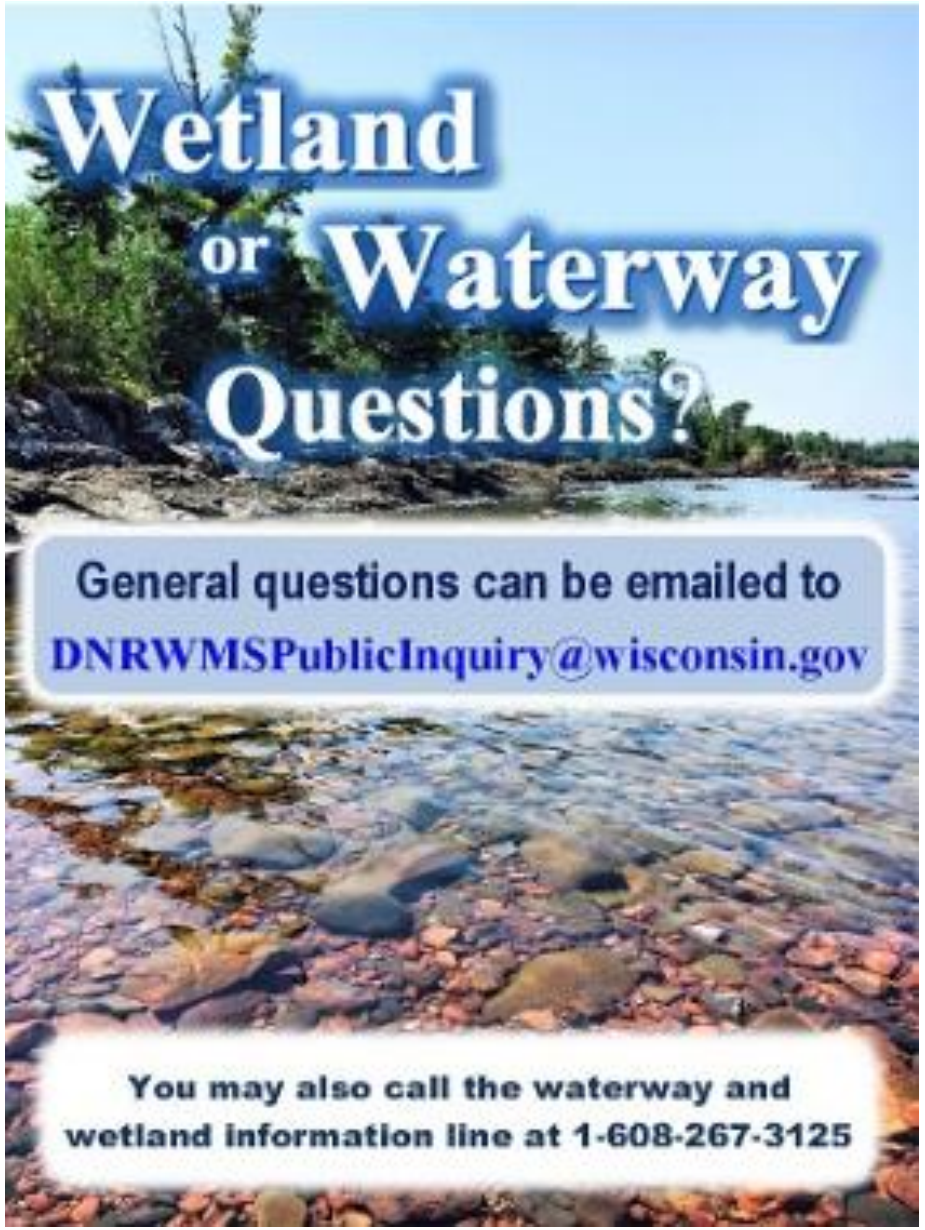
SHORELINE EROSION: CAUSES, PREVENTION, AND CONTROL OPTIONS

https://dnr.wisconsin.gov/topic/Waterways/shoreline/info-erosion.html

Some Erosion Causes

- Rivers/Streams move water→carry sediment
- Wind and wave action
- Significant precipitation events
- fluctuating water levels
- Ice heave erosion

Every Shoreline Project is Unique



The shoreline evaluation tool can be found at the following link:

https://survey.healthylakeswi.com/

Shoreland Evaluation Tool

Welcome to the Wisconsin Shoreland Evaluation Tool!

The Shoreland Evaluation Tool walks you through questions about the physical aspects of your lake or river property, as well as how you manage it. Questions are set up by property zone - Upland, Transition, and In-Water areas. The Tool also includes a section for you to identify habitat restoration and runoff and erosion control projects that currently exist on your property. This Tool is intended for typical shoreland properties and may not be a great fit for unique properties and locations. There may also be nuanced exceptions to some of the answers; try your best to choose the response that most closely matches your property.

The Tool is smart. Your answers may lead you to different questions and ultimately a custom score. By registering for an account, you can save your results and come back after you have implemented best practices to improve your score. Many questions include help buttons for answers, links to additional information about shoreland management, and clarifying photos. You can click on photos to expand them for easier viewing. Your final score will help you understand the property's management context - entry, restoration, enhancement or protection - and specific projects that could improve not only the score but help your lake or river, too!

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Related Links

- Water Permit Applications
- Construction Projects
- Crossings Projects
- Water Levels Projects
- Waterway and Wetland Recreation Projects
- Habitat Projects
- Waterways Permit Process

Additional Resources

- Stream Bank Erosion Control
- Vegetated Armoring Erosion Control
- Beach Maintenance
- Placing Erosion Control Structures on Great Lakes
- Stream Realignment and Enclosure
- Waterway and Wetland Permits Traditional Riprap Erosion Control
- Weed Rake
- Lake Shore Erosion
- Seawall Erosion Control
- Biological Shore Protection
- Calculating Energy Along a Shoreline

BIOLOGICAL SHORELINE PROTECTION METHODS

Biological shore protection structures use vegetative and natural materials for stabilization and protection. Living plants, such as native grasses, sedges and forbs, or organic materials may be used as live stakes and posts, jute netting, or coir fiber rolls and mats. All materials used in biological shore protection techniques must be biodegradable. Biological Shore Protection Techniques fall into three categories: bank treatments, integrated toe protection, and biodegradable/temporary breakwaters.

- **BRUSH MATTRESS**
- **LIVE STAKING**
- **BRUSH LAYERING**
- **FIBER ROLLS**
- **BIODEGRADABLE OR TEMPORARY BREAKWATERS**

INTEGRATED BANK TREATMENT METHODS

Vegetated armoring techniques integrate biological and hardscape methods. The purpose of using these techniques to control waterward erosion is to combine the structural integrity of hard armoring with the benefits of living vegetation. Providing woody cover and vegetation is key in establishing and preserving critical habitat for shoreline organisms.

Dead trees and woody debris provide a significant amount of food and cover for a wide variety of animals. Additionally, roots add tensile strength, binding together masses of stone and soil. Stems and branches dissipate wave energy, shielding the soil from the erosive force—growing vegetation sprouts to fill in any open, eroding areas. As a supplement to structural wings, live woody cuttings have the advantage of extending roots and sprouts that protect and bind masses of soil. As vegetated systems grow, they become increasingly effective in preventing shoreline erosion.

INTEGRATED TOE PROTECTION

VEGETATED RIPRAP

STRUCTURAL EROSION CONTROL METHODS

- RIPRAP
- SEAWALL (RETAINING WALL)

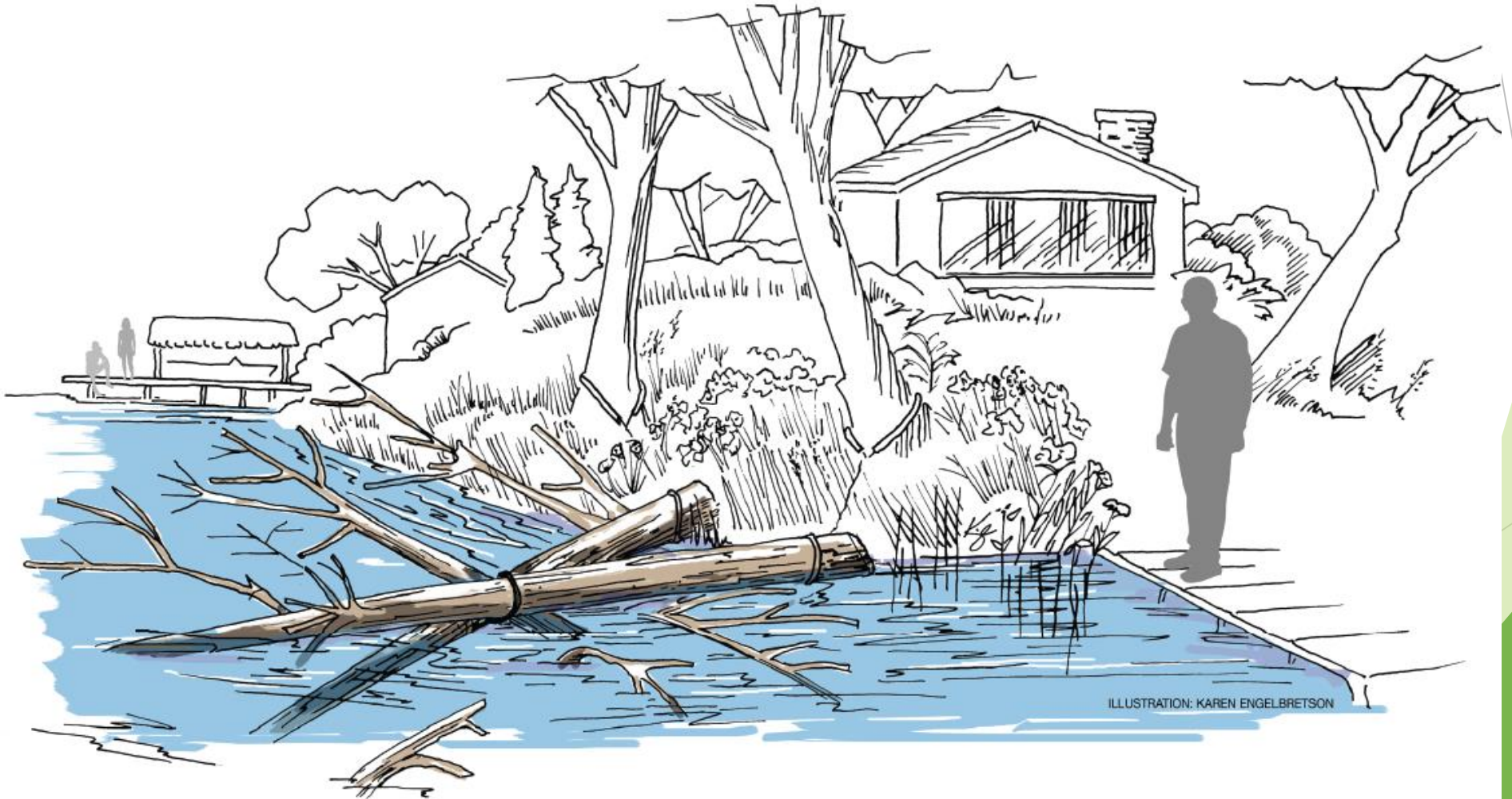
Review of the various shoreline improvement methods per DNR Healthy Lakes Program

Arthur Watkinson

Healthy Lakes Grants

- Annual deadline November 15th (pre-application required by September 15th if first-time applicant)
- $25,000 state cap with up to 10% of it for technical assistance and project management
  - 75/25% state/sponsor match
  - Eligible sponsors, including qualified lake associations, lake districts, counties and other local government units, may apply on behalf of multiple landowners
- Each best practice capped at $1000 state share
- 10-year contract with standard operation & maintenance details described in grant agreement
  - Grant sponsor develops and administers contract that landowner signs

Practice #1: Fish Sticks-Not Eligible on Rivers



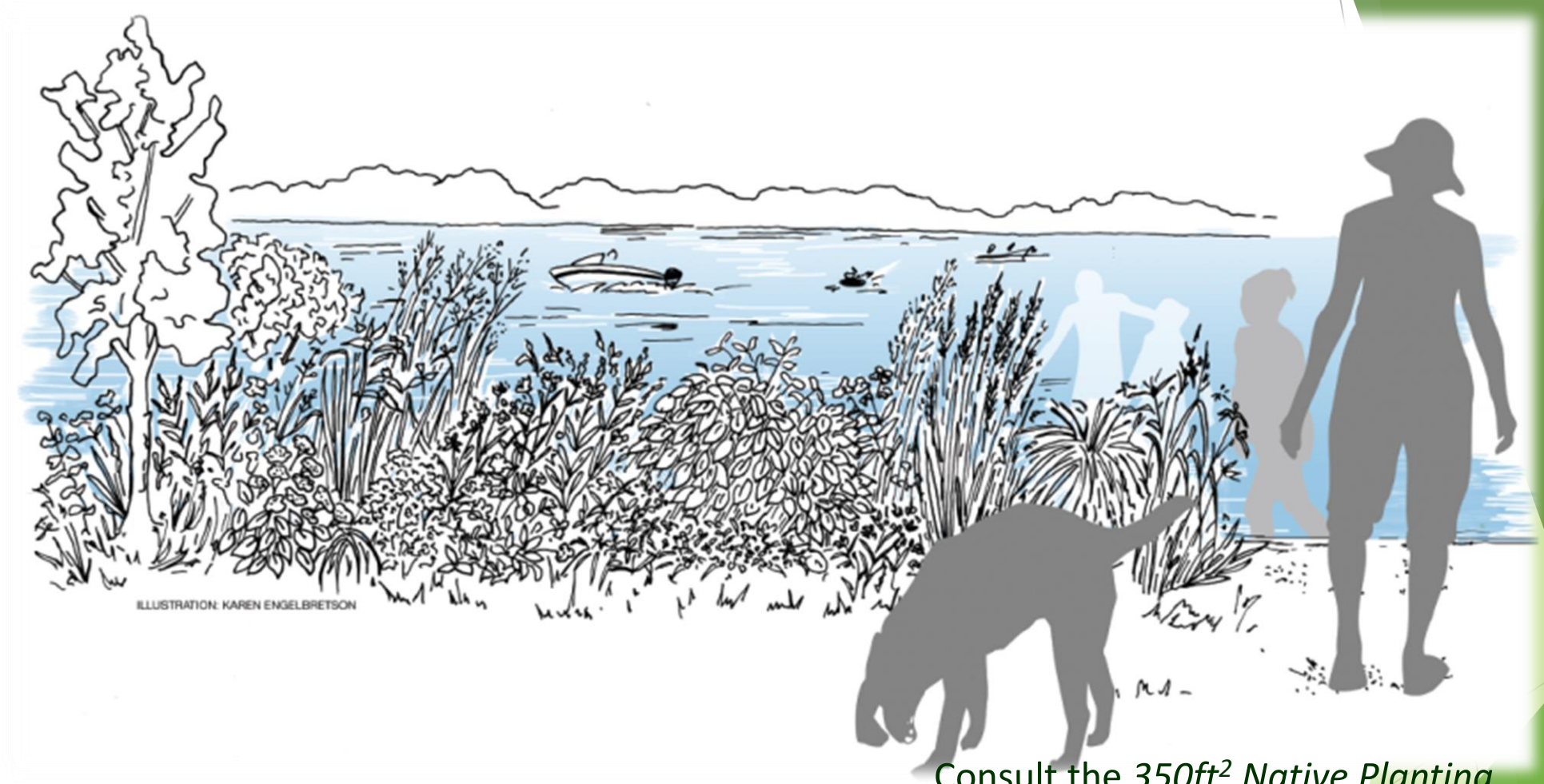
Practice #2: 350 ft^2 Native Plantings

- 350 contiguous ft^2 at least 10 feet wide
- One 350 ft^2 native planting per property per year

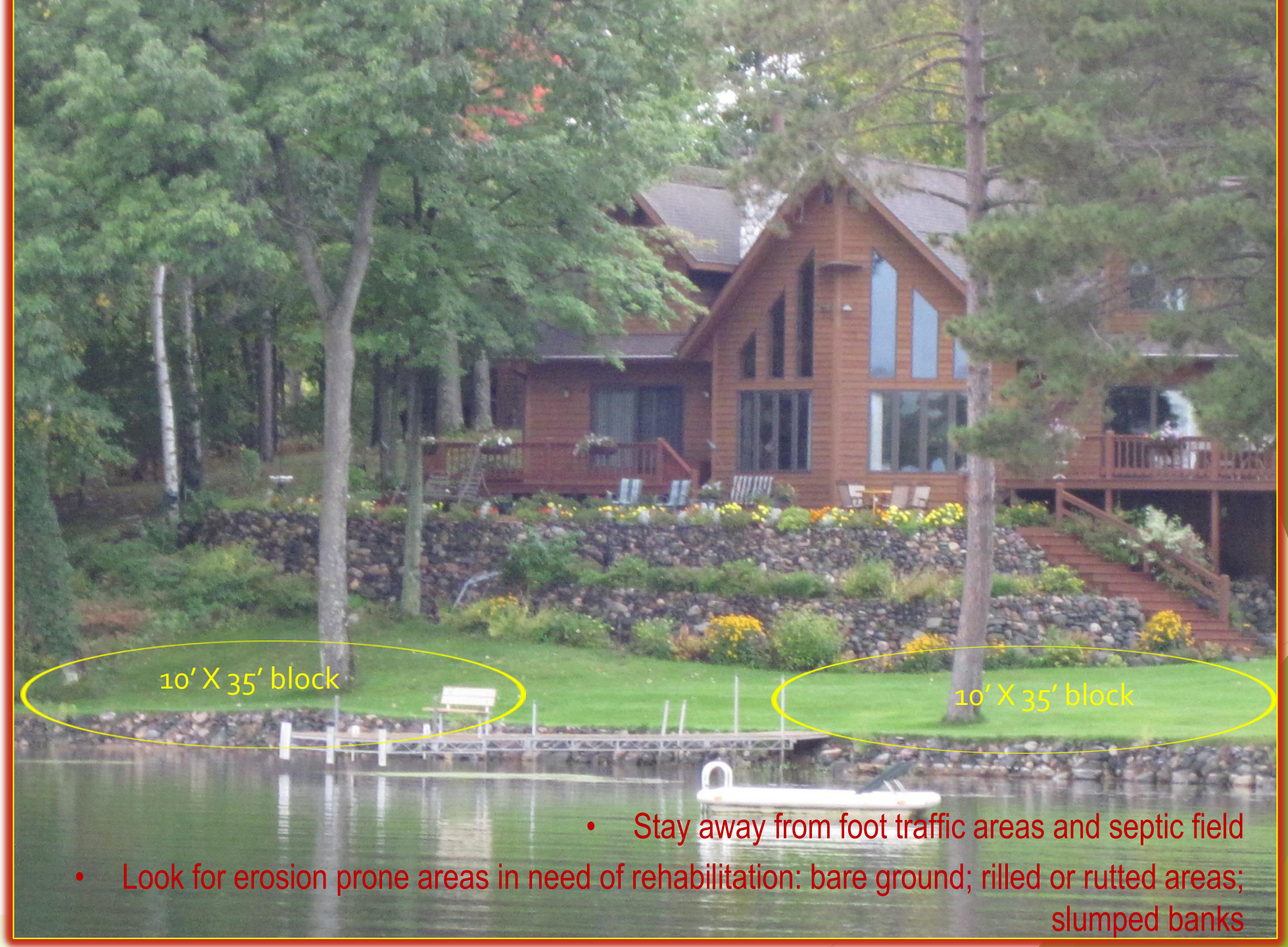
Village of Frederic, Coon Lake, Polk County

Beaver Dam Lake, Dodge County

5 BEST PRACTICES



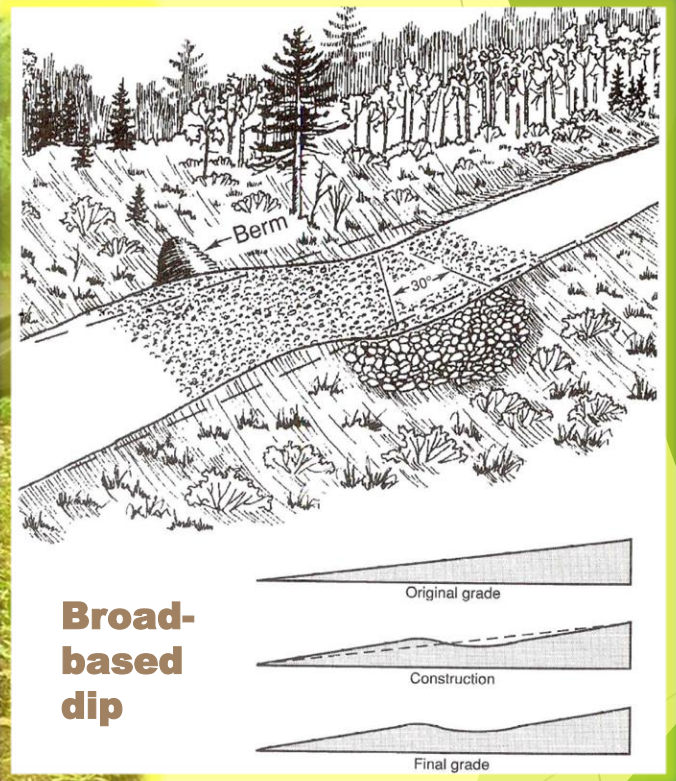
Consult the *350ft² Native Planting Guidance* on our Healthy Lakes web pages for siting ideas, planning and design help, and ***to choose the best prescribed option for you and your property.***

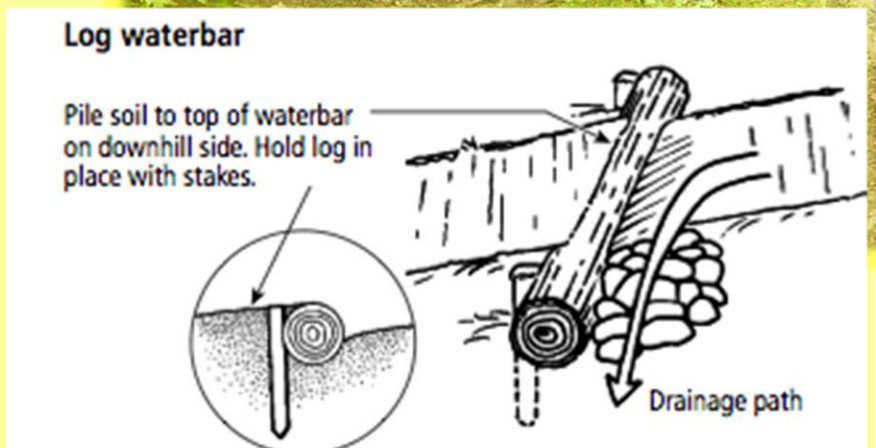


- Stay away from foot traffic areas and septic field
- Look for erosion prone areas in need of rehabilitation: bare ground; rilled or rutted areas; slumped banks

Practice #3: Diversion

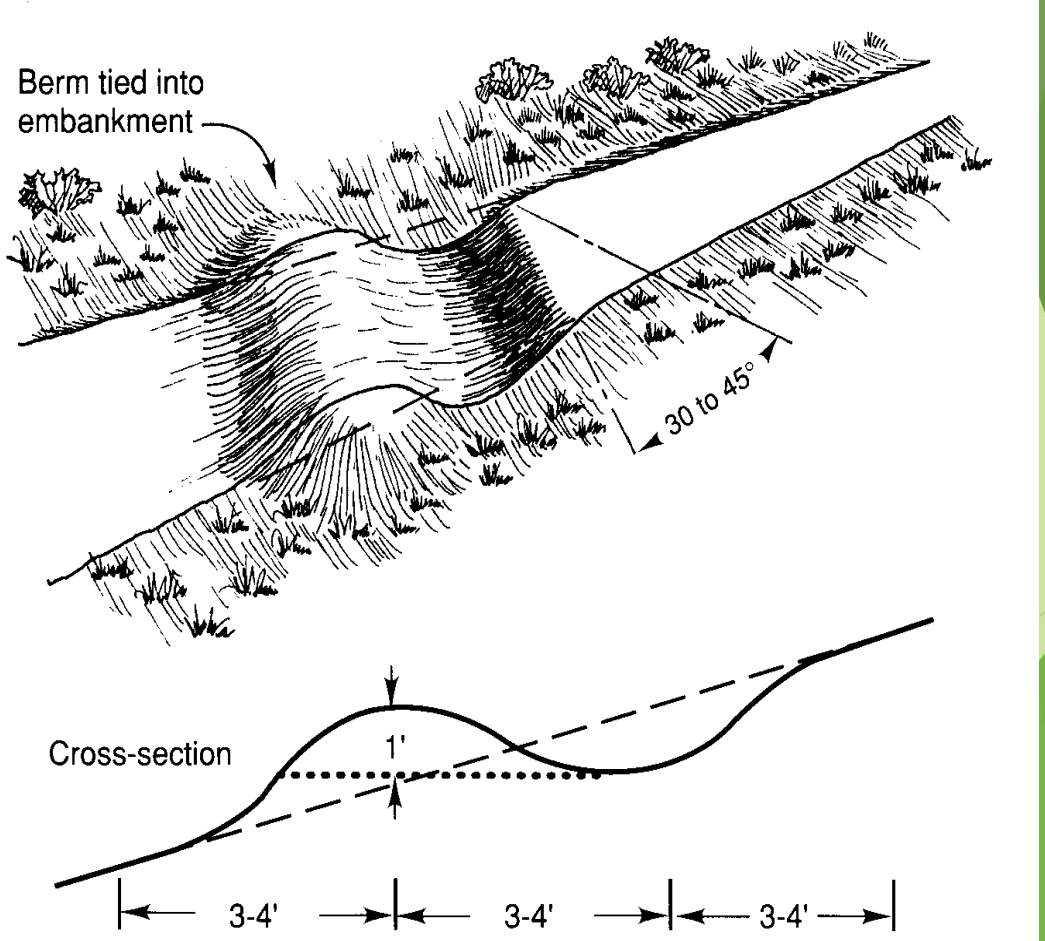
(http://awwatersheds.org/)



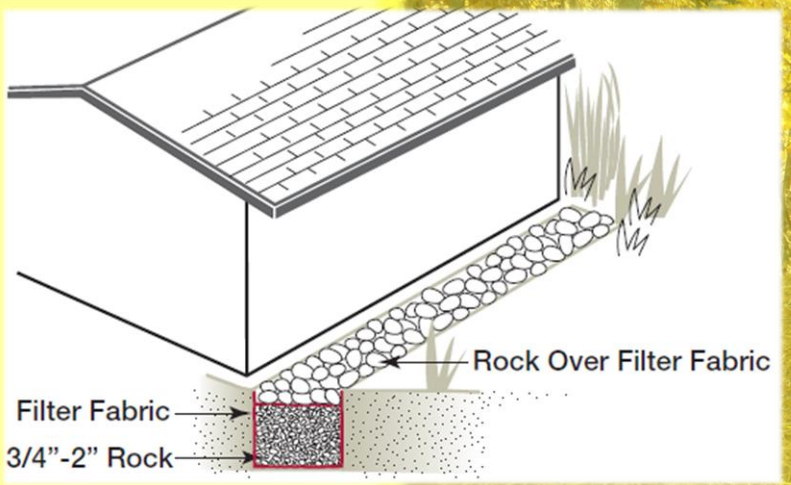


Pathway and Driveway Diversions

- Broad Dip
- Water Bars

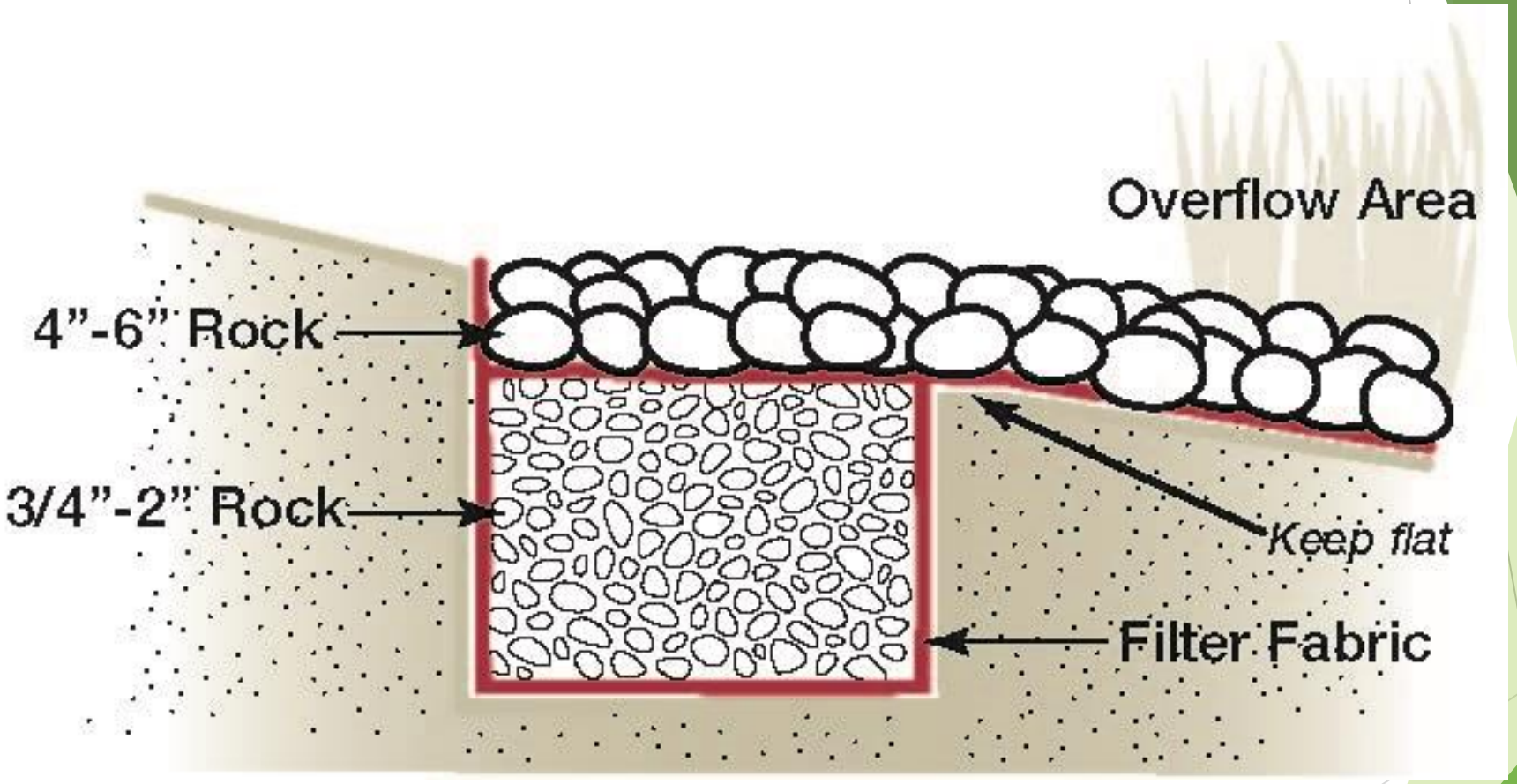


Practice #4: Rock Infiltration



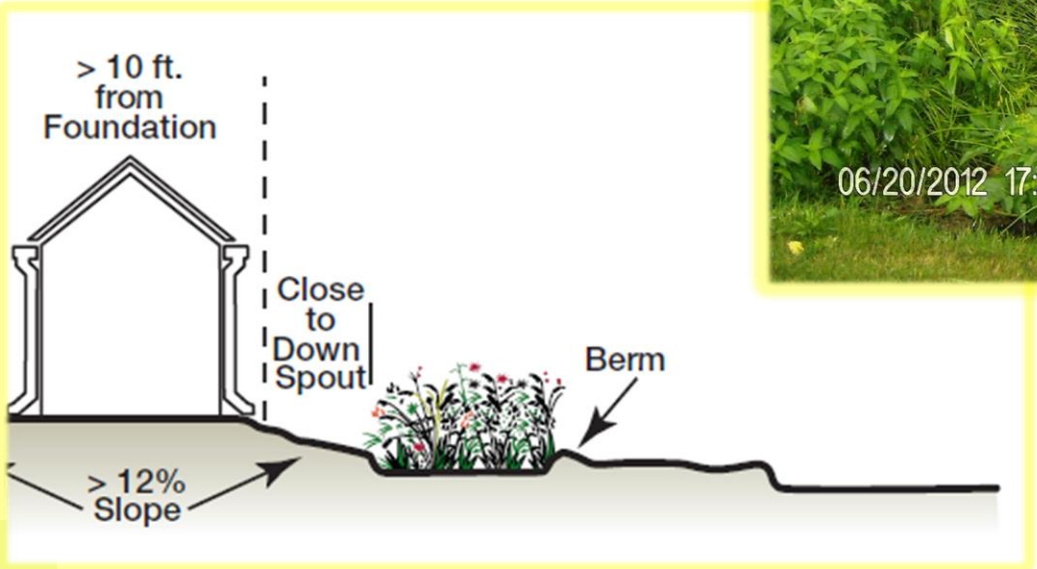
Deer Lake, Polk County (Cheryl Clemens)

5 BEST PRACTICES

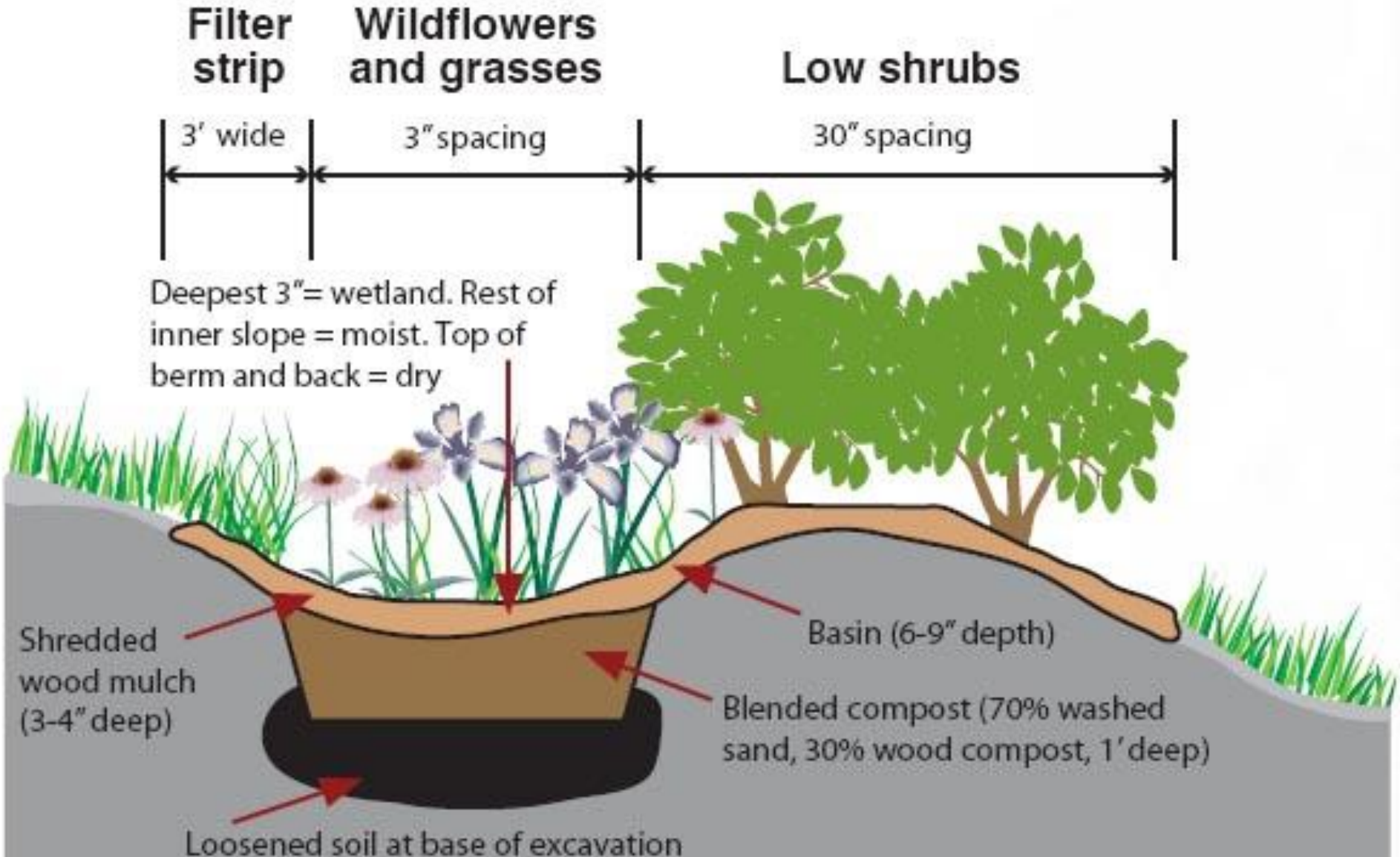

Overflow Area
4”-6” Rock
3/4”-2” Rock
Keep flat
Filter Fabric

Practice #5: Rain Garden

Shell Lake, Washburn County (Brent Edlin)



Practice #5: Rain garden



Nagawicka Lake, Waukesha County

QUESTIONS?

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