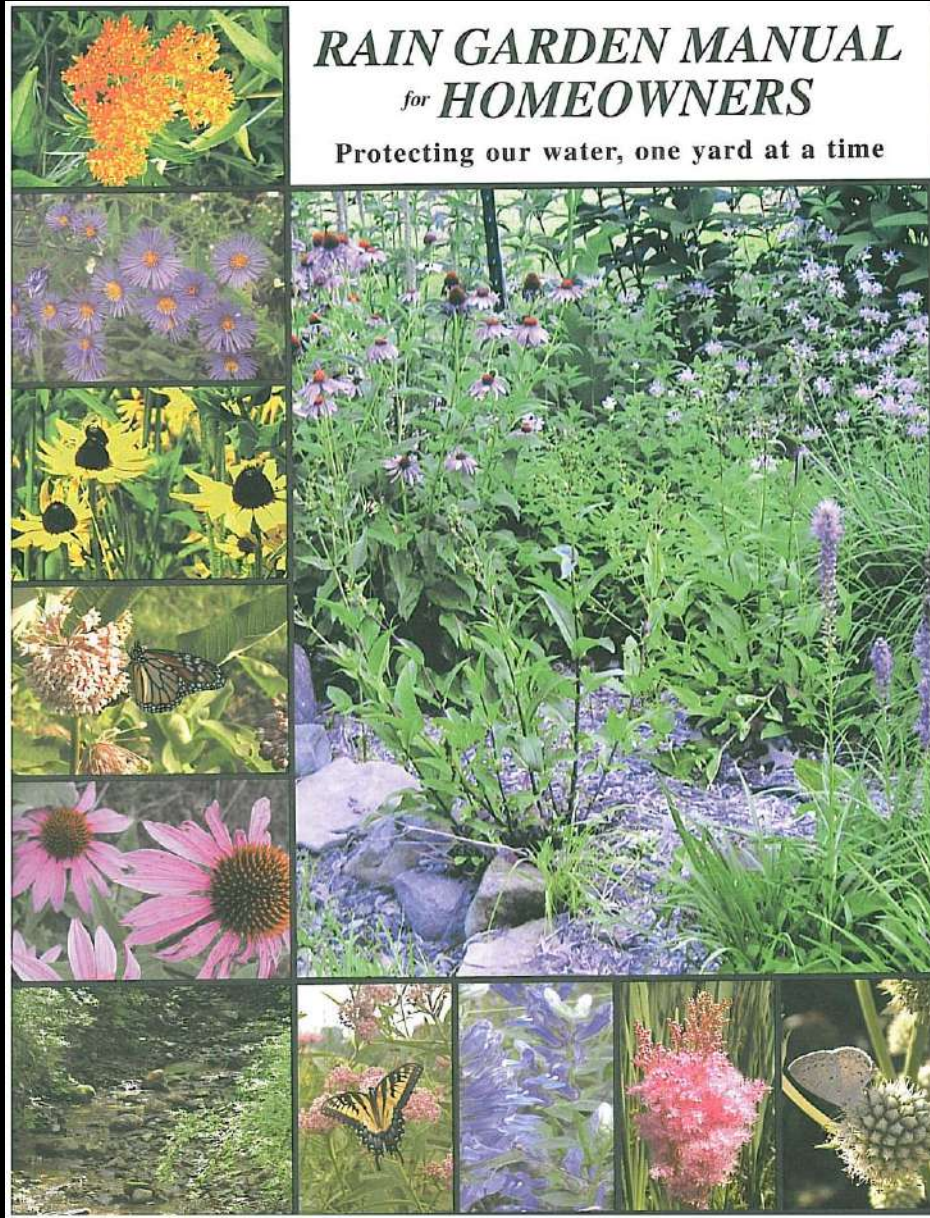
Tools to reduce stormwater runoff from your property....

- ✓ Install Rain Barrels
- ✓ Build Rain Gardens
- ✓ Protect stream channels from erosion
plant a tree.
- ✓ Reduce impervious areas.
- ✓ Reduce sediment, nutrients, chemicals,
and other pollutants in runoff.

Build a Rain Garden



How to Install Rain Gardens



- Read the manual before starting
- Follow the worksheet in the back
- Ask for help
- Think about bed placement
- Chose the best plants
- HAVE FUN !



Placing and Sizing Your Rain Garden

This section of the manual covers rain garden planning basics -- where to put the garden and how large it should be based on your soil type, slope, and drainage area. Following the instructions in this section will help ensure your rain garden is successful. There is a rain garden worksheet on page 18 where you can perform and record your calculations.

Finding the Right Location for Your Rain Garden

Rain gardens can be placed near your home to catch runoff from your roof, or farther out in your lawn to collect surface water draining across your property. Do a bit of rainy day sleuthing to discover the drainage pattern on your property. Find out where runoff flows and locate areas where water collects. Typically, the largest sources of runoff are rooftops, paved surfaces, slopes, and compacted soils.

Some helpful tips are listed below to help you determine the best location for your rain garden:

- ☞ Rain gardens should be a minimum of ten (10) feet from your home and your neighbors' homes, to prevent damage from water seepage.
- ☞ Rain gardens should not be placed over or near the drain field of a septic system.
- ☞ Because these areas are already poorly drained, rain gardens should not be placed in an area of your yard where water collects. They should be placed up-slope of these areas to reduce the amount of water that flows into them.
- ☞ Rain gardens should not be placed within existing drainage ways such as swales and ditches.
- ☞ Sunny or partly sunny locations are best for rain gardens, but shade gardens are possible.
- ☞ Rain gardens should be integrated with your landscape. They can have a formal or informal look based on your preference.
- ☞ Rain gardens should not be installed under large trees. Trees have extensive root systems that may be damaged in the rain garden excavation process. In addition, they may not be able to adapt to the extra moisture being held by your rain garden.
- ☞ Check with your local building department before installing your rain garden as some of the installation requirements may conflict with local ordinances or zoning regulations.
- ☞ Make yourself aware of underground service lines or utilities. Remember to "Call before you dig!" 1-800-362-2764 for underground utilities and 1-800-925-0988 for oil and gas lines.

POINTS TO REMEMBER

- Keep 10 + feet from foundations
- Keep away from septic systems
- Keep out of wet areas
- Don't install in drainage lines
- Use sunny or partly sunny areas
- Integrate it with the landscape
- Refrain from installing under large trees
- Check with local building department for restrictions
- Call before you dig!!!

DETERMINING THE DEPTH OF YOUR RAIN GARDEN

1. Set one stake at the uphill side of your rain garden and another stake at the downhill side.
2. Tie a string at ground level to the uphill stake.
3. Secure the other end of the string to the downhill stake, ensuring that the string is level.
4. Measure the width (in inches) between the two stakes. Next, measure the height (in inches) between the ground and the string of the downhill stake.
5. Divide the height by the width and multiply the result by 100. This will give you the percentage slope of the area where you wish to build your rain garden.
6. Record your percentage slope on line 1 of the worksheet, p. 18.
7. Find your percentage slope in the box below and determine the depth of your rain garden. Record that depth on line 2 of the worksheet, p. 18.

Slope	Depth
≤ 4%	3 to 5 inches
5% - 7%	6 to 7 inches
8% - 12%	8 inches maximum

Rain Garden Depth and Slope

The slope of your land will greatly influence the depth of your rain garden. The ideal depth of a rain garden is between four (4) and eight (8) inches deep. A rain garden that is less than four inches deep will need to be larger in size to provide enough capacity to store water from heavy rains. However, a rain garden that is deeper than eight inches might hold water for too long. In general, slopes over 12% are not suitable for rain gardens. Installing a rain garden in a flatter part of your yard will reduce the amount of preparation needed to build your rain garden. To determine the depth of your rain garden, use the guidelines in the sidebar to the left.

Directing Water to Your Rain Garden

There are several options for directing roof water to your rain garden. You can simply disconnect a downspout near the ground and reroute it to your rain garden. Rerouting the water from your downspout can be accomplished by creating a grassy swale, a rock-lined channel, or by extending the downspout across your lawn. Another option is to run a PVC pipe underground from your downspout to the rain garden. To slow the velocity of the routed rain water and prevent erosion, you may need to install landscape fabric, rocks or bricks at the outlet of the pipe.



Rain barrels can also be used to collect roof runoff. Water from the barrel can be used to water plants throughout your yard and overflow can be directed into your rain garden.

Additionally, you may also want to install a rain barrel at your downspout to capture roof runoff for use in your rain garden or other parts of your yard. The overflow from the rain barrel can be directed into your rain garden by way of a grassy swale, rock lined channel or a drip hose.

Depth & Slope of Garden

- One size does not fit all
- Ideal depth 4 – 8 inches PLUS!
- Main point is to hold runoff
- Keep out of sloped areas > 12%
- Best to install in flat area

Directing Water to Garden

- Disconnect downspouts
- Overflow from Rain Barrels
- Rock line channel to garden
- Grassy swale to garden
- PVC pipe underground to garden
- Have rocks at end of pipe outlet

FURTHER RESEARCHING YOUR SOIL TYPE

The best place to begin researching your soil is to contact your local Soil and Water Conservation District (SWCD). Your local SWCD can provide you with the Natural Resources Conservation Service (NRCS) "Soil Interpretation Table." This table summarizes soil attributes related to the official soil survey such as: how acidic a soil is (pH), how fast water moves through the soil (saturated hydraulic conductivity), depth to bedrock, clay and any other restrictive layers, and high water tables. Your local SWCD can also provide you with soil survey maps.

If you find more than one type of soil on your property, choose your soil type based on the actual location of your rain garden. Unfortunately, especially in urban areas, not all soils are fully mapped. If your property is in one of these areas and you are unable to determine what type of soil you have, refer to the *Basic Soil Tests* section and perform the feel, ribbon, and dry tests. If you are still unsure or uncomfortable with the results of your soil tests you may want to have your soil tested professionally. Contact your local SWCD for advice.

Keep in mind that while it is always best to build your rain garden in a sandy or silty soil versus clayey soil, conditions don't always allow this. The soil mix mentioned in the *Soil Type and Garden Size* section may provide you with the best possible alternative to overcome any soil limitations present in your yard.

Soil Type and Garden Size

Now that you have determined how deep your rain garden should be, you will need to figure out what type of soil you have in order to determine its appropriate size.

The type of soil you have will affect the movement of water through the soil profile. Therefore, the size of your rain garden will be determined by how quickly water is able to percolate or move through the soil profile. There may be restrictive soil features below your rain garden that prevent it from functioning properly. Reference the *Further Researching Your Soil Type* sidebar to the left to find out where to obtain more information about your soil.

In general, soil textures in Northeastern Ohio range from clayey to sandy. If your soil profile is sandy (coarse textured soils), you may be able to simply loosen the soil and improve it with some yard waste compost to prepare your rain garden for planting. Silty soils (intermediate textured soils) drain better than clayey soils (fine textured soils), but both types may need help to function properly.

There may be extra considerations in planning and building rain gardens containing silty, clayey or compacted soils. These soils reduce the ability of rain water to percolate. Consequently, an increase in the size of your rain garden and/or the complete replacement of soil can help combat the slow percolation problem. A recommended soil mix is 50-60% sand, 30-40% loamy topsoil (which can be purchased from local garden stores or landscape suppliers) and 5-10% organic matter derived from yard waste compost. If you would like a more exact soil mix, contact your local SWCD for a list of local suppliers who will be able to provide you with an appropriate soil mix.

Basic Soil Tests

There are simple tests you can perform to figure out what type of soil you have. Detailed information on these soil tests is available through your local SWCD. Once you've determined your soil type, (sandy, silty, or clayey) enter it on line 8 of the rain garden worksheet, p. 18.

Feel Test - Rub moist soil between your finger tips. Sandy soil feels gritty, silty soil feels smooth, and clayey soils feel sticky.

Ribbon Test - Moisten soil to a putty like consistency. Make a soil ribbon by squeezing the moist soil between your thumb and forefinger. Sandy soils will not form a ribbon. Silty soils will make a short, weak ribbon. Clayey soils will form a long, strong ribbon.

Dry Test - Mold soil into a ball and allow it to air dry for several hours. Once the soil is dry, crush it between your thumb and forefinger. Sandy soils will crumble easily while silty soils will be moderately resistant and firm. Clayey soils will be very difficult, if not impossible, to crush.

Soil Type = Size

- Do not skip this section
- Soil will = drainage = size

Determining the Size of Your Rain Garden

The general ratio of drainage area to rain garden area is 5:1 for a well drained, sandy soil profile. For example, if you had 500 square feet of drainage area, you would build a 100 square foot rain garden. Tables 1 and 2 below will give you a rain garden size factor which will help you determine the appropriate size of your rain garden. If you already know that you have compacted, clayey or otherwise poorly draining soils, a drainage area to rain garden area of 3:1 or 2:1 for building your rain garden will result in better success.

- ☞ Select the appropriate size factor table for your existing soil. Table 1 is for rain gardens less than 30 feet from your downspout. Table 2 is for rain gardens more than 30 feet from your downspout.
- ☞ Use your soil type (line 8 of the rain garden worksheet) and rain garden depth (line 2 of the rain garden worksheet) to select the appropriate size factor. Record your answer on line 9 of the worksheet, p. 18.
- ☞ Next, multiply the size factor by your total drainage area (line 7). This gives you the recommended area of your rain garden. Record this number on line 10 of the worksheet, p. 18.
- ☞ If the recommended rain garden area is more than 300 square feet, it is recommended that you divide your rain garden into a couple of smaller gardens.

Rain Garden Size Factor Table 1
(less than 30 feet from downspout)

	3-5 in.	5-7 in.	8 in.
Sandy Soil	.19	.15	.08
Silty Soil	.34	.25	.06
Clayey Soil	.43	.32	.20



This rain garden features the following fall species: Wild Bergamot, Black-eyed Susan, Sky Blue Aster, Beardtongue, and Obedient Plant.

Rain Garden Size Factor Table 2
(more than 30 feet from downspout)

	Size factor for all depths
Sandy Soil	0.03
Silty Soil	0.06
Clayey Soil	0.10

Determining the Shape of Your Rain Garden

After you have determined the general size of your rain garden, you will need to choose a shape that will best integrate with your landscape.

There are a few things to keep in mind when determining the shape of your rain garden. *The longer side of the garden should run perpendicular to the flow of water (along the contour).* This will maximize the amount of water your garden will be able to intercept.

In addition, the garden needs to be wide enough for the water to spread evenly over the whole garden. A good rule of thumb is that your rain garden should be twice as long as wide. See Figure 4 on page 12 for further clarification.

- Follow direction on worksheet step-by-step
- This is not a science so you can be off on your calculation
- Over sizing is better than under sizing

WHERE TO DIG AND WHERE TO PUT THE SOIL YOU'VE DUG

Figure 3a - Between 3% and 8% slope lawn

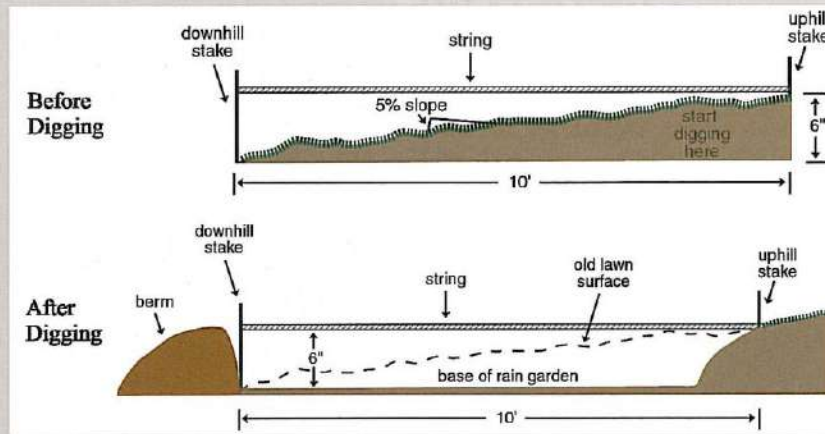
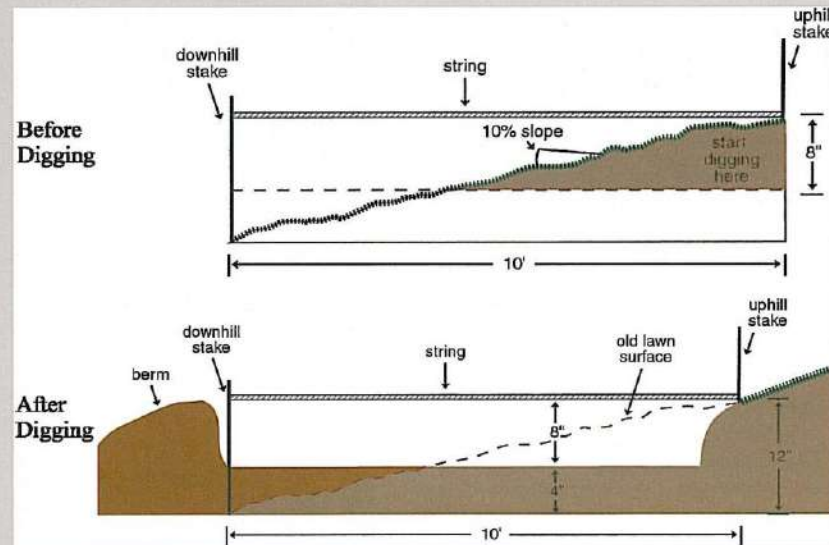


Figure 3b - Between 8% and 12% slope lawn



Important points

1. Bed needs to be flat
2. Have a good berm on down slope
3. Do not put bed in wet areas
4. Don't put bed on slopes $>12\%$

Plant Selection

Site dependant

- Dry area vs. wet. Sun vs. shade.
- Size.
- Season.
- Maintenance. *Wildlife*
- Common, commercially available plants are in sub-optimal habitat:
 - Herbaceous (including grasses, sedges, ferns),
 - shrubs,
 - trees

Plant selection: herbaceous



Plant Selection: Shrubs



Plant selection: trees



Use Ohio Native Plants

- Better adapted for the Ohio environment
- More beneficial for local wildlife
- Lower short & long term maintenance costs
- No chance of introducing non native invasive species into the landscape
- Preservation of Ohio's unique botanical heritage and biodiversity

Plant root depth comparison

Smooth brome

- Root system reaches 10-15 inches in depth.
- Plant height is 2-3 ft.

Kentucky bluegrass

- Root system reaches 6-8 inches in depth.
- Plant height is about 1 ft.

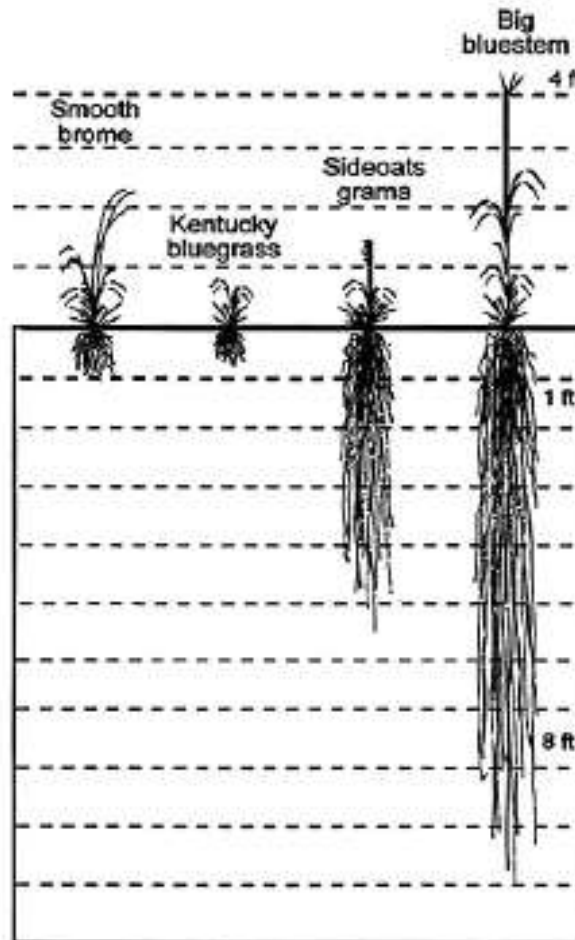
Grasses introduced from Europe and Asia have been traditionally used to establish vegetative cover on roadsides in the midwestern United States. However, many experts are now specifying native grasses for critical area seedlings.

While they establish quickly, introduced grasses frequently deteriorate when planted on poor soils. Often their sod opens up and weeds invade.

Introduced grasses may provide good erosion control under favorable soil and moisture conditions.

Introduced Grasses

Native Grasses



Sideoats grama

- Root system reaches to 5 ft in depth.
- Plant height is 12-18 inches.

Big bluestem

- Root system reaches down to 9 ft in depth.
- Plant height is 4-8 inches.

Because they develop very deep root systems, native grasses provide very good long-term erosion control. And, they will often grow on poor soils because they can gain access to nutrients and water that shallower rooted grasses cannot reach. Native grasses are therefore desirable for stabilizing soils.

Their drawback is that they establish somewhat slowly. Cover crops may be seeded with them to provide short-term erosion control while the native grasses establish. Mulching newly planted sites is also a good idea.

Benefits of Native Plants

- Deep roots allow increased percolation
- Do not require:
 - ✓ Watering once established
 - ✓ Pesticides
 - ✓ Fertilizers
- Reintroduces native seeds into local ecosystem
- Does not allow new invasive species

Informal and formal looks



Places to Use Rain Gardens



Below roof downspouts



© John Gishnock III

Along walkways



In road ditches NOT
YET IN NE OHIO!



Cost of Rain Gardens

Do It Yourself

100 square feet

Plants: “Let it Rain Garden”™ kit \$150

(Available through your county SWCD)

Sand: 1 yd delivered \$85.00

Landscape cloth: \$35.00

Your time: \$??.

Approx total: \$270.00

Remember These Steps

- Determine size and location
- Design shape and select plants. Use Native Ohio Plants
- Talk to neighbors
- Ohio dial before you dig hotline

1-800-362-2764

Add a weed barrier and mulch



Landscape cloth
works well in a
specimen type
garden.

Add a weed barrier and mulch

Newspaper works
well in a free
seeding type
garden



Geauga fair grounds
demonstration rain
garden



Non-Native Invasive Species

Garlic Mustard

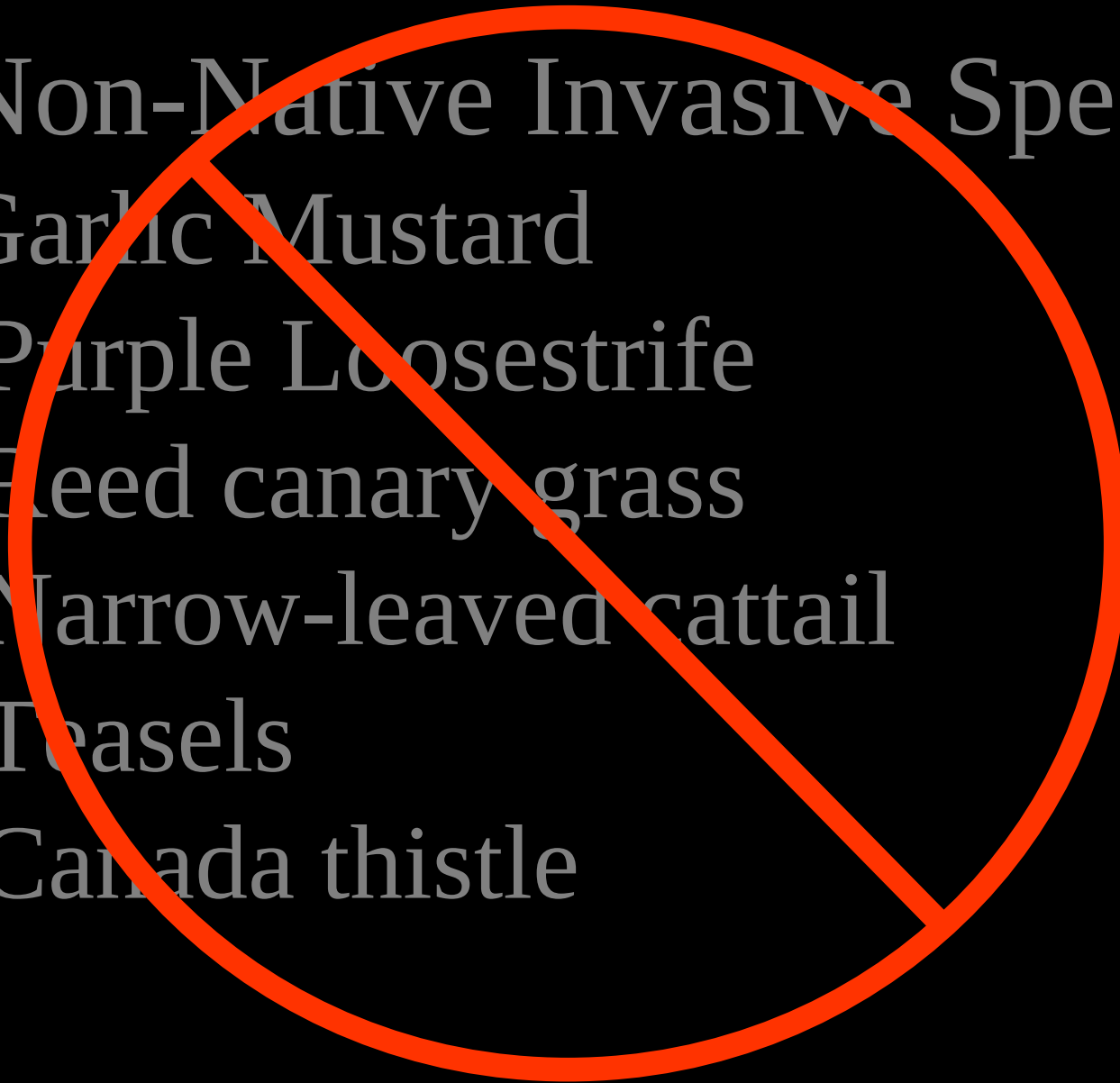
Purple Loosestrife

Reed canary grass

Narrow-leaved cattail

Teasels

Canada thistle





native plants

Using native plants in public and private landscapes and gardens can help reduce the threat of invasive non-native species to the region's biodiversity. The LEAP Native Plants of the Year campaign highlights native species that can make exceptional additions to area landscapes and gardens.

Native plants in the garden:

- ✧ Attract native wildlife
- ✧ Reduce soil erosion
- ✧ Require less fertilizer and watering
- ✧ Promote native regional biodiversity
- ✧ Thrive under natural conditions
- ✧ Connect people to nature

native plants of the year

2015

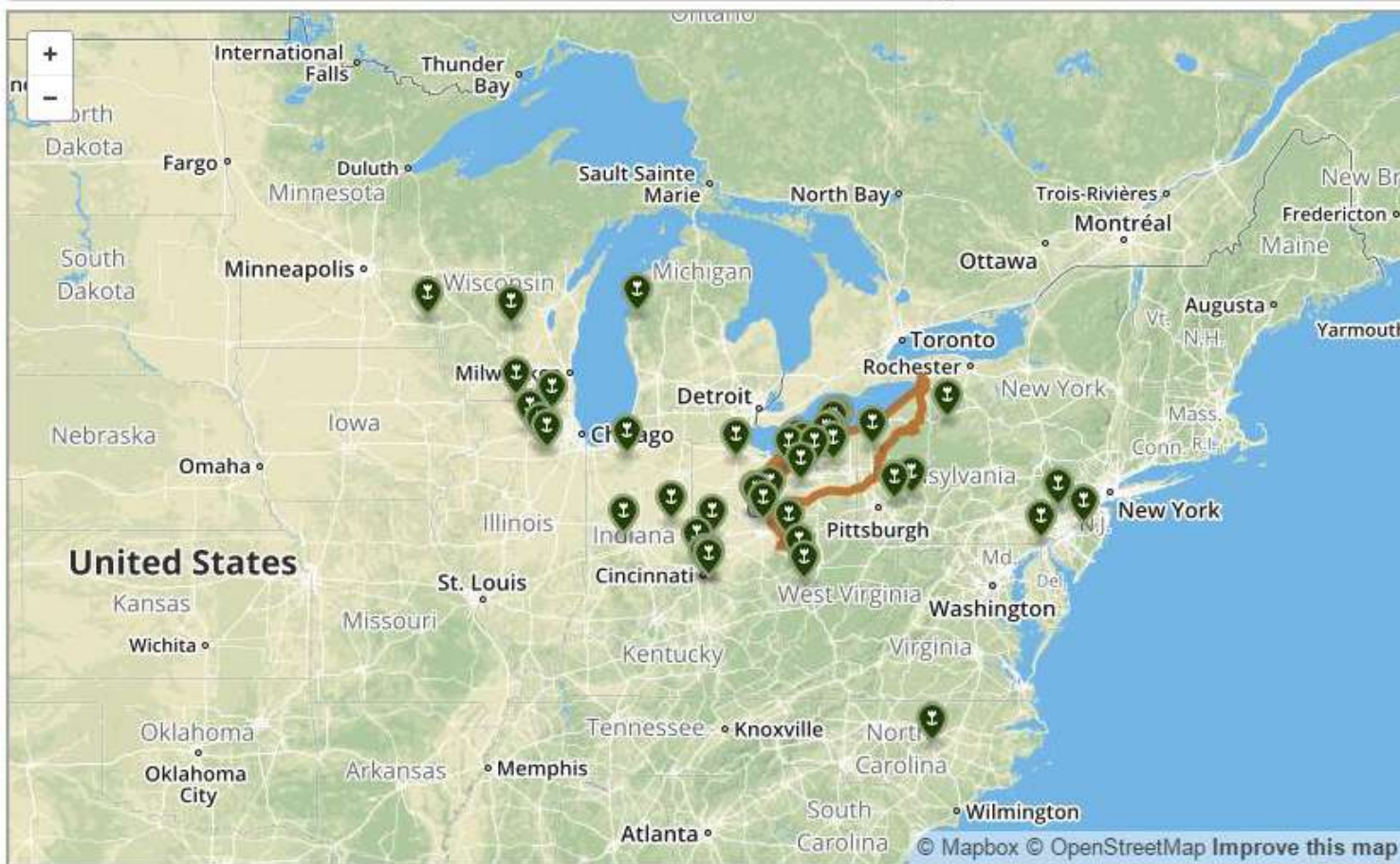




Cardinal Flower (*Lobelia cardinalis*)



Native Plant Nurseries Map



[full screen](#)

 LEAP Boundary



Use Ohio Flood Plain Species

“Let it Rain Garden”™ Kit

Bergamot	Northern Blueflag
Big Bluestem	Ohio Goldenrod
Grass	Prairie Cord Grass
Brown Fox sedge	Prairie Dock
Cardinal Flower	Purple Coneflower
Columbine	Queen of the Prairie
Culvers Root	Spotted Joe Pye
Dense Blazing Star	Swamp Milkweed
Great Lobelia	Switch Grass
Indian Grass	Tall Ironweed
Mountain Mint	Thin-leaved Coneflower
New England Aster	Turtlehead



Big Bluestem Grass

Andropogon gerardii



This grass is also called Turkey feet because the shape of the seed heads. The name big bluestem grass comes from the fact that this grass can grow to very tall, 4 to 7 feet. It blooms from June - September, with purplish flower spikes.

The tall and slender stems are blue-green in summer. The hairy blades, can get up to be 12 inches long and 1/2 inch wide, with red tint on the leaves as they get older, turn bronze in the fall.

Purple Coneflower

Echinacea purpurea



Stems have short hairs and grow to 3-ft. tall. The leaves are long-lanceolate, smooth-edged, hairy, and 3-8 inches long. Flowers are only at the stem tips. The center of the head is about 3/4 inch in diameter. The petals are long, drooping, rose-purple and 1-3 inches long.

Swamp Milkweed

Asclepias incarnata



Clusters of small pink or white flowers on plants which grow 3 feet high. Swamp Milkweed usually grows in moist areas. Usually blooming June thru July, this plant serves as a nectar source for several butterfly species and as a host plant for Monarch butterflies.

Wild Bergamot

Monarda fistulosa

Stems are branched and square, with upper stems finely hairy. It grows to 4 ft. tall. The leaves are opposite, sharply toothed, and 5 in. long and 2 in. wide. Flowers are dense, rounded heads at the tops of stems. The flowers are lavender in color.



Cardinal Flower

Lobelia cardinalis

The plant grows 2-5 feet tall and it is rarely branched. The leaves are oval or lanceolate, toothed, 2-6 inches long, 1/4-1 1/2 inches wide. Each flower is scarlet red, tubular, and five-lobed. It occurs mostly in low areas and moist soils.



Ohio Goldenrod

Solidago ohioensis

The Goldenrod with the most foliage best describes this wildflower. Its massive dome shaped flower heads add plenty of color to any planting. This native grows best in medium to moist rich soils in full sun and reaches a height of 2-4 feet.



Spotted Joe-Pye-Weed

Eupatorium maculatum



Spotted Joe-Pye weed got its name for having dark purple spots on its stems, though sometimes the stems are solid dark purple. It is hardy to zone 5. It is in flower from July to September. The plant prefers light (sandy), medium (loamy) and heavy (clay) soils and requires well-drained soil.

Prairie Dock

Silphium terebinthinaceum



Prairie Dock is easily recognized by its large spade shaped, basal leaves which can grow up to 1 feet long. Its yellow flowers bloom atop the smooth, shiny, leafless stalks that reach a height of 2'-10'. It blooms August thru October and prefers medium to wet well drained soils in full sun.

Queen-of-the-Prairie

Filipendula rubra



This native perennial plant is about 3-6' tall. The stem is smooth and sometimes reddish. Each flower is about 1/3" across, consisting of 5 pink petals. The flowers bloom from the bottom up, and have little or no fragrance. The blooming period occurs from early to mid-summer, and lasts about 3 weeks.

Turtlehead

Chelone glabra



Best grown in moist to wet, rich, humusy soils in part shade. This species of turtlehead is a stiffly erect native perennial which typically grows 2-3' tall and occurs in moist woods, swampy areas and along streams. The white flowers appear from late summer into autumn. Flowers purportedly resemble turtle heads.

Large Blue Flag Iris

Iris versicolor

Blue Flag Iris is a perennial herb, found abundantly in swamps and low grounds throughout eastern and central North America. It grows 2 to 3 feet high, with narrow, sword-shaped leaves, and from May to July produces large, handsome flowers, blue, except for the yellow and whitish markings at the base of the sepals.



SUGGESTED PLANT LIST FOR YOUR RAIN GARDEN

BOTANICAL NAME	COMMON NAME	LIGHT PREFERENCE	BLOOM TIME	BLOOM COLOR	HEIGHT
<i>Aquilegia canadensis</i>	Columbine	Shade	Spring to Summer	Scarlet, yellow	1-2'
<i>Asclepias incarnata</i>	Swamp Milkweed	Sun	June-July	Red/pink	3-5'
<i>Aster laevis</i>	Smooth Aster	Sun	Aug.-Oct.	Blue	1-4'
<i>Aster novae-angliae</i>	New England Aster	Sun	Aug.-Oct.	Pink, purplish	3-6'
<i>Baptisia australis</i>	Blue False Indigo	Full to part Sun	May-July	Blue	2-4'
<i>Caltha palustris</i>	Marsh Marigold	Sun	April-May	Yellow	1-2'
<i>Chelone glabra</i>	White Turtlehead	Sun	July-Oct.	White to Purple	1-3'
<i>Echinacea purpurea</i>	Purple Coneflower	Full to part Sun	July-Sept.	Purple	3-4'
<i>Eupatorium purpureum</i>	Joe-Pye Weed	Sun	July-Sept.	Rose to pink	3-5'
<i>Iris versicolor</i>	Blue Flag Iris	Sun	June-July	Blue	2-3'
<i>Liatris pycnostachya</i>	Prairie Blazing Star	Sun	July-Aug.	Purple-Pink	3-5'
<i>Lobelia cardinalis</i>	Cardinal Flower	Full to part Sun	July-Sept.	Red	2-5'
<i>Lobelia siphilitica</i>	Great Blue Lobelia	Full to part Sun	July-Sept.	Blue	1-4'
<i>Lycopus americanus</i>	Cut-leaved Water Horehound	Sun	June-Sept.	White	1-2'
<i>Monarda didyma</i>	Bee Balm	Sun	Summer	Red	2-5'
<i>Monarda fistulosa</i>	Wild Bergamot	Full to part Sun	July-Sept.	Lavender	2-5'
<i>Oxycoccus sensibilis</i>	Sensitive Fern	Shade	Non-flowering	Non-flowering	1-2'
<i>Osmunda cinnamomea</i>	Cinnamon Fern	Shade	Non-flowering	Non-flowering	2-5'
<i>Osmunda regalis</i>	Royal Fern	Shade	Non-flowering	Non-flowering	1-3'
<i>Penstemon digitalis</i>	Smooth Penstemon	Sun	June-July	White	2-3'
<i>Polemonium reptans</i>	Jacob's Ladder	Full to part Sun	Spring/Summer	Blue	12-15"
<i>Potamogeton novae-angliae</i>	Rough Cinquefoil	Sun to part Shade	Late Spring to Fall	Yellow	4-36"
<i>Rudbeckia hirta</i>	Black-eyed Susan	Sun	Aug.-Oct.	Yellow	4-6'
<i>Rudbeckia triloba</i>	Branching Coneflower	Full to part Sun	July-Sept.	Yellow	2-4'
<i>Sagittaria latifolia</i>	Arrowhead	Full to part Sun	Summer	White	1-5'
<i>Silphium perfoliatum</i>	Cop Plant	Full to part Sun	Summer	Yellow	3-10'
<i>Silphium terebinthinaceum</i>	Prairie Dock	Full to part Sun	July-Sept.	Yellow	2-10'
<i>Solidago canadensis</i>	Ohio Goldenrod	Sun	Aug.-Sept.	Yellow	3-4'
<i>Stylophorum diphyllum</i>	Celandine Poppy	Part shade to full Sun	May-July	Yellow	12-18"
<i>Vernonia noveboracensis</i>	Ironweed	Sun	July-Sept.	Red-pink	4-6'
<i>Vernoniastrum virginicum</i>	Culver's Root	Full to partial Sun	July-Aug.	White	3-6'
<i>Andropogon gerardii</i>	Big Bluestem	Full Sun	Sept.-Oct.	Golden blue	4-8'
<i>Carex muskingumensis</i>	Palm Sedge	Part shade to full Sun	Spring	Red-brown	2-3'
<i>Carex vulpinoidea</i>	Fox Sedge	Sun	May-June	Green	1'-3'
<i>Panicum vergatum</i>	Switch Grass	Full Sun	Aug.-Sept.	Green, gold	3-6'
<i>Spartina pectinata</i>	Prairie Cord Grass	Full Sun	Aug.-Sept.	Green, gold	3-7'

RAIN GARDEN WORKSHEET

1) Slope: $\frac{\text{Height of string (in inches)}}{\text{Distance between stakes (in inches)}} \times 100$	1) %
2) Rain garden depth: From Chart on page 5	2) in.
3) Home footprint: Length of house x width of house	3) sq. ft.
4) Number of downspouts: Total number of downspouts on home	4)
5) Roof area draining to garden: (Line 3 ÷ Line 4) x number of downspouts directed to the rain garden	5) sq. ft.
6) Lawn area (if more than 30 ft from downspout): Length of uphill lawn area x width of uphill lawn area	6) sq. ft.
7) Total drainage area: Line 5 + line 6	7) sq. ft.
8) Soil type: Enter sandy, silty or clayey from results on page 7	8)
9) Rain garden size factor: Results from table 1 or table 2 on page 8	9)
10) Rain garden size: Line 7 X Line 9	10) sq. ft.

Lines 2 and 10 give you the dimensions of your rain garden. This is based on capturing 100% of the runoff. If you do not wish to build a rain garden of this size, a smaller rain garden will still help control runoff and filter pollutants.



Edgewood College, photos by Jim Lorman

Questions / Discussion





**Cuyahoga County
Board of Health
5550 Venture Dr.
Parma, Ohio 44131
(216) 201-2001 ext.
1256**

**mborcherds@ccbh.net
www.ccbh.net**