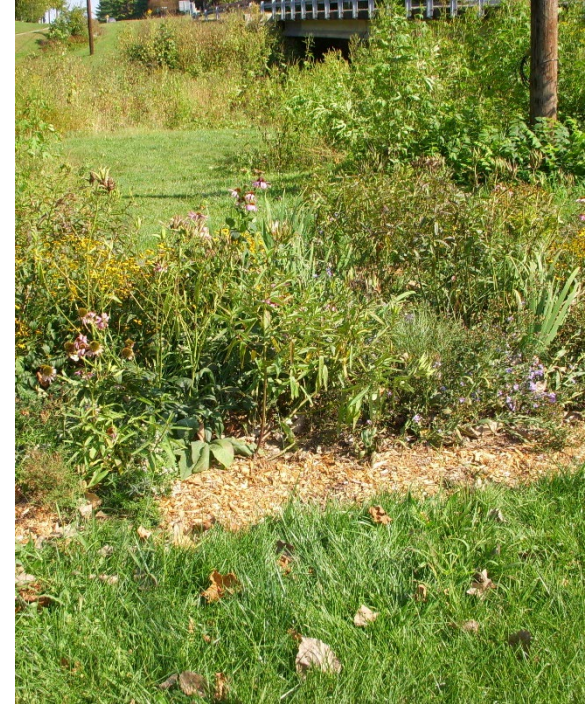


Rain Gardens



www.hamiltonswcd.org/raingardens





Increase in impervious surface

Natural areas converted to development

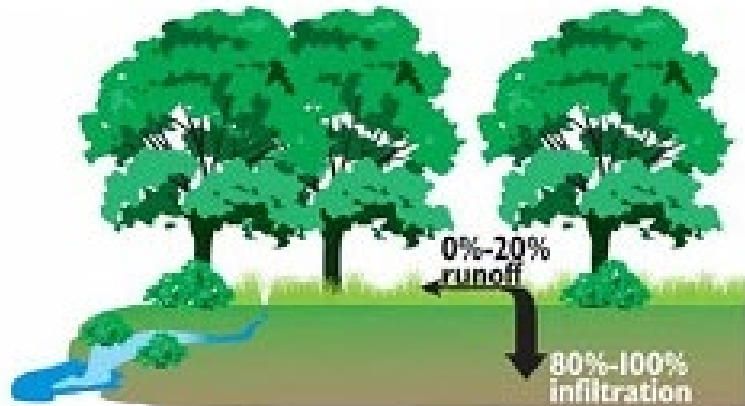
Pavement, roofs, compacted soil, driveways, sidewalks, parking lots, etc.

- No natural drainage- water directed to storm sewers & streams
- No groundwater recharge
- Flashy- flooding and increased erosion
- Pollutants
- Contributes to combined sewer overflows (CSO's)



INCREASE IN STORMWATER RUNOFF WITH URBANIZATION

NATURAL GROUND COVER
0% IMPERVIOUS SURFACE



LOW DENSITY RESIDENTIAL
10%-20% IMPERVIOUS SURFACE



URBAN RESIDENTIAL
35%-50% IMPERVIOUS SURFACE



COMMERCIAL/INDUSTRIAL
75%-100% IMPERVIOUS SURFACE



We LOVE lawn!

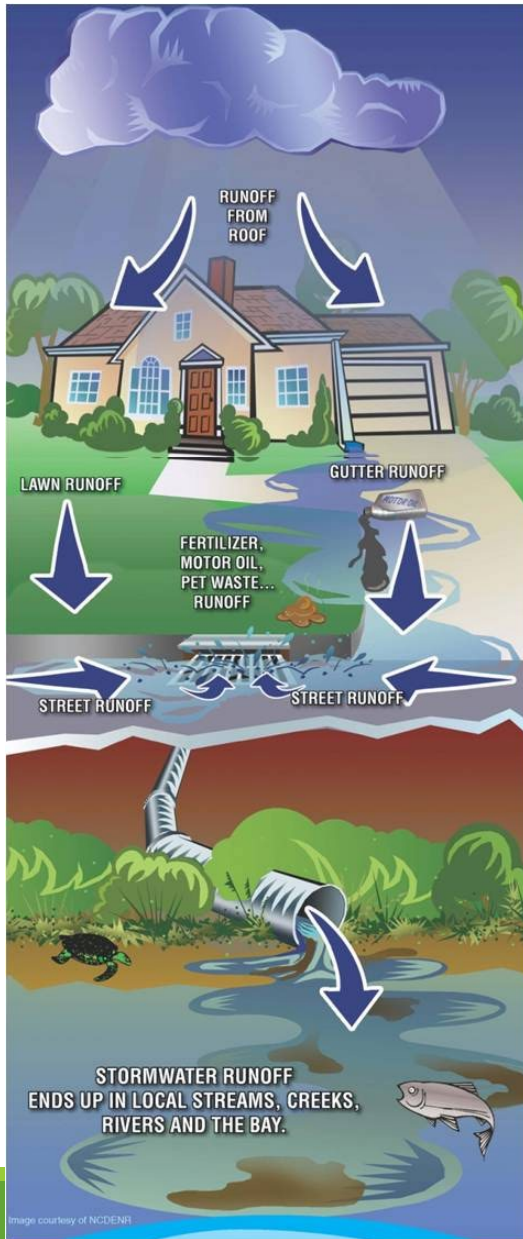


- Over 40 million acres of lawn in the US.
- Watering the lawn generally accounts for 50 percent to 75 percent of a home's water use during the summer.
- A lawnmower pollutes as much in one hour as does driving an automobile for 350 miles.
- 67,000,000 pounds of synthetic pesticides are used on U.S. lawns.



The U.S. Fish and Wildlife Service reported that “homeowners use up to **10 times** more chemical pesticides per acre on their lawns than farmers use on crops.”

What happens when it rains?



- Water quickly runs off manmade surfaces and your lawn away from your home to infrastructure.
- Along the way it picks up fertilizer, sediment, pesticides, and other pollutants.
- Rapidly carried away into waterways that connect to lakes, streams, wetlands, and rivers.

One pound of phosphorus fertilizer can produce 500 pounds of algae!



Clean water starts at home!

- Rain gardens
- Buffers
- Reduce lawn
- Rain barrels
- Soil tests & P free fertilizer

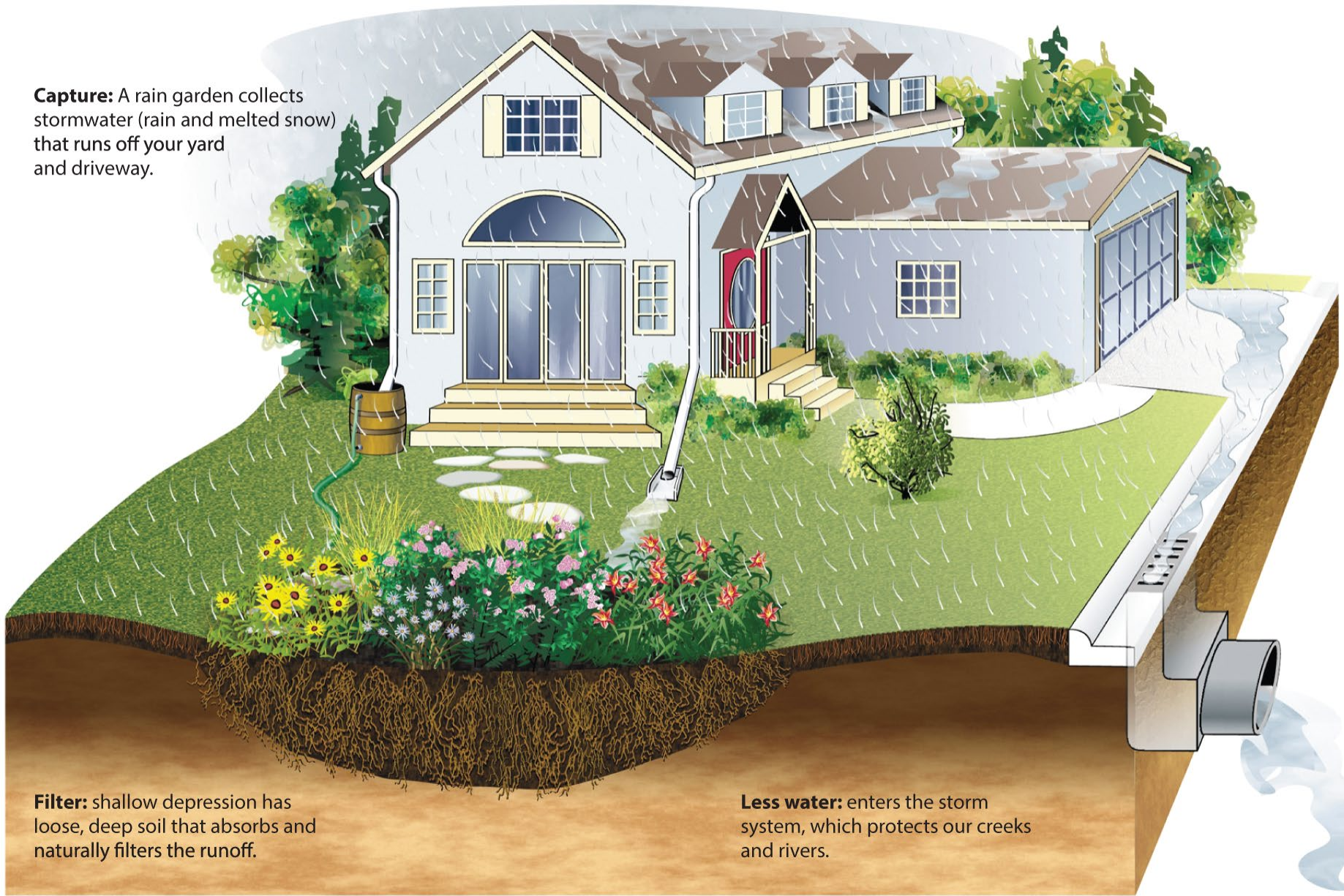




Rain gardens

- Shallow depression, planted with native grasses and flowers, to which you direct stormwater for infiltration.
- Temporarily fill with water, primarily dry
- Prevent runoff because water is soaking into the ground
- Native plants help absorb excess nutrients and pollutants
- Beautiful!

Capture: A rain garden collects stormwater (rain and melted snow) that runs off your yard and driveway.



Filter: shallow depression has loose, deep soil that absorbs and naturally filters the runoff.

Less water: enters the storm system, which protects our creeks and rivers.



Things to consider

- Location
- Soil
- Size
- Plants
- Construction
- Maintenance



Location

Wet spots

- True rain gardens accept additional water – not good for areas already draining poorly.



Location

Sun

- Most plants like full sun but there are options

Distance from structures

- You are infiltrating water down into the ground so need to stay 10+ feet from foundation and 25+ feet from septic systems

Avoid steep slopes (3:1 or less recommended) and tree roots

Consider utilities



Location

Use county mapping systems or Google Maps/Earth to find an aerial view of your property

Where does your water flow?

- Go out in the rain and watch!
- Which downspouts are easily utilized?
- Where can you reduce the most runoff?

Do not disrupt existing swales

Consider utilities & easements



Soils

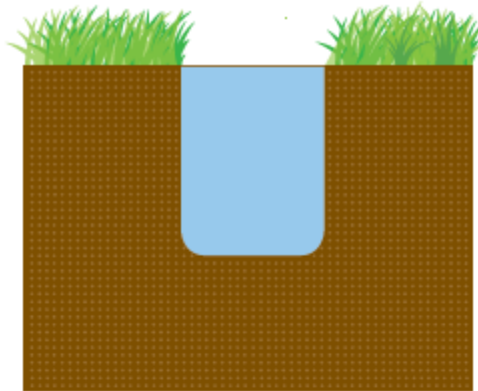


Soils vary widely— especially in urban environments and are effected by things like compaction from construction equipment & other uses

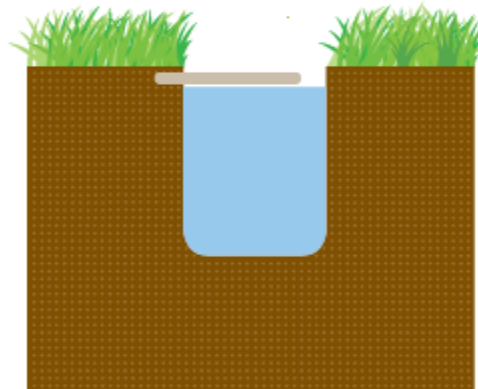
Soils determine infiltration

- Rain gardens are all about infiltrating water. If your soil has too much clay, you may need amendments or subsurface drainage (pipes) to improve the infiltration
- Percolation test (next slide) determines infiltration rate
- Looking for at least 1” an hour infiltration

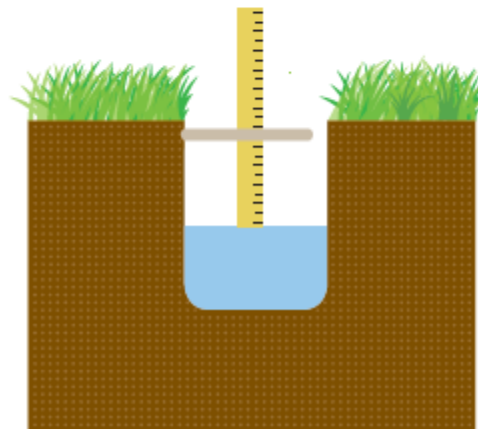
Percolation Test



1. Dig a coffee can-sized hole in the planned rain garden site and fill it with water several times during the day to saturate the surrounding soil.



2. The next day fill the hole nearly to the top and mark the water level with a stick in the side of the hole.



3. After 6 hours, measure the drop of the water by measuring the distance between the stick and the top of the water. Take this measurement in inches and multiply by 4 to get your infiltration rate for 24 hours. This will be the depth of your rain garden. The ideal depth for a rain garden is 6 inches.

Sizing

Rain garden size is based on the size of the area draining to the rain garden and the infiltration rate of the soil (based on a one-inch rainfall).

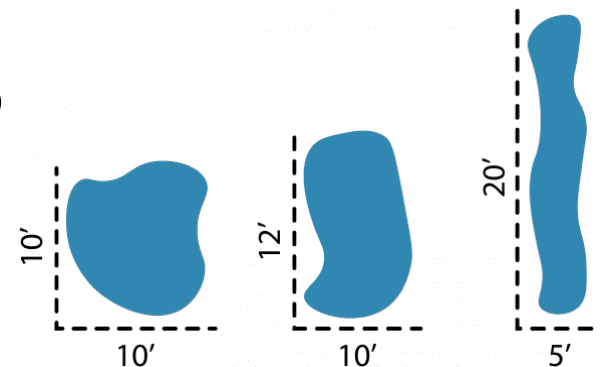
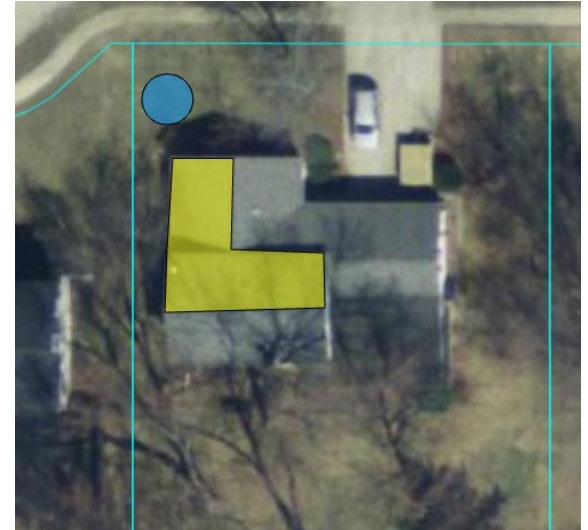
Most rain gardens are 4-8 inches deep
(determined by infiltration test)

Determine the square footage of the impervious surface draining to the rain garden

Impervious area = 500 square feet
Infiltration rate was 5 inches per day

We've decided to make our rain garden 4 inches deep

500 sq. ft divided by 4 = 125 sq. ft. rain garden



Other considerations

- How will the water get to the rain garden?
 - Swale, rock swale, underground pipe, etc.



Other considerations

- How will I prevent erosion?
- Where will overflow go? (drain system, overflow point)
- Do I want a border (plants, pavers, turf edge?)
- Mulching
 - Suppresses weeds
 - 2-3 inches shredded or double shredded (wood chips float away)



Construction

Determine location & shape

Call 311

Eliminate turf or cut sod

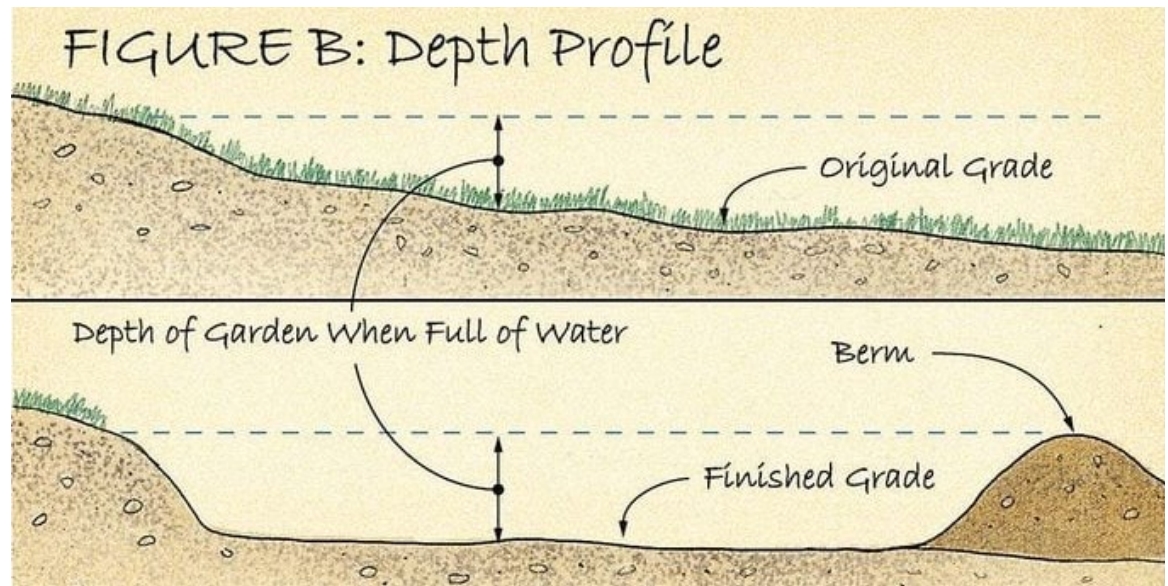
Excavate

- by hand or equipment, avoid compaction
- Over excavate to account for mulch and any amendments
- Confirm final ponding depth

May need to till or break up bottom

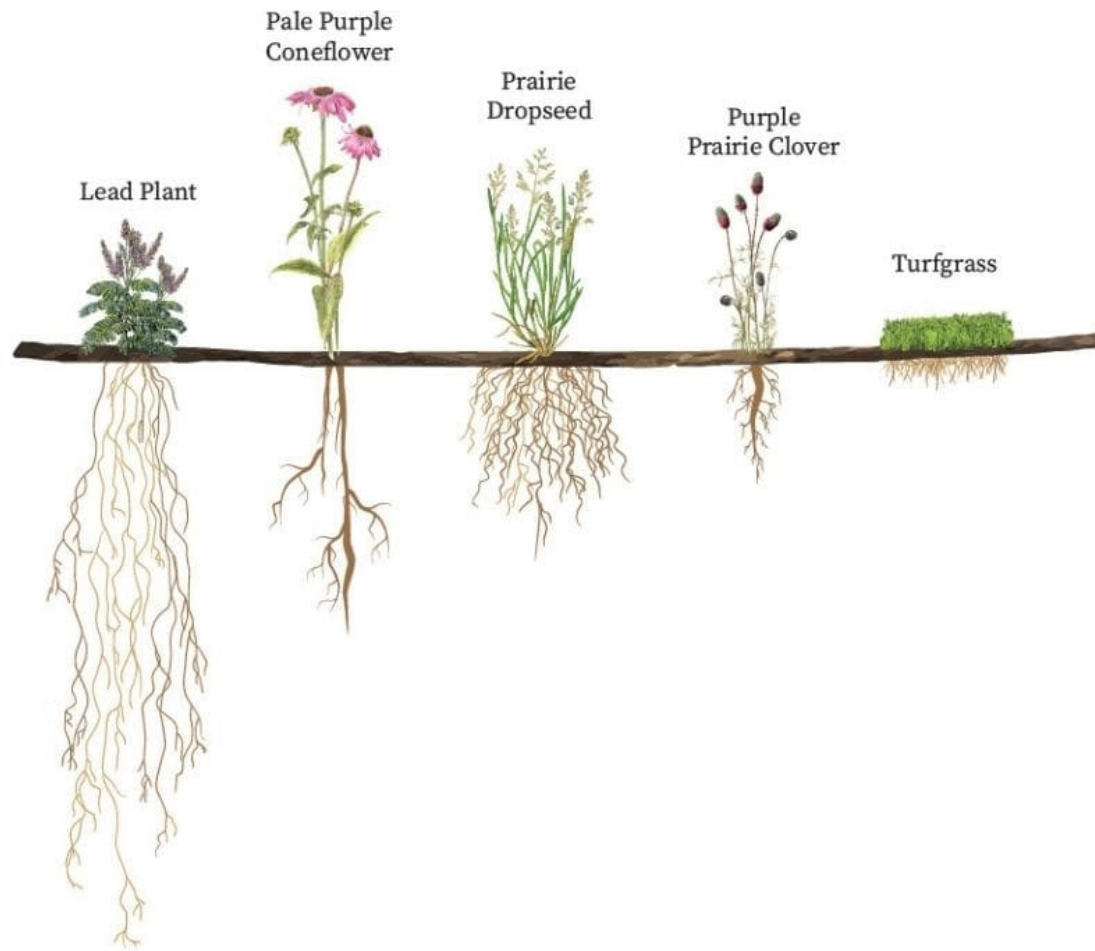
Use excavated soil to create berm if necessary (Fig. B)

Erosion control measures



See Purdue Rainscaping RG Installation videos





Choose native plants

- Adapted to soils, pests, climate
- Great for our pollinators
- Drought tolerant
- DEEP ROOTS!

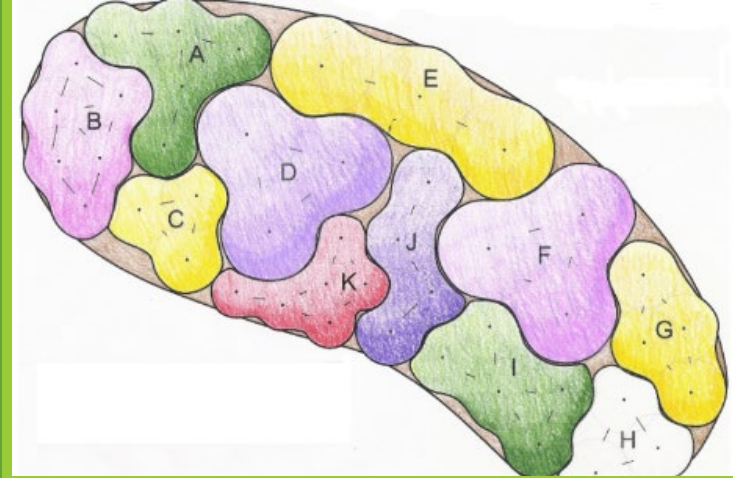
Choosing plants

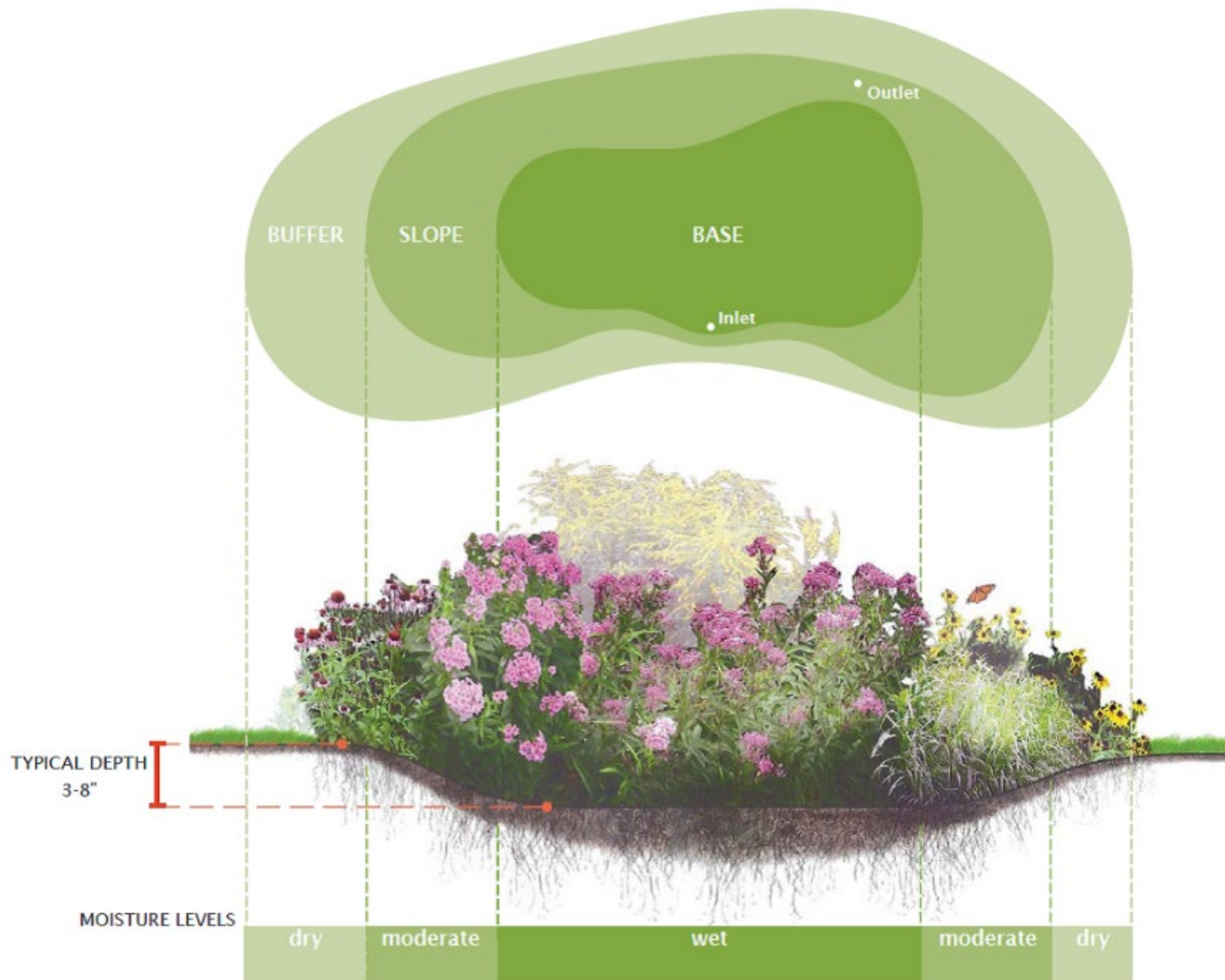
Bottom – can stand inundation for 24-48 hours

Sides – medium water tolerance

Rim – dry plants

- Sun (full, partial, shade)
- Height, color, bloom time, flowers and grasses
- Manicured (clumps of 3 or 5+, odd number)
- Meadow– more nature look
- It will fill in over the first few years & drainage improves!!





Choosing plants

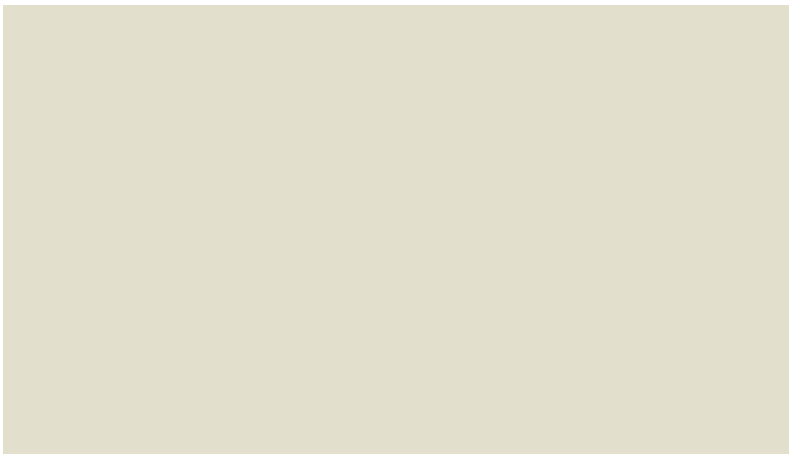
Bottom- Marsh Milkweed, Blue False Indigo, Emory's, Hop, Tussock, Fox or Palm Sedge, Turtlehead, Joe Pye Weed, Blue Flag Iris, Prairie Blazingstar, Cardinal Flower, Sweet Black Eyed Susan, Ironweed, Culver's Root, etc.

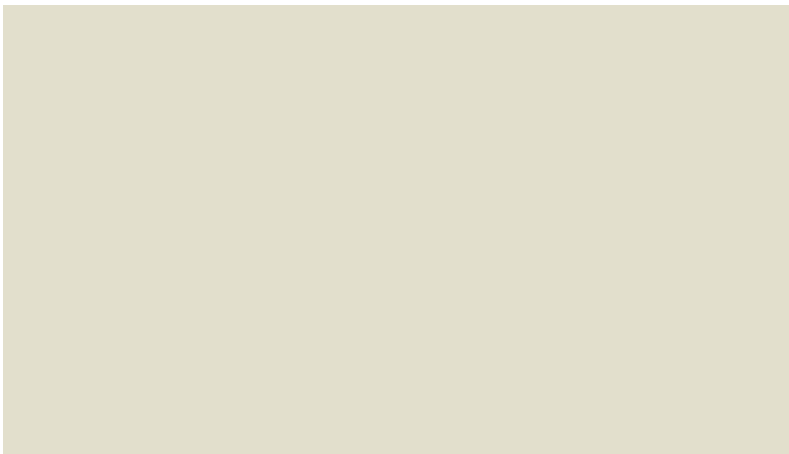


Middle and Rim- Columbine, Wild Ginger, Milkweed, Aster, Sideoats Grama, Purple Prairie Clover, Purple Coneflower, Joe-Pye weed, Rough or Dense Blazingstar, Bee Balm, Little Bluestem, Prairie Dropseed



+ shrubs!









Commercial rain gardens



Maintenance

Water new plants but little to none as garden establishes

Spring

- Prune dead vegetation and large plants
- Weed
- Remove sediment, debris
- Touch up mulch
- Check berm integrity

Ongoing

- Weed through growing season for first few years (mulch helps)
- Thin plans, replacements, etc.

Costs

Depends on:

- Size
- Plant size selection (plug vs. gallon vs seed)
- Need underdrain? Amendments?
- How much work you do yourself

Usually say \$2-\$12 a square foot

You could qualify for a stormwater rebate in your community!



Resources

Rain Gardens for Homeowners Booklet

Marion County : <https://marionswcd.org/water-management/>

Hamilton County: www.hamiltonswcd.org/raingardens

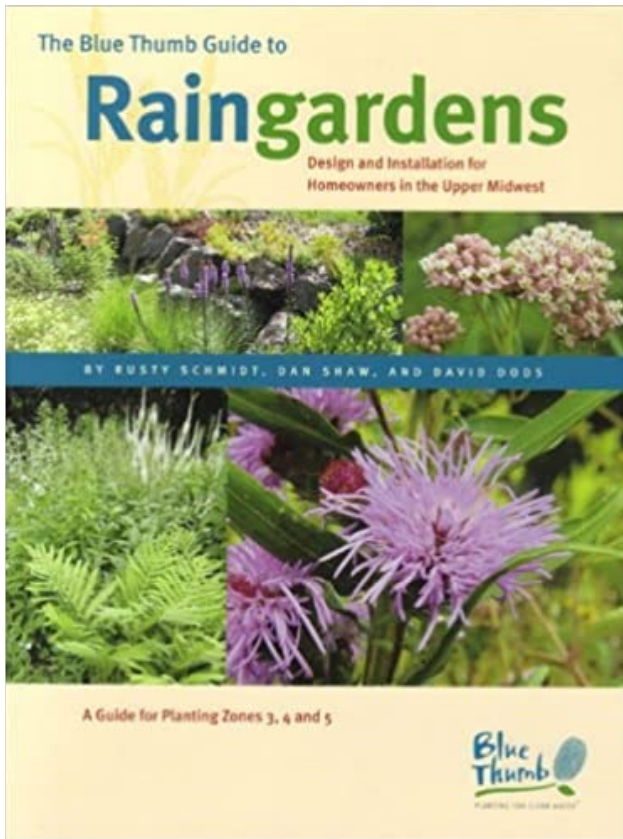
NEW RESOURCE
AVAILABLE NOW

**RAIN
GARDENS**
for Homeowners

**RAIN
GARDENS
FOR HOMEOWNERS**

Learn how to use native plants to soak in
rainwater on your property

ONLINE AT HAMILTONSWCD.ORG
IN PRINT FROM THE SWCD OFFICE



Blue Thumb Guide to Raingardens by Rusty Schmidt

Local library

TONS of online resources and videos on
YouTube

Other Resources

- Spring Native Plant Kit Sale
- Fall Native Tree Sale
- Rain barrel sales
- Soil nutrient testing

- Check out your local SWCD and Extension Office
- Find your local CISMA (Cooperative Invasive Species Management Area)

HAMILTON COUNTY
Soil & Water



CONSERVATION DISTRICT

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Noblesville, IN 46060

317-773-2181

www.hamiltonswcd.org



Hamilton Co. Invasives Partnership