



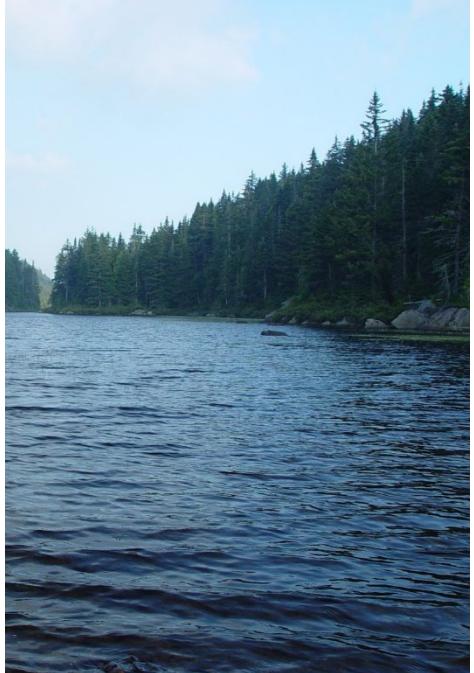
OUR SHORE: The Guide, Training, & Certification

John Maclaine
Nonpoint Source Training Center

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

Protecting Maine's Air, Land, and Water

Maine's Natural Resources



~6,000 Lakes & Ponds



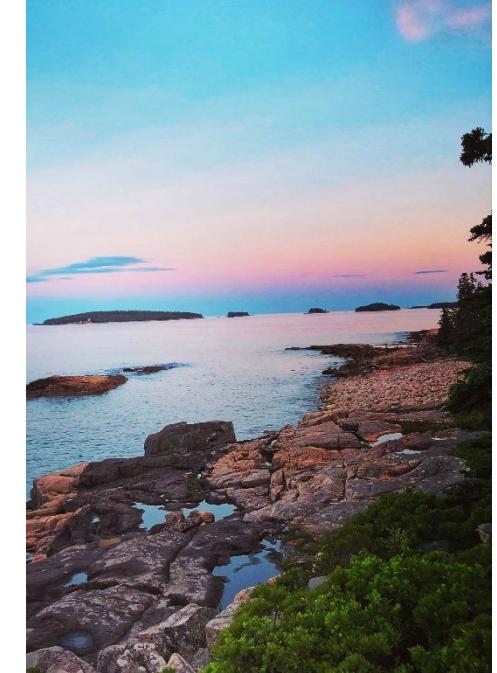
>45,000 Miles of Rivers & Streams



5 Million Acres of Wetlands



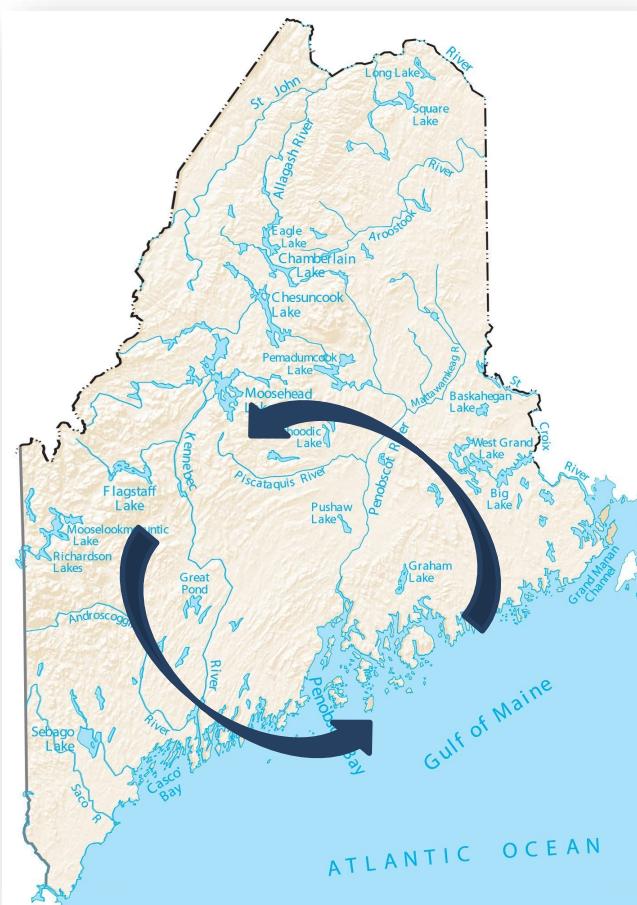
157,500 acres of Coastal Wetlands



3478 miles of Coastline



“OUR SHORE” CONCEPT



Assessment & Selection of Stabilization Tools that:

1. Use the least amount of intervention and disturbance necessary
2. Allow shorelines to function as natural systems as quickly as possible

This is key to protecting the shoreline stability, water quality, and habitat for fish and wildlife in the long term



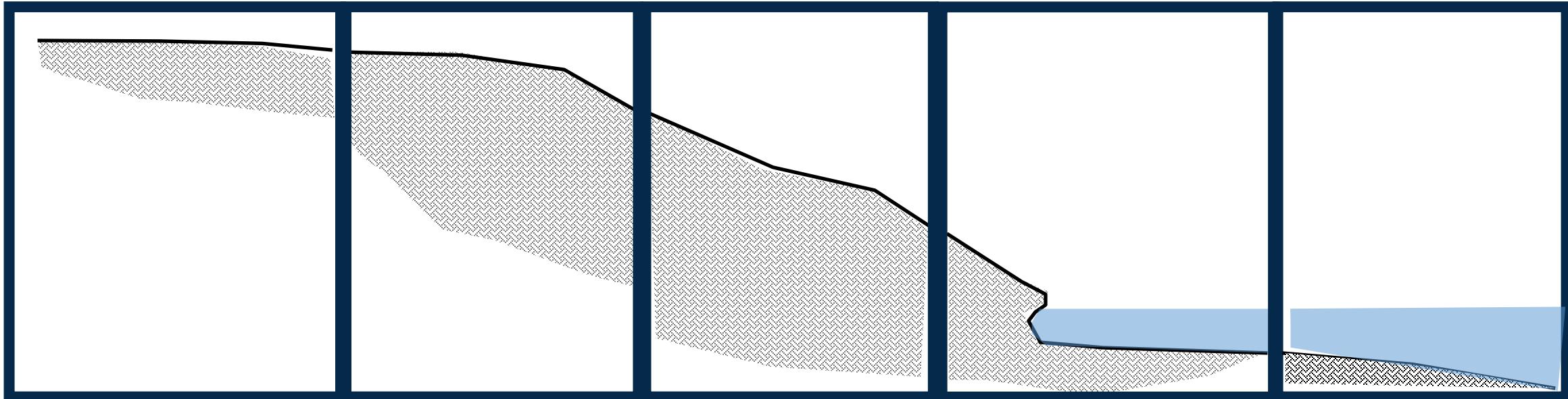
A Combination of Factors

Land Use & Overland Water

Soil type, Slope,
Bank Height

Waves, Ice &
Groundwater &
Flooding

Nearshore
dissipation



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Quick Assessment & Selection Checklist

Nature-based Solutions to Shoreline Erosion

This tool is intended for use by homeowners, contractors, municipal officials, and others involved in the assessment, selection, or construction of shoreline stabilization projects. Use this resource for selecting appropriate tools and practices to stabilize shorelines using the least amount of intervention to become more resilient to erosion, and function as natural systems, protecting the shoreline, water quality, and habitat for fish and wildlife in the long term.

Design Goals & Objectives

O **U** **R**

Observe and blend the project with unaltered shorelines near the site

Use native, natural, living, and biodegradable materials

Reach conditions that function as a naturalized shoreline over time

Source & Severity of Erosion

Assess the contributions of instability by source such as Surface water flows, Groundwater, wave action/ toe erosion, and ice.

Height & Slope Risk

Assess contributions of height, slope, and soil conditions to instability risk

Overland Water and Land Use

Assess how use of the site may affect stability

Re-vegetate/Re-connect Shoreline Buffer

Assess the existing shoreline vegetation and the contribution to stability, water quality, & shoreline habitat connectivity.

Erosion Control Selection Based on Site

Select stabilization practices after assessing the causes of instability to create a targeted stabilization plan based on the needs of the specific site conditions, while meeting the "O-U-R" design objectives.

Implement



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OUR SHORE

Quick Assessment Checklist

SITE ASSESSMENT

Using the **Quick Assessment** on the previous page, the user can determine the potential for instability and the risk of erosion. See potential stabilization practices under the corresponding results in Section **S** on the next page or **Site Selection** practices that can be combined to meet your site's needs. Select and combine practices from each category or, combine practices within a category to increase stabilization ability where needed. Permitting of certain projects may require additional review and consultation - additional guidance on permitting is available on Page 4 of this Assessment. Consult an engineer or other experts to fully assess any site where safety and property are at risk. Use this tool with the Maine DEP Shoreline Stabilization Guide for more detailed information on permitting and each practice.

	Lower	Higher
	Instability Risk	Instability Risk
S Source & Severity of Erosion – Assess the locations & sources of instability	<p>Overland Water No recent bank erosion or loss from limited flows</p> <p>Groundwater No evidence of groundwater seepage</p> <p>Toe Erosion (Wave or Ice) Toe erosion in limited areas or none</p> <p>Site is mostly sheltered from severe wave action</p>	<p>Overland Water Bank erosion is occurring with measurable change and loss of soil or vegetation</p> <p>Groundwater Evidence of limited or seasonal groundwater seepage or impacts to slope</p> <p>Toe Erosion Mature toe is failing or moving to undercut; upper bank is otherwise stable</p> <p>Site receives some wave action, but only temporary cause erosion. Only ice is affected.</p> <p>Site is receiving heavy wave or ice action and/or impacts seen from severe storms.</p>
H Height & Slope Risk – Assess contributions of height, slope, and soil to instability risk	<p>Bank Height Low Bank (less than 3 feet)</p> <p>Slope Protection Low Slope (less than 3L:1V) Current Slope Protection Install vegetation and duff layer</p> <p>Soils Soils contain mix of sediments and stone, fairly stable soil condition</p>	<p>Bank Height Moderate Bank (3-6 feet)</p> <p>Slope Protection Moderate Slope (3L:1H—1L:1H) Install vegetation and duff layer</p> <p>Soils Unstable soil condition or moderate erosion rate</p> <p>High Bank Buff (over 6 feet)</p> <p>High Slope (> 1L:1V)</p> <p>High Rate of surface has vegetation and duff layer</p> <p>High rate of erosion and very unstable soils of solely sand or fine sediments</p>
O Overland Water from Land Use – Assess how property use affects stability through overland flow and groundwater	<p>Surface water flow from land use No concentrated or channeled flow from land use</p> <p>Lawn or bare ground No lawn or bare ground are within 25 feet of the bank</p> <p>Distance to impervious surfaces No roads, driveways, houses, or other impervious surfaces are within 25 feet of the bank</p> <p>Overall impact of surface flows Very limited impacts from surface flows; surface flows properly managed</p>	<p>Surface water flow from land use Some concentrated or channeled flow is directed toward the bank resulting in minimal shear or soil erosion</p> <p>Lawn or bare ground No lawn or bare ground are located within 25 feet of the bank</p> <p>Distance to impervious surfaces Roads, driveways, houses, or other impervious surfaces are within 25 feet of the shoreline</p> <p>Overall impact of surface flows Concentrated or channeled flow is directed toward the bank resulting in high shear and soil erosion. No protection is in place.</p> <p>Moderate Overland Impact from surface water</p> <p>Concentrated or channeled flow is directed toward the bank resulting in high shear and soil erosion. No protection is in place.</p> <p>Concentrated or channeled flow is directed toward the bank resulting in high shear and soil erosion. No protection is in place.</p>
R Re-vegetate/reconnect shoreline buffer – Assess levels of buffer vegetation for stability and habitat connection	<p>Vegetation within 250 feet of the shoreline habitat Dense mix of shrubs and trees (70% + Coverage)</p> <p>Vegetation within 25 feet of the shoreline habitat Dense mix of shrubs and trees (70% + Coverage)</p> <p>How natural is the shoreline habitat? Bank and vegetation are not altered; No riprap or hardened structures installed.</p>	<p>Average vegetation (20-70% coverage)</p> <p>Low/sparse vegetation (less than 20%)</p> <p>Average vegetation (20-70% coverage)</p> <p>Low/sparse vegetation (less than 20%)</p> <p>Bank is hardened and/or no vegetation present</p>
E Erosion Control Selection Based on Site Needs	<p>On the following page, select practices that would address the factors of instability identified above. Practices can be combined from multiple risk levels to increase function. See Permitting Guidance on Page 4 for more information.</p>	

SELECTION

Legend: ♦ = No permit required

Overland Erosion	<p>None – no groundcover or vegetation</p> <p>Increase buffer & vegetation & cliff layer</p> <p>Land Use Best Practices</p>	<p>Multiple "Lower Risk" Treatments</p> <p>Upslope treatments (e.g. Waterbars, upslope water diversion, rubber rafts, etc.)</p> <p>Install vegetation and groundcover surfaces to stable areas, infiltration areas</p> <p>Divert runoff into stable buffer area</p> <p>Site Stabilization practices (e.g. coir logs, wattles, contour swales, contour planting)</p> <p>Use of Vegetation Practices or other Slope Protection Practices</p>
Groundwater	<p>None – no groundcover or subsurface drainage</p> <p>Increase buffer & vegetation & cliff layer</p> <p>Land Use Best Practices</p>	<p>Multiple "Lower Risk" Treatments</p> <p>Upslope treatments (e.g. Waterbars, upslope water diversion, rubber rafts, etc.)</p> <p>Install vegetation and groundcover surfaces to stable areas, infiltration areas</p> <p>Divert runoff into stable buffer area</p> <p>Site Stabilization practices (e.g. coir logs, wattles, contour swales, contour planting)</p> <p>Use of Vegetation Practices or other Slope Protection Practices</p>
Toe Erosion	<p>None – toe erosion is not present or minimal</p> <p>Root wad to be protected</p> <p>Retain some toe</p> <p>Land Use Best Practices</p>	<p>Multiple "Lower Risk" Treatments</p> <p>Root wad to be protected</p> <p>Coir Logs & coarse media-filled socks*</p> <p>Riprap stones in excavated toe trench</p> <p>Vegetated Timber Cribs*</p> <p>Vegetated Gabions*</p> <p>In-Water Practices (see Page 4)*</p>
Slope Severity	<p>None – Slope is low or flat</p> <p>Increase buffer & vegetation & cliff layer</p> <p>Land Use Best Practices</p>	<p>Multiple "Lower Risk" Treatments</p> <p>Use of Vegetation Practices or other Slope Protection Practices</p> <p>Install vegetation (coir logs, wattles, contour swales, contour planting)</p> <p>Retain some toe</p> <p>Retain some toe</p>
Slope Protection	<p>Natural conditions retained or augmented with vegetation and groundcover</p> <p>Increase buffer & vegetation & cliff layer</p> <p>Land Use Best Practices</p>	<p>Multiple "Lower Risk" Treatments</p> <p>Install native vegetation (may require addition of topsoil)</p> <p>Erosion Control Mat mulch, Other appropriate mulches</p> <p>Hydraulic mulches & hydroseeding</p> <p>Retain some toe</p> <p>Heavy coir & Vegetation</p>
Land Use Best Practices	<p>Vegetated buffers</p> <p>Refin fine soil by adding organic material, topsoil, and/or mulch</p> <p>Install vegetation and groundcover</p> <p>Retain some toe</p> <p>Plant native vegetation</p>	<p>Multiple "Lower Risk" Treatments</p> <p>Retain some toe</p> <p>Install vegetation with riprap or vegetated riprap</p> <p>Retain some toe</p> <p>Retain some toe</p>
Vegetation Practices	<p>Natural Growth - Increase growth indirectly by limiting mowing, pruning, raking of duff, and thoughtful land use</p> <p>Live Stakes - Live stakes are cuttings of hardwood shrubs/trees like willows, dogwoods, and elders. They are put in the soil and grow into new plants, identical to their parent. This simple and cost-effective tool can be used in many wetland restoration projects, including shoreline habitat restoration, riparian buffers, and wetland buffers, pollinator gardens, and other bioengineering techniques, making it an important resource in stabilization projects.</p> <p>Planting Native Seed Stock - Increasing native seed mix and shrubs, with their deeper and wider root systems, can enhance stability. Additional stabilization may be required.</p> <p>Seed - Enhancing shoreline resilience and habitat can be achieved by seeding disturbed areas with a native seed mix composed of species adapted to the site's conditions. However, the seeds will require time and attention to establish. To protect the soil and seeds from erosion, temporary mulches or natural fiber blankets should be used.</p>	
Pathways/resource access	<p>Define & stabilize pathways</p> <p>Make pathways meander through the buffer to prevent concentrated runoff</p> <p>Install vegetation and groundcover to move stable bank areas</p> <p>Cover pathways with mulch</p> <p>Don't store docks, trailers, or boats near the bank</p>	
Lawn & Gardens	<p>Minimize lawn/landscaped areas near the bank</p> <p>Reduce and minimize lawn or other impervious surfaces downstream of the buffer</p> <p>Limit mowing, allow re-vegetation of buffer, or set mower height higher</p>	
Driveways, Parking, & Road Buffs	<p>Driveways, parking, and roads</p> <p>Prevent driveways, driveways, or roads using water bars, infiltration steps, or mulch cover</p> <p>Minimize runoff from impervious surfaces to the buffer</p> <p>Identify any high energy or concentrated water flows - slow it down, spread it out</p>	
Houses & Roof Runoff	<p>Drainage, outlets (Drains, pump pump discharge, gutters) to dissipate energy and spread runoff</p> <p>Use rain gardens, dryline trenches for roof runoff</p>	

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Materials



Non-Biodegradable Materials

- Gabions and Variations (e.g. marine mattresses)
- Turf Reinforcement Mats (TRM)
- Cellular Confinement Systems

Mixed Materials

- Infilled Riprap with Soil, Erosion Control Mix or variations for growing vegetation
- Cobbles Mixed with Erosion Control Mix

Stone, Soil & Aggregate Materials

- Riprap Stone
- Bank-Run Stone & Cobbles
- Crushed Stone
- Pea Stone
- Oyster Shells
- Coarse Sand
- Loam



Manufactured Products

- Biodegradable Erosion Control Socks
- Coir Logs
- Natural Fiber Blankets & Filter Fabrics (long-lived, fully biodegradable), Burlap, Heavy Coir blankets
- Temporary Erosion Control Blankets

Mulches & Organic Matter

- Erosion Control Mix (permanent)
- Fine Erosion Control Mix, super humus
- Hay or Straw Mulch (*temporary erosion control/seed establishment*)
- Natural Mulches (duff, leaves, pine needles)
- Other Natural Wood-Based Mulches & Chips
- Hydraulically Applied Mulches & Biotic Soil Media
- Plant-Based Compost

Dead Wood & Tree Materials

- Tree Root Wads
- Dead Brush Bundles
- Logs & Posts, Anchored Tree Material

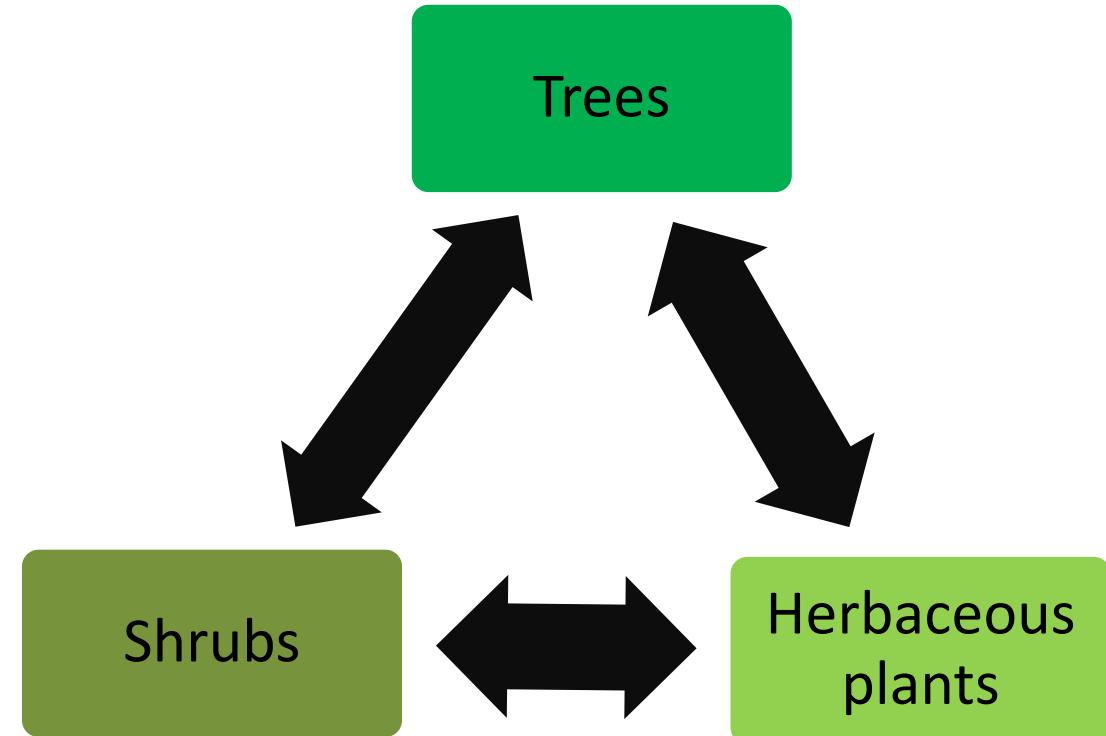
Living Materials

- Live Stakes
- Live Poles
- Live Posts
- Living Brush
- Living Fascines
- Living Wattles

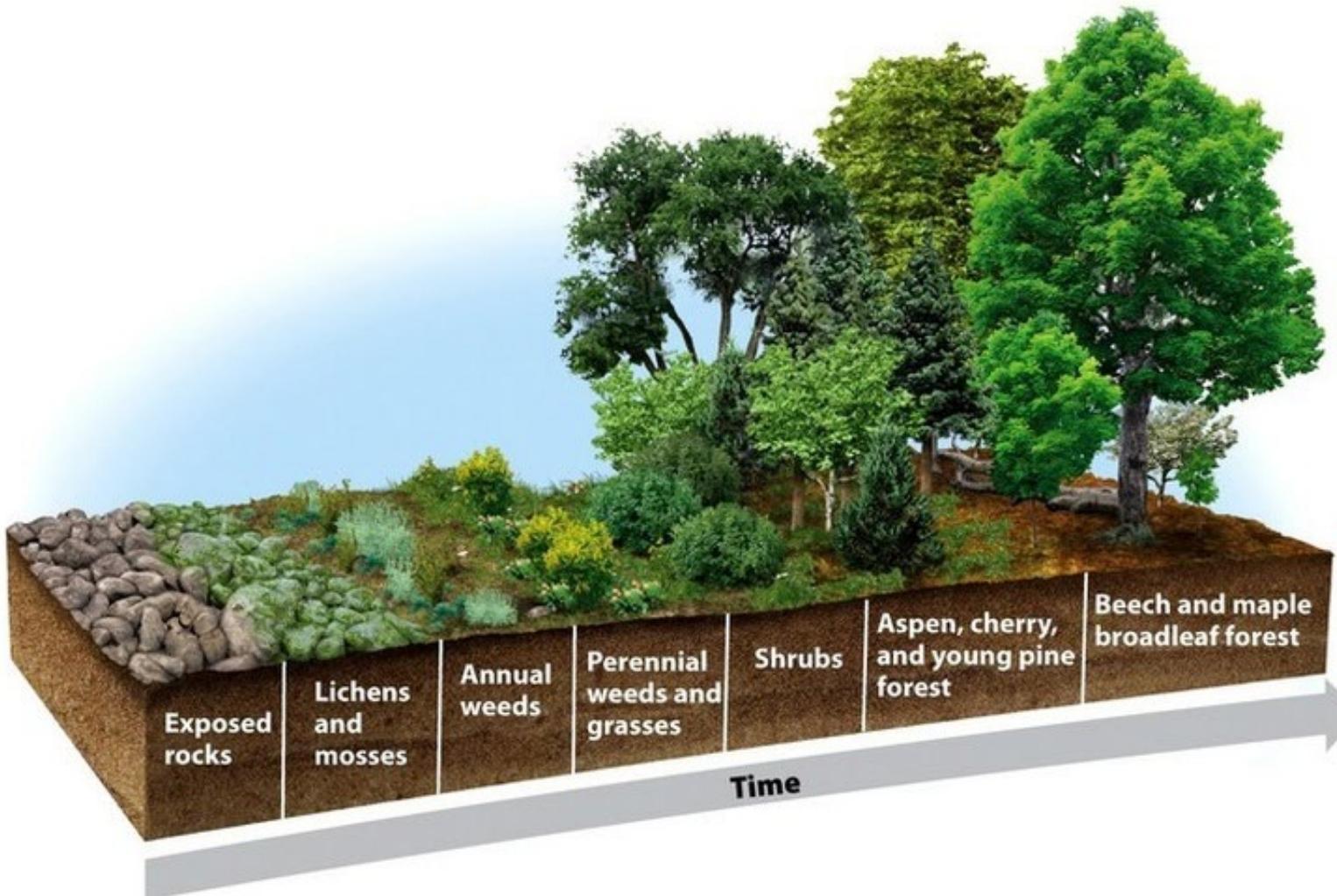
Establishing Vegetation

(Don't get in nature's way)

- Seeding
- Potted plants
- Dormant bare-root
- Transplanted natives
- Live-staking & self-rooting variations
 - Living brush
 - Fascines
 - Living wattles
 - Living Poles & Posts
- Creating places for wild seeds to collect
- Using graded soil from the site (seed bank)



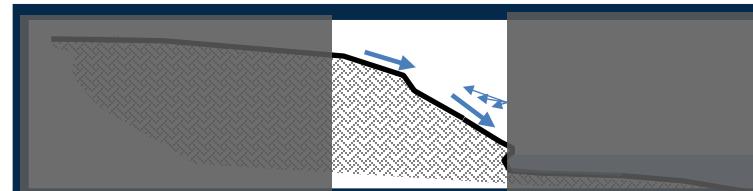
Ability to Naturalize Over Time



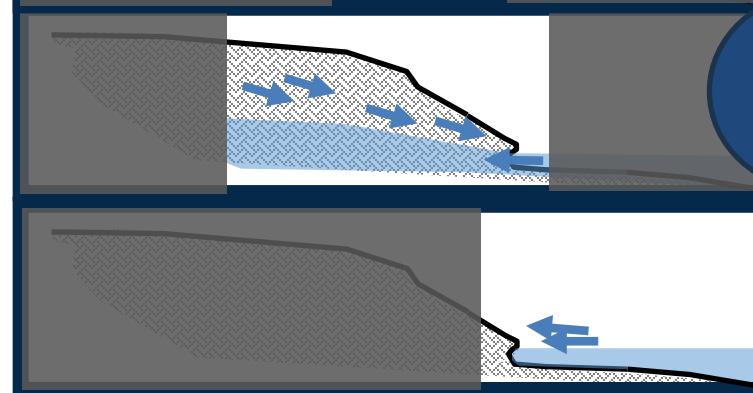
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Photo Credit: Damon Yakovleff
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Overland Erosion & Wave Spray



Groundwater & Saturation



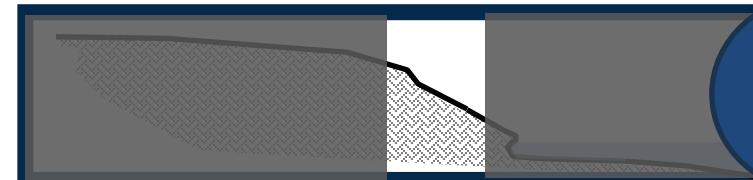
S

Source of Erosion

Toe Erosion



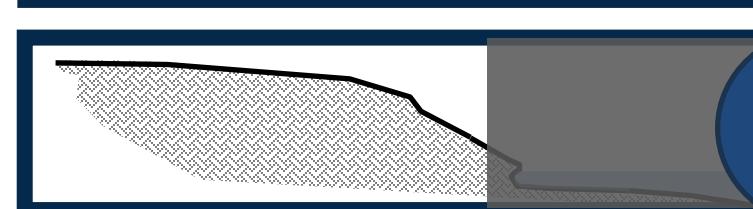
Slope Alterations



H

Height & Slope

Slope Protection



O

Overland Water from Land Use



R

Revegetate & Restore Habitat



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S

Sources of Erosion & Instability:

- Toe Erosion from waves/ice
- Overland Flows/Spray
- Groundwater/Saturation

Assessing & Selecting Tools - Site #1

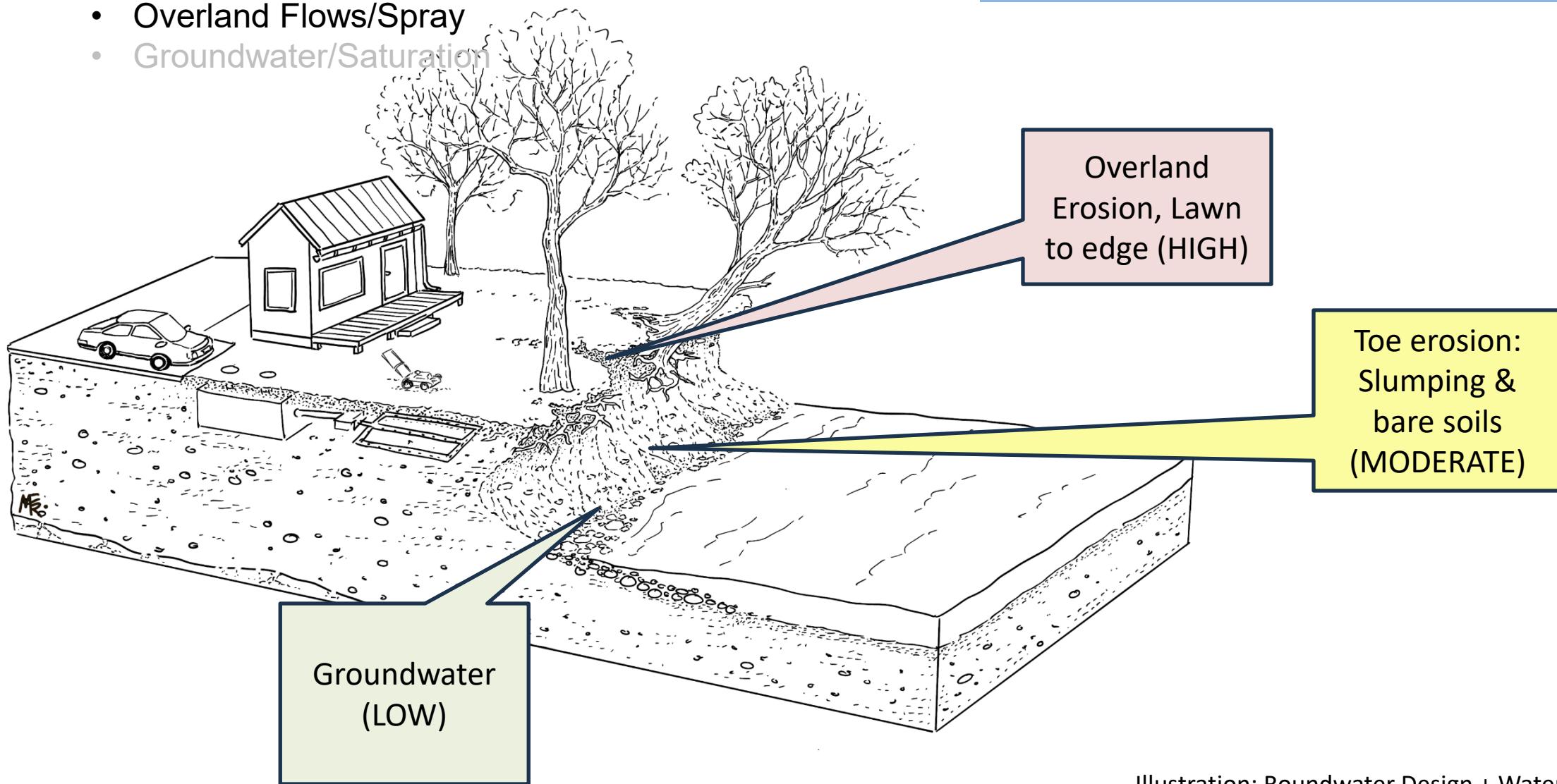


Illustration: Roundwater Design + Waterview Consulting



S

Sources of Erosion & Instability:

- Toe Erosion from waves/ice

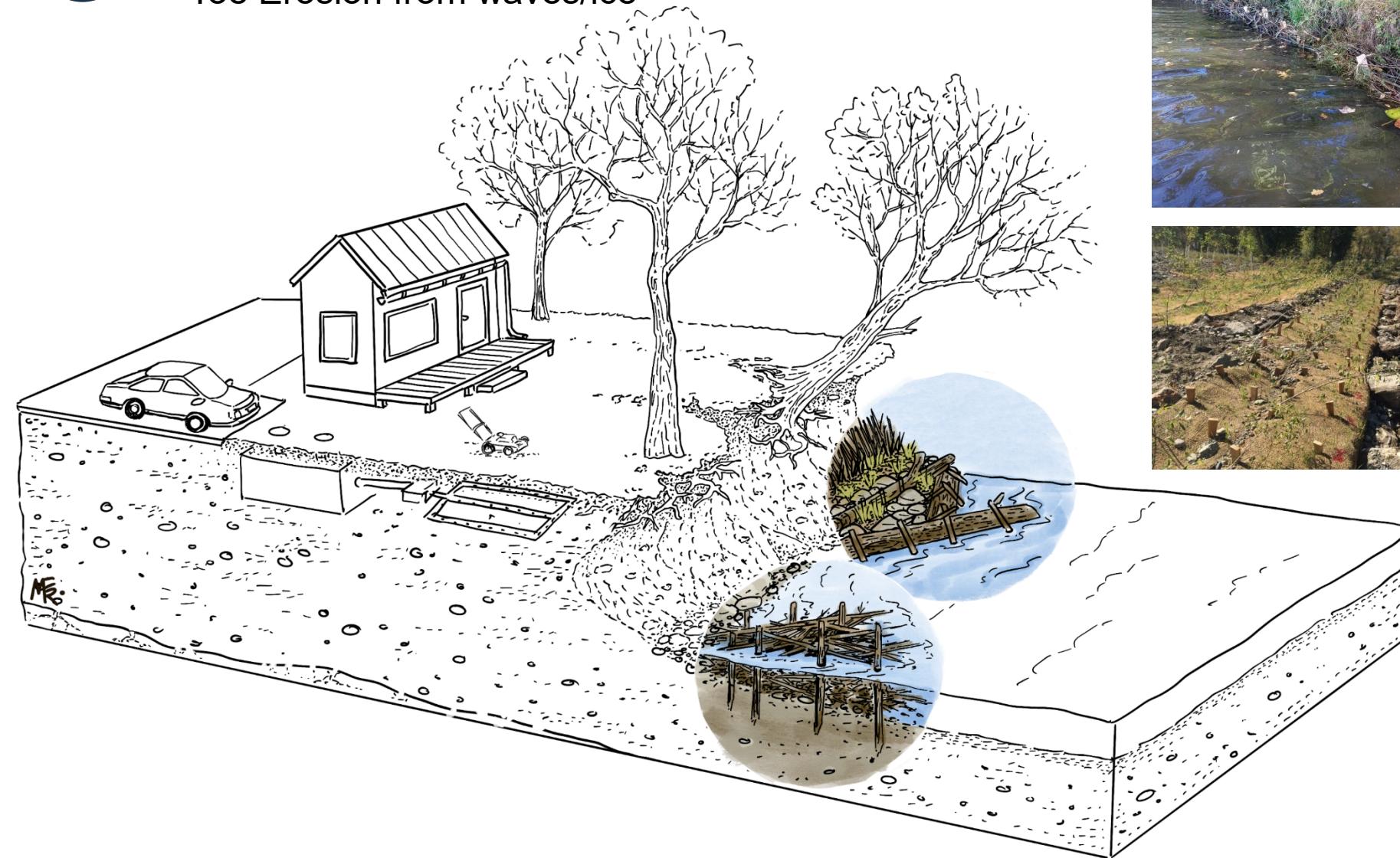
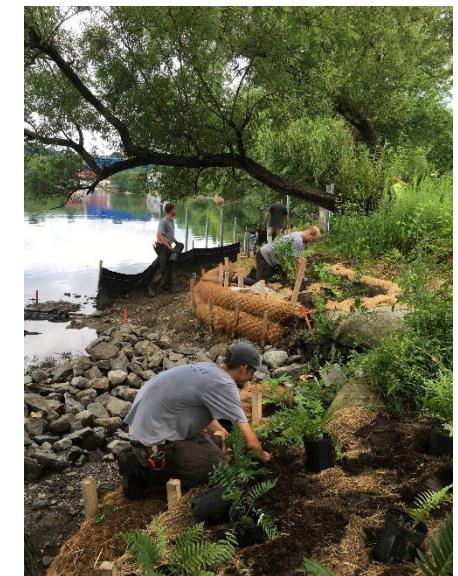


Illustration: Roundwater Design + Waterview Consulting



The Home Place Team



Parterre Ecological

S

Sources of Erosion & Instability:

- Overland Erosion/Spray

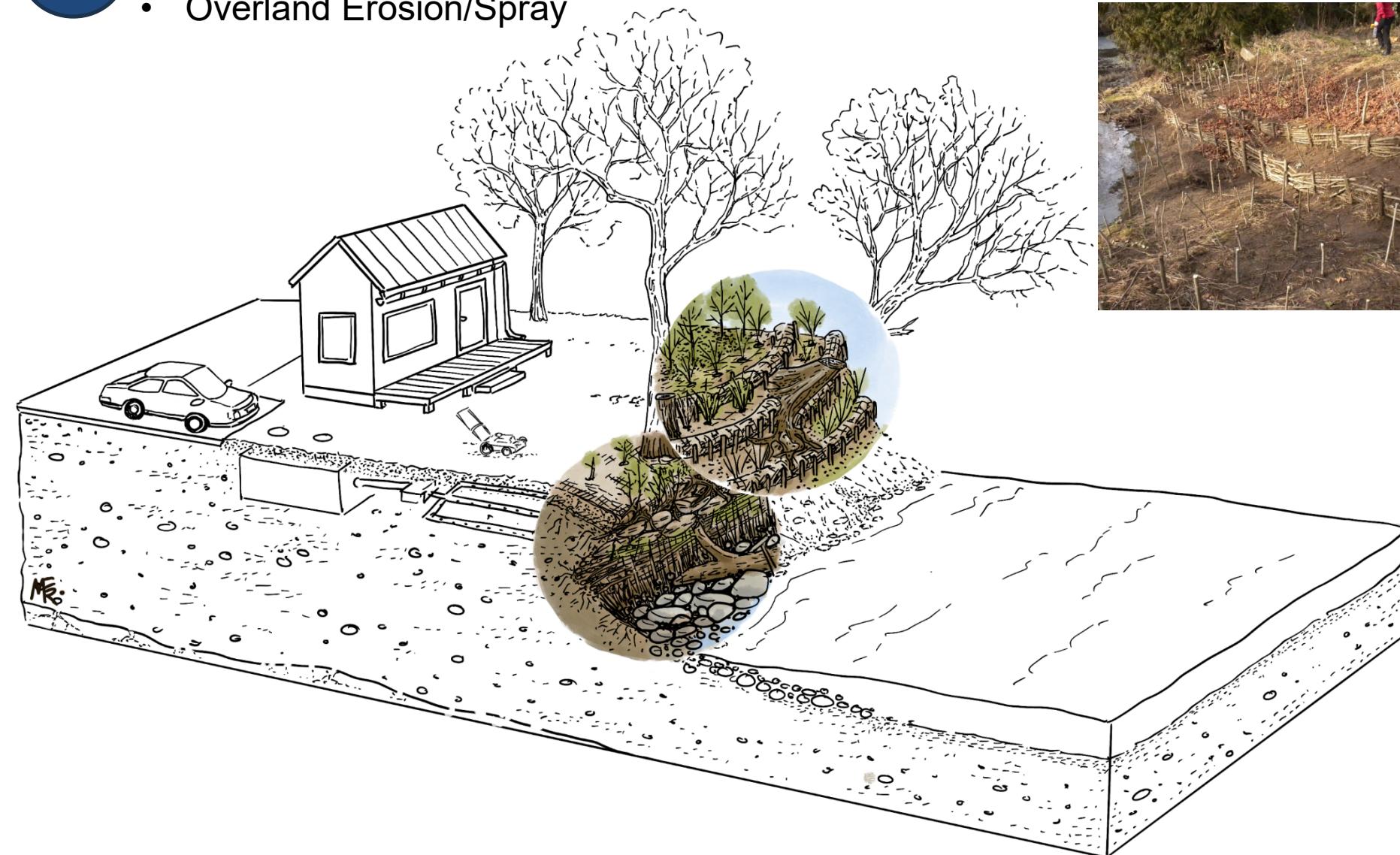


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H Height & Slope Risks

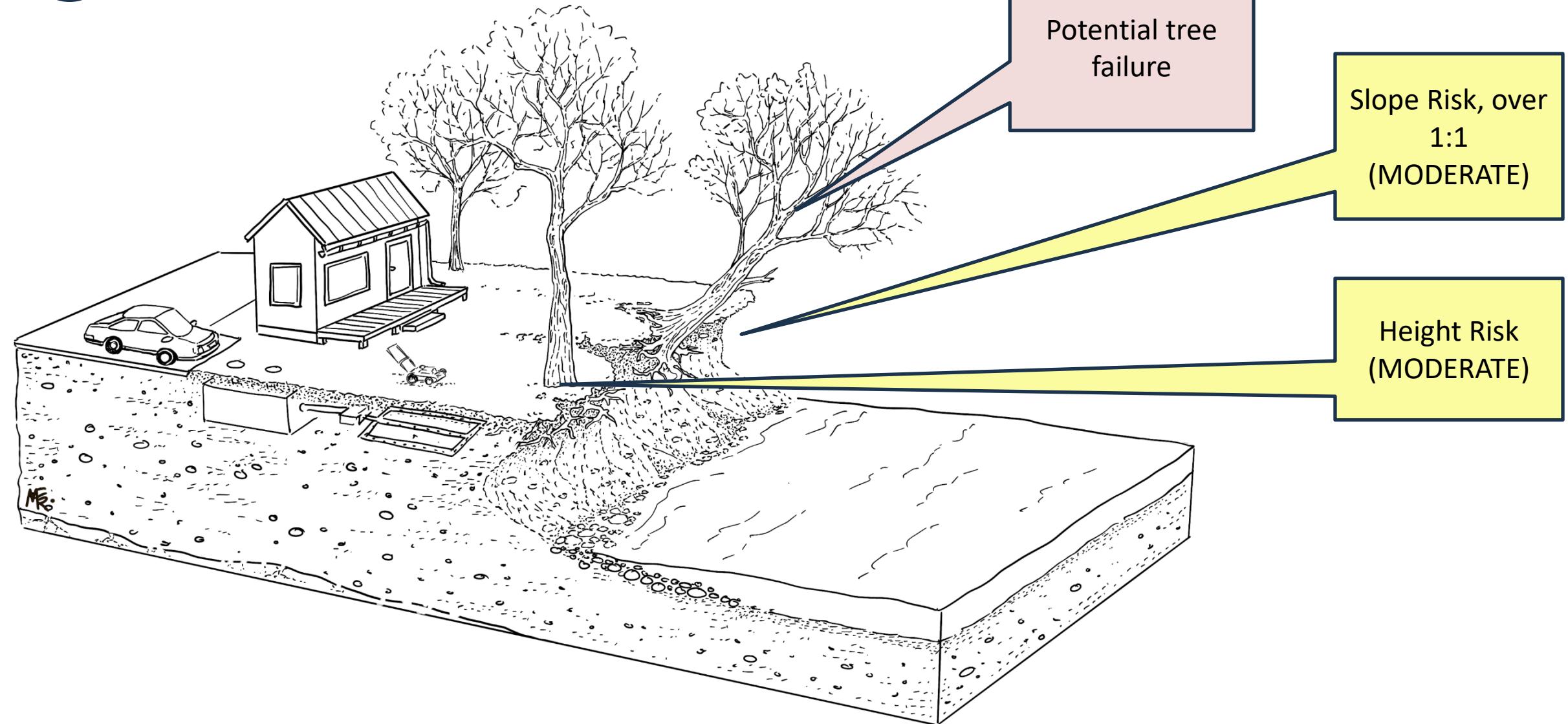


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H

Height & Slope Risk: Regrading

SLOPE GRADING PRACTICES

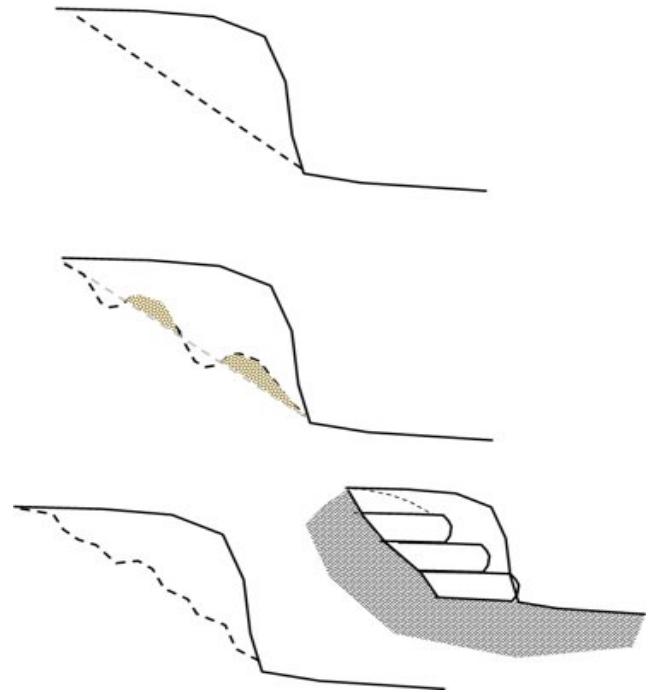
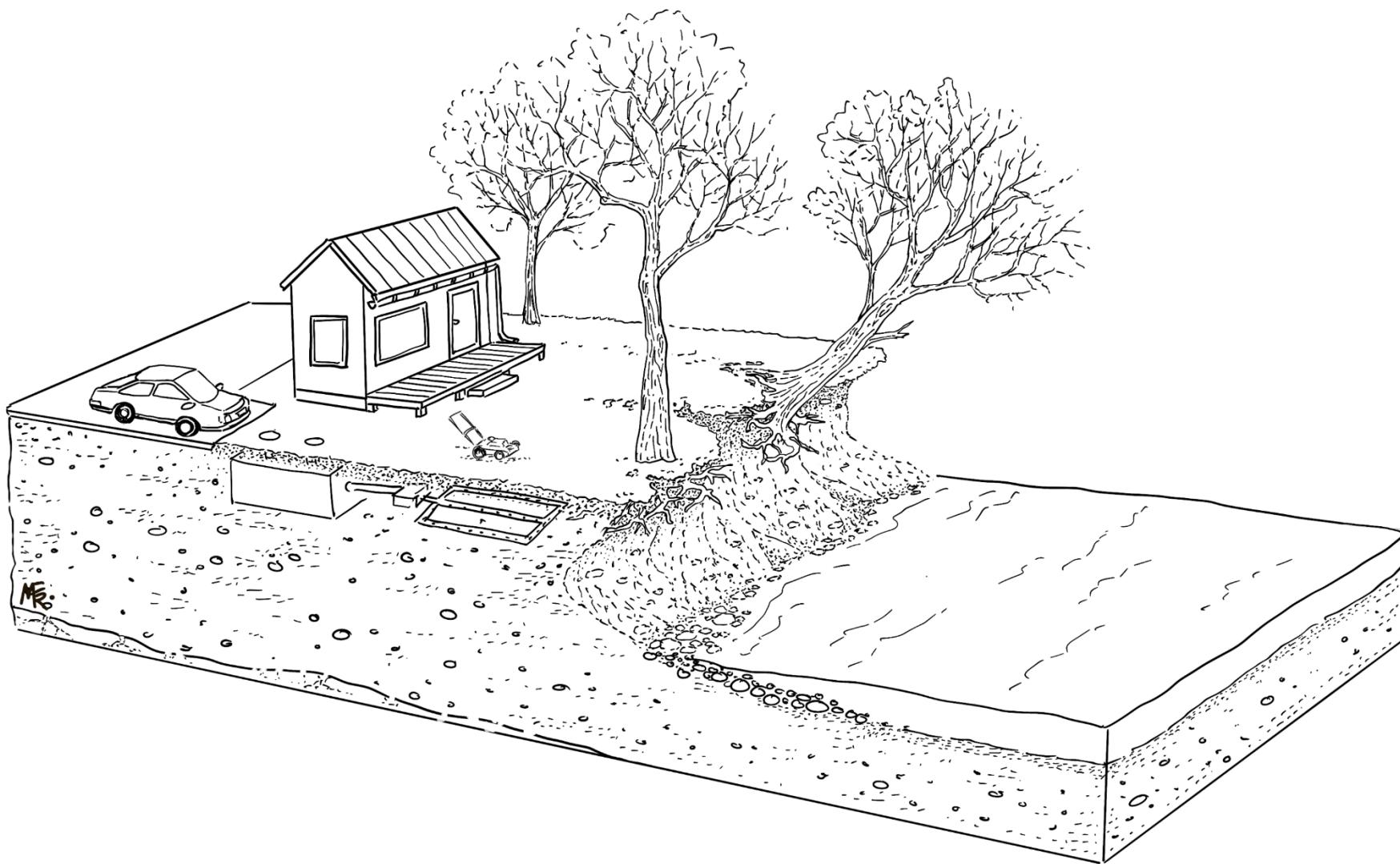


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O Overland Water From Land Use

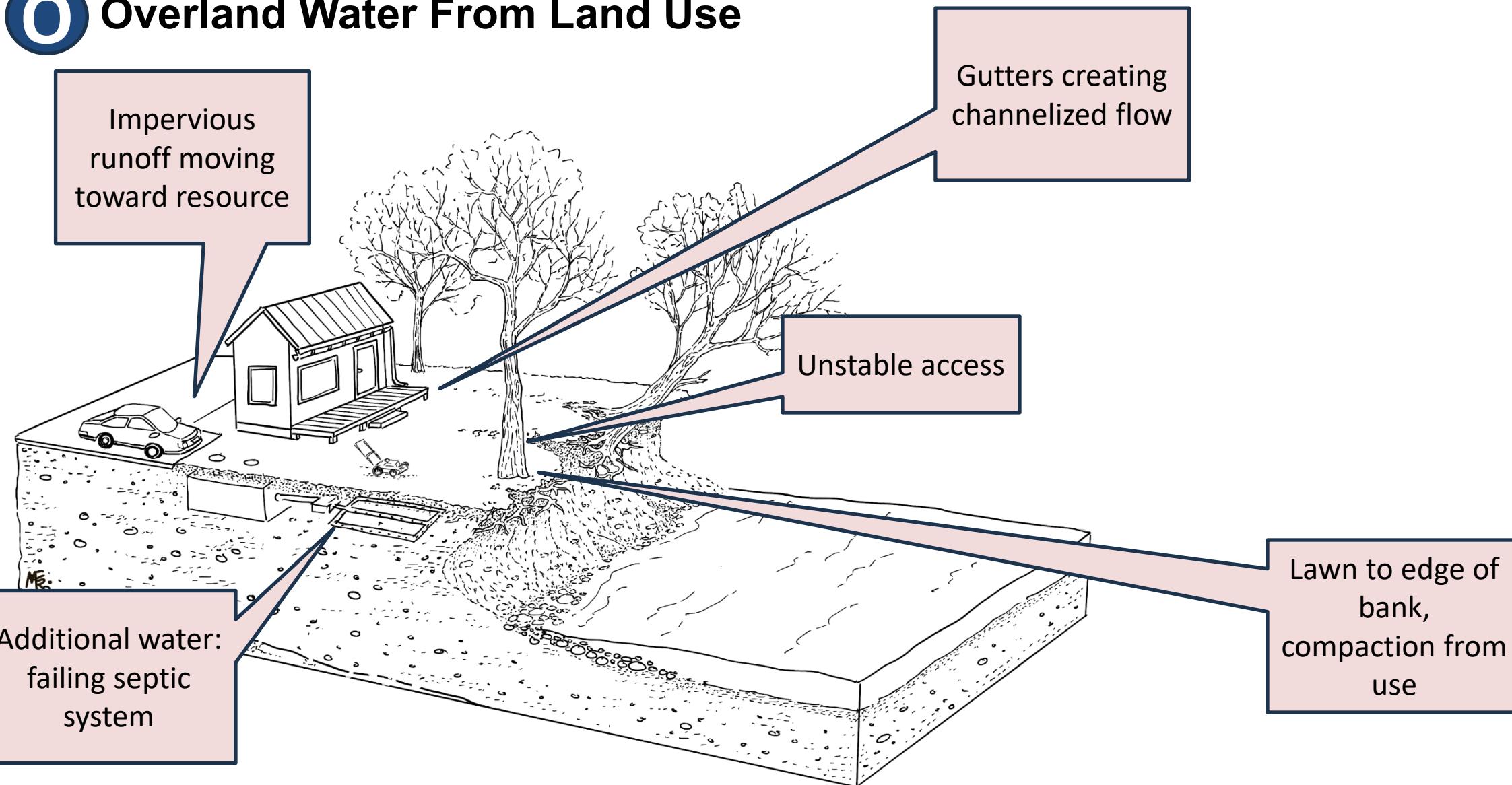


Illustration: Roundwater Design + Waterview Consulting



O Overland Water From Land Use

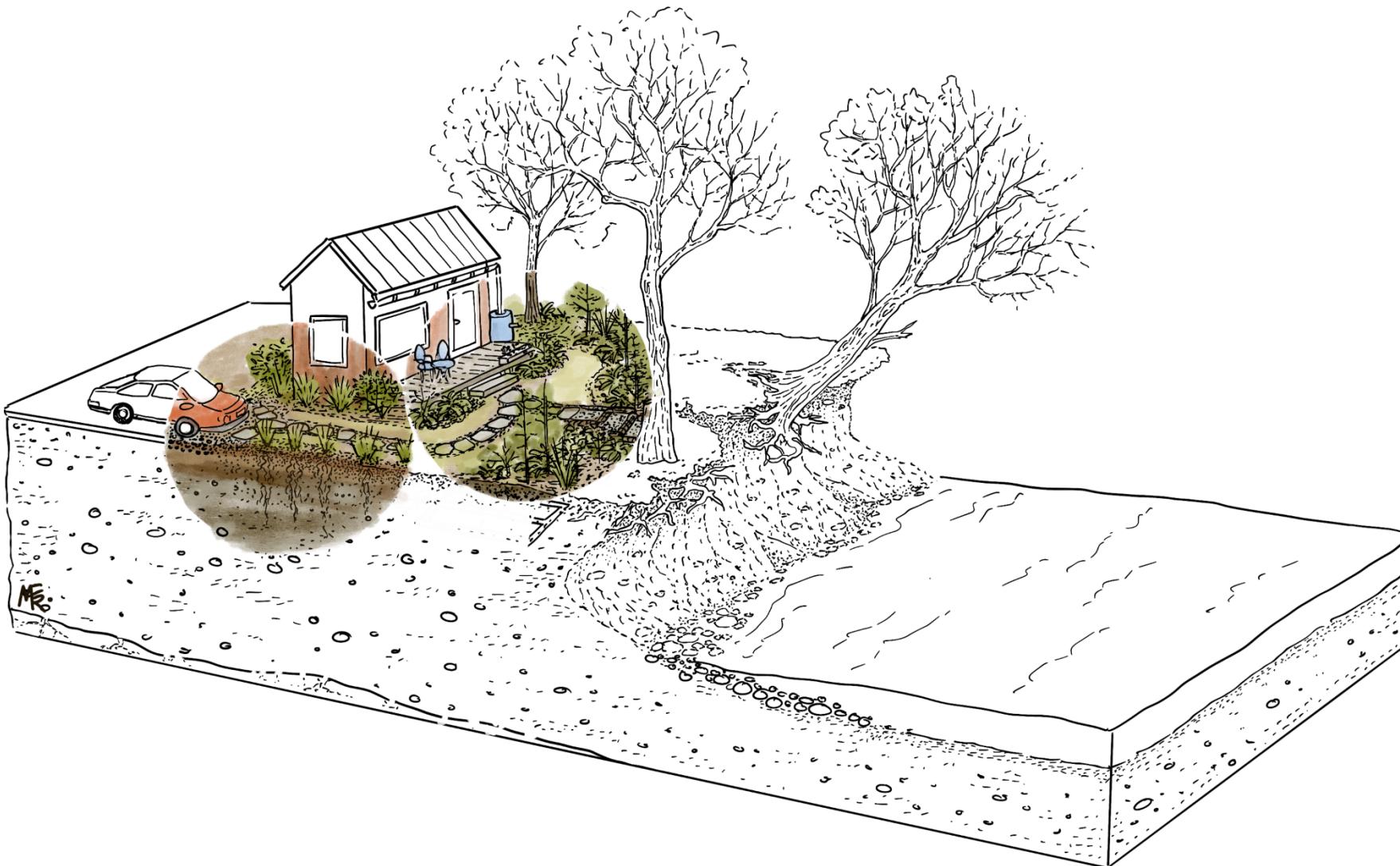


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Minimize water volume

Slow it down & Spread it out



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Anchored
woody
practices

Decreased lawn
area, increased
buffer of native
vegetation

Higher density &
variety of vegetation

Stabilized access

Hazard tree
stump remains

Various slope
interruption
practices, log sills

Anchored logs
& sills with
mixed stone

Anchored
woody
practices add
habitat and
break up
energy

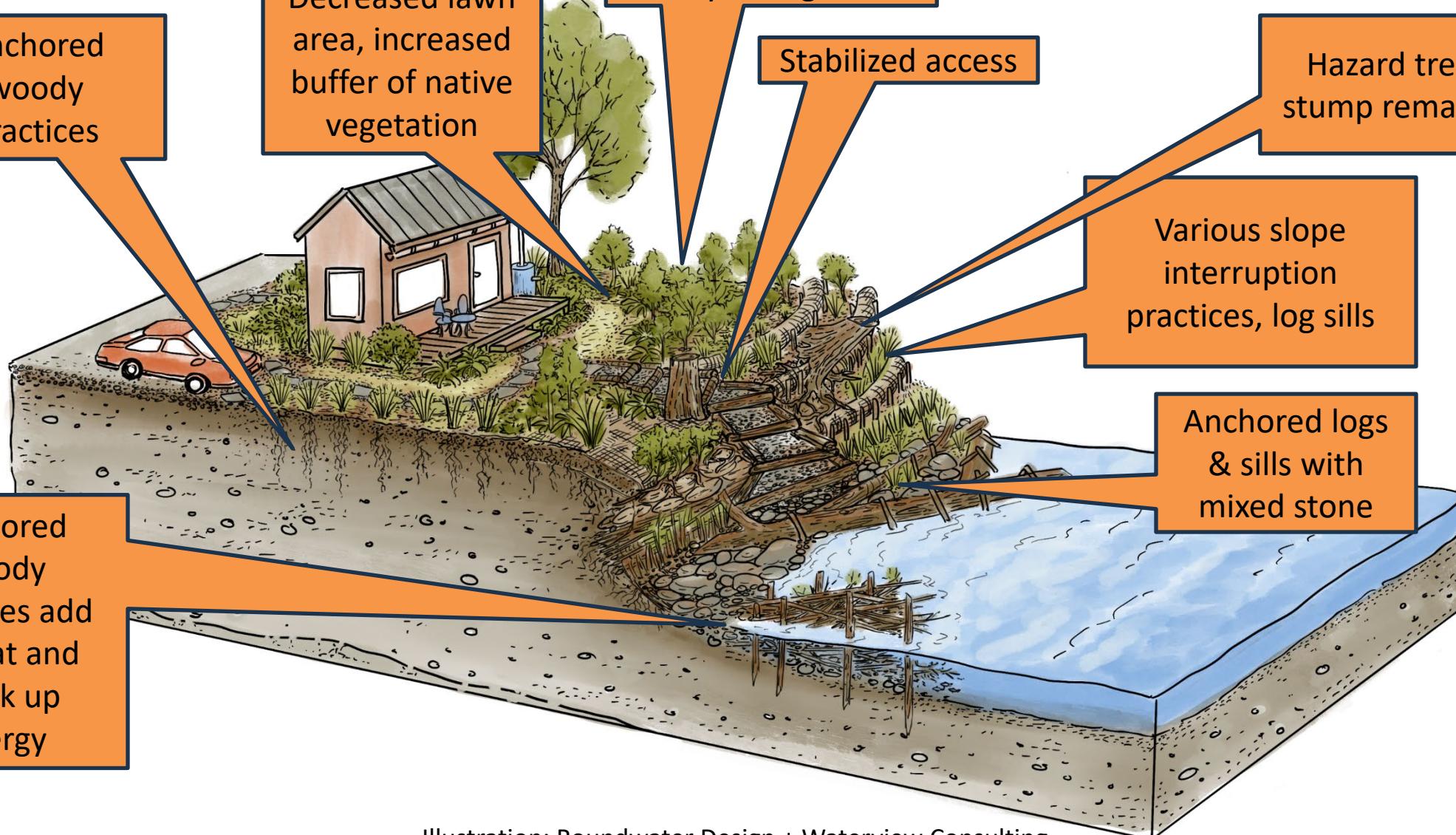
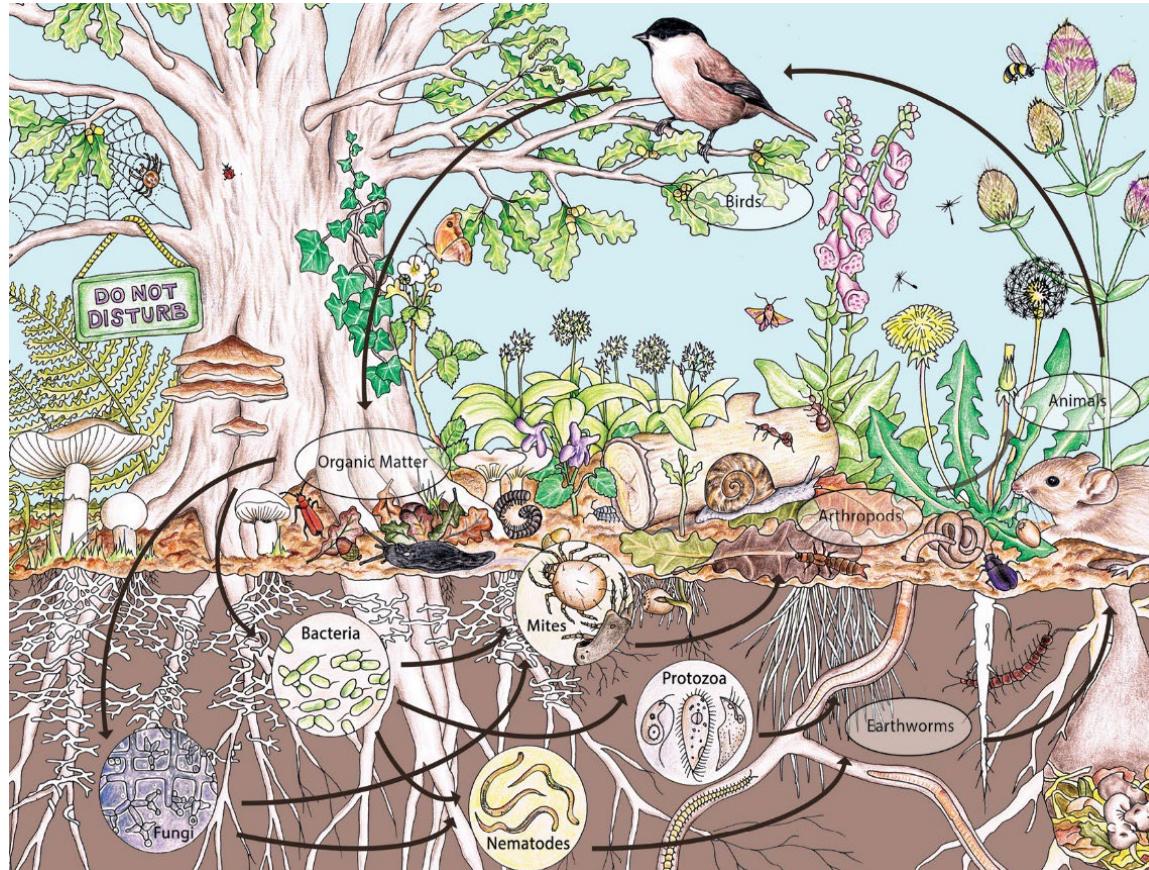


Illustration: Roundwater Design + Waterview Consulting



Restoring Shoreline Habitat



Habitat elements:

- Terrestrial Shade/cover
- Aquatic Shade & nearshore habitat
- Cover Diversity, duff (Surface)
- Natural vegetation diversity (species/types)
- Woody Material Inputs
- Travel Corridor
- Soil Health and structure
- Sediment Transfer?
- Specific wildlife/fisheries considerations



S

Sources of Erosion & Instability:

- Toe Erosion from waves/ice
- Overland Flows/Spray
- Groundwater/Saturation

Assessing & Selecting Tools –
Site #2

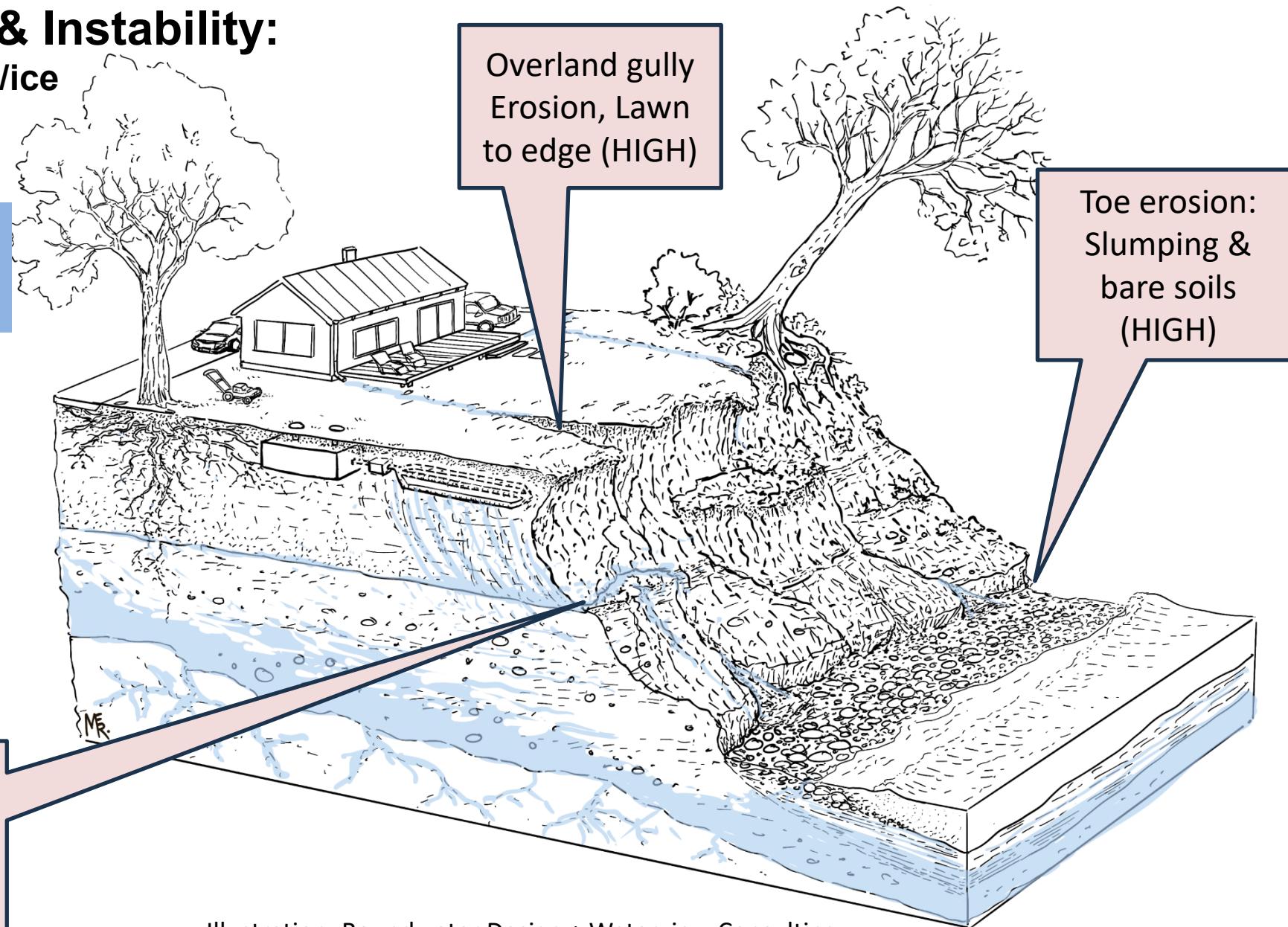


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S Sources of Erosion & Instability:

• Toe Erosion from waves/ice



Higher energy site

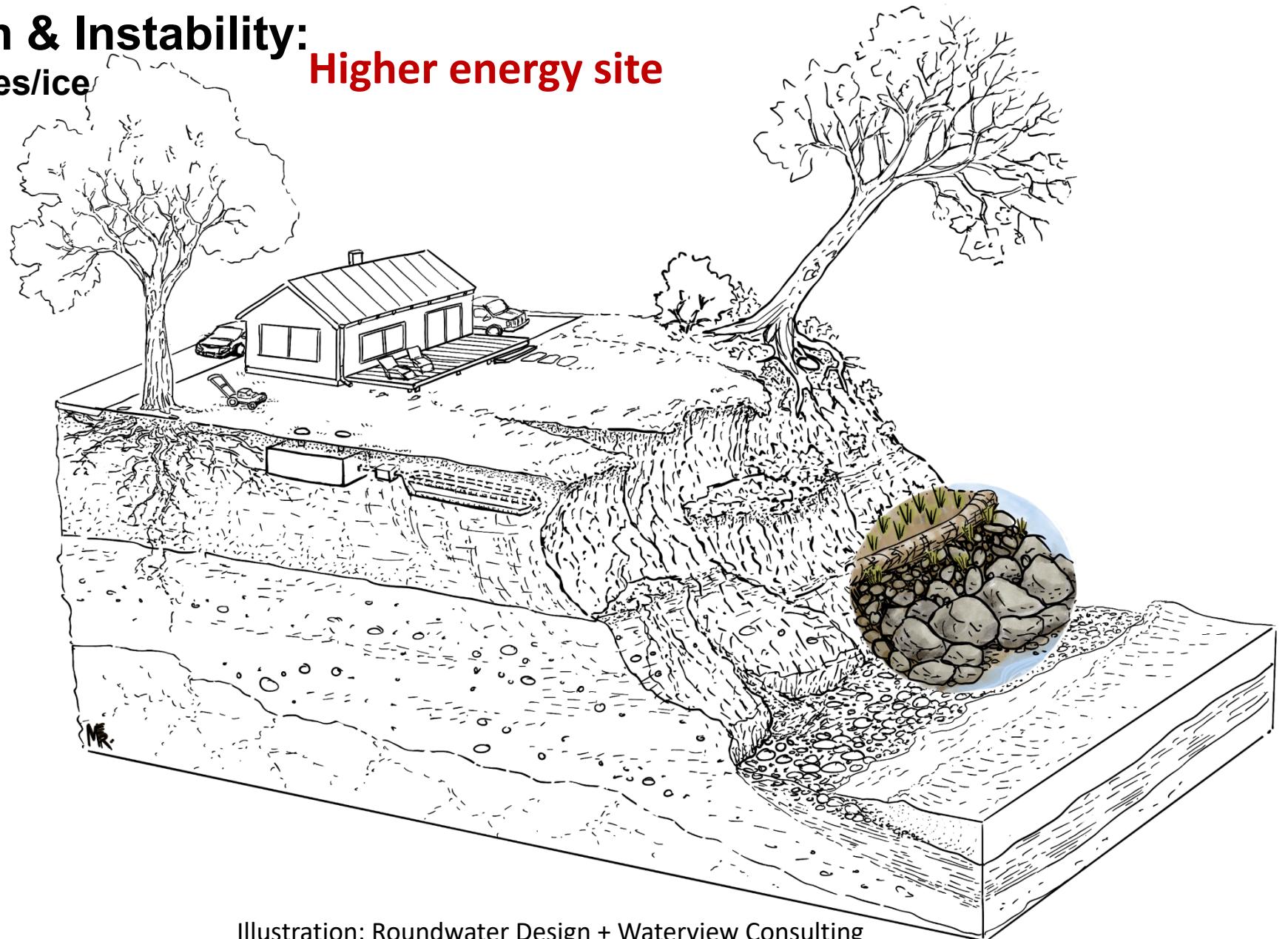


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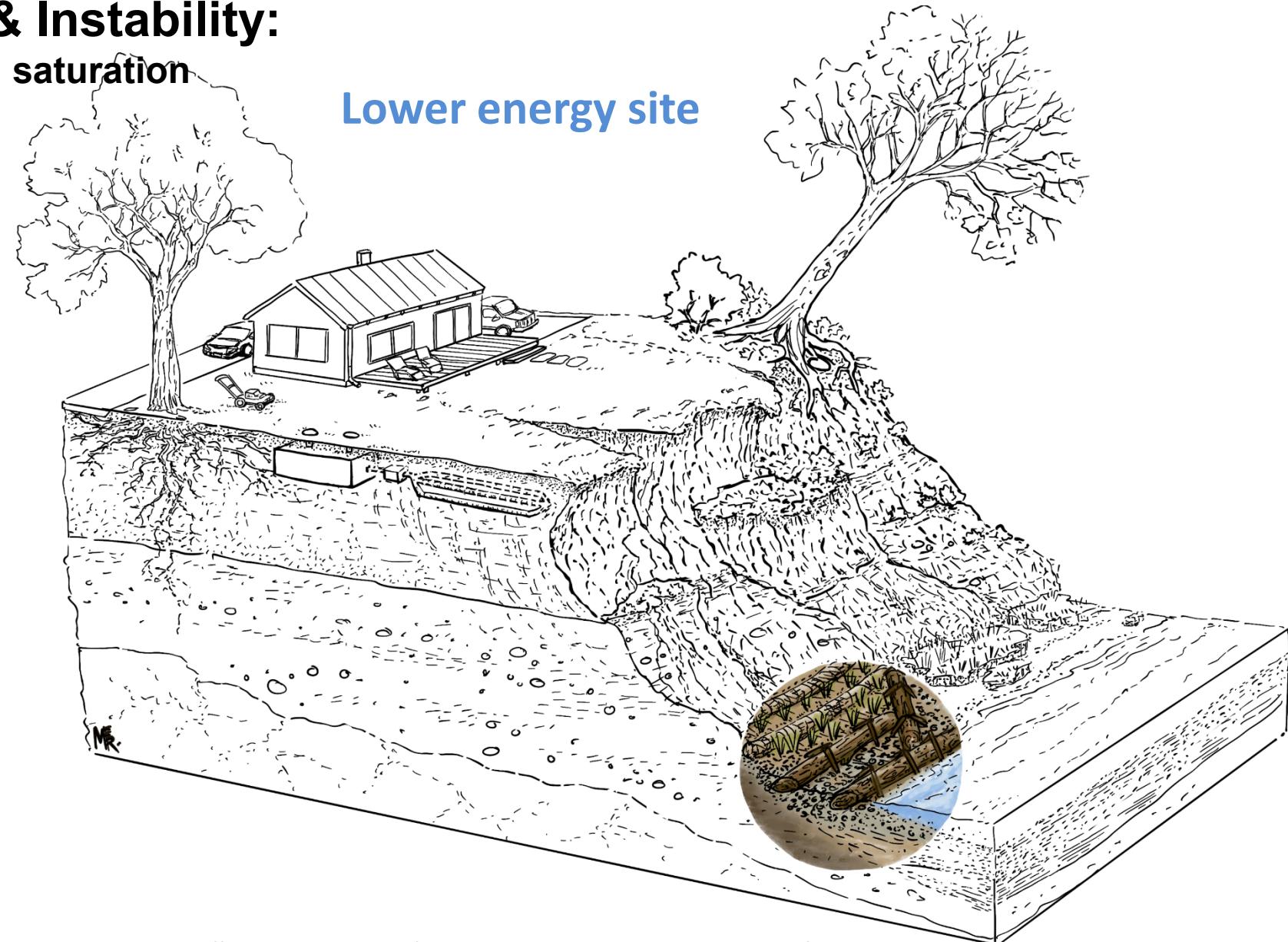
S

Sources of Erosion & Instability:

- Toe Erosion from waves, saturation



The Home Place Team



S

Sources of Erosion & Instability:

- Overland Erosion/Spray

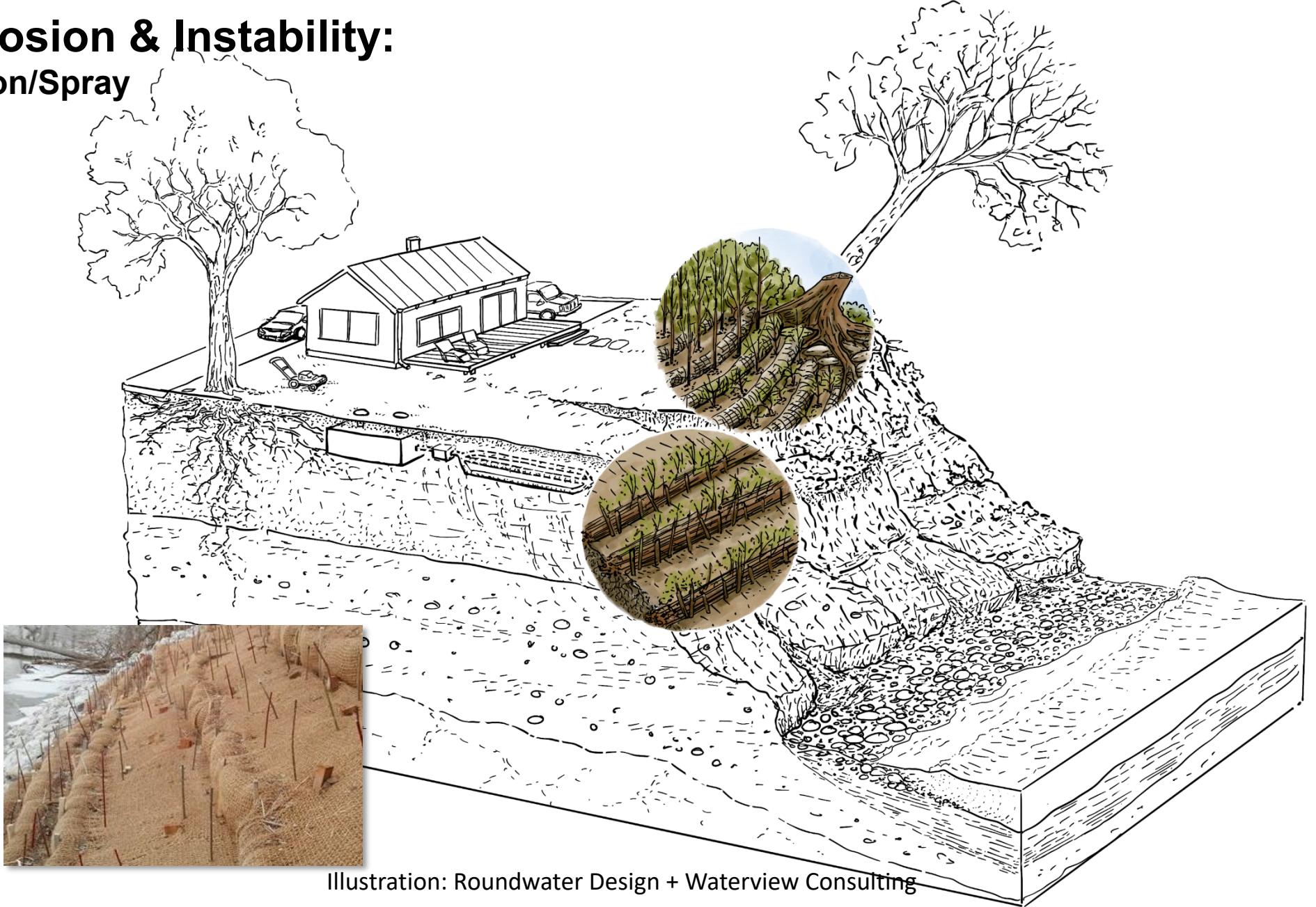


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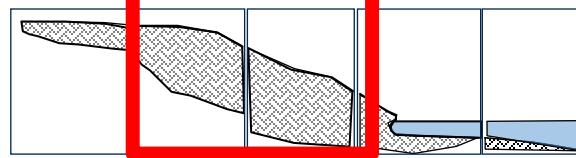
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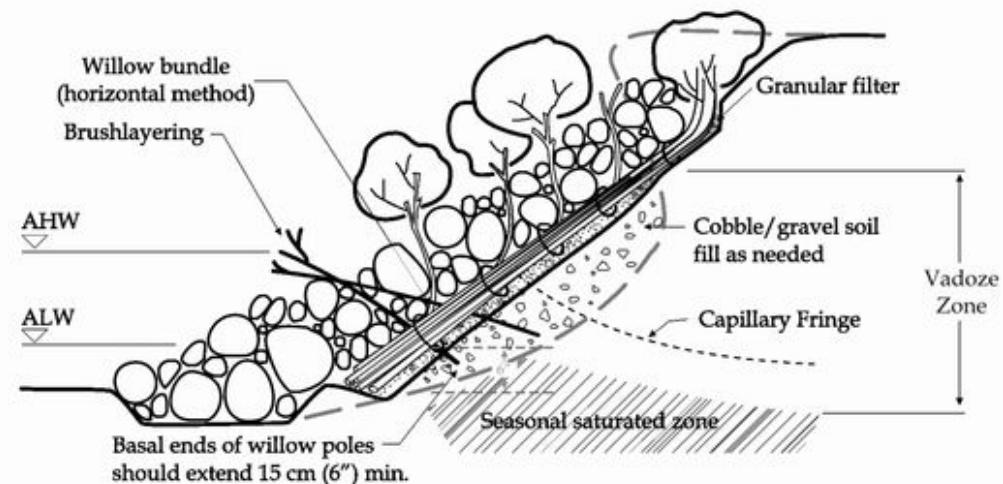
Sources of Erosion & Instability:

- Groundwater & Saturation



Filter layers

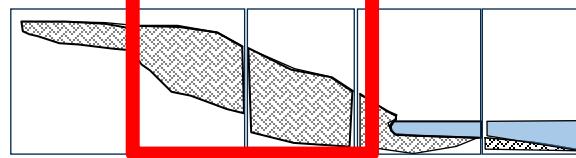
- Nonwoven geotextile (filter fabric)*
- Filter gravel/granular filters
- Temporary biodegradable filter fabrics/blankets with vegetation
- Live brush/brush mattress



S

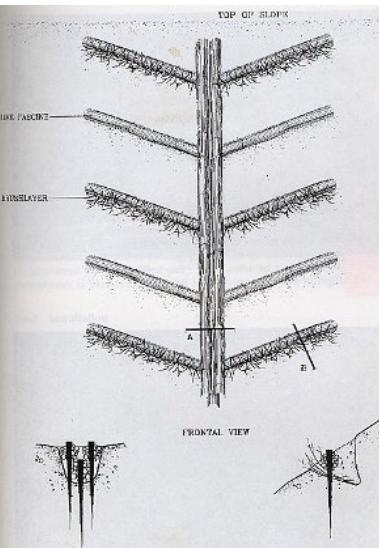
Sources of Erosion & Instability:

- Groundwater & Saturation



Groundwater Interception

- French drains
- Drain tile
- Correct septic/sprinkler/other water contributions



Targeted stabilization of seep areas



H

Height & Slope

O

**Overland Water From
Land Use**

R

**Restore & Revegetate
for Habitat**



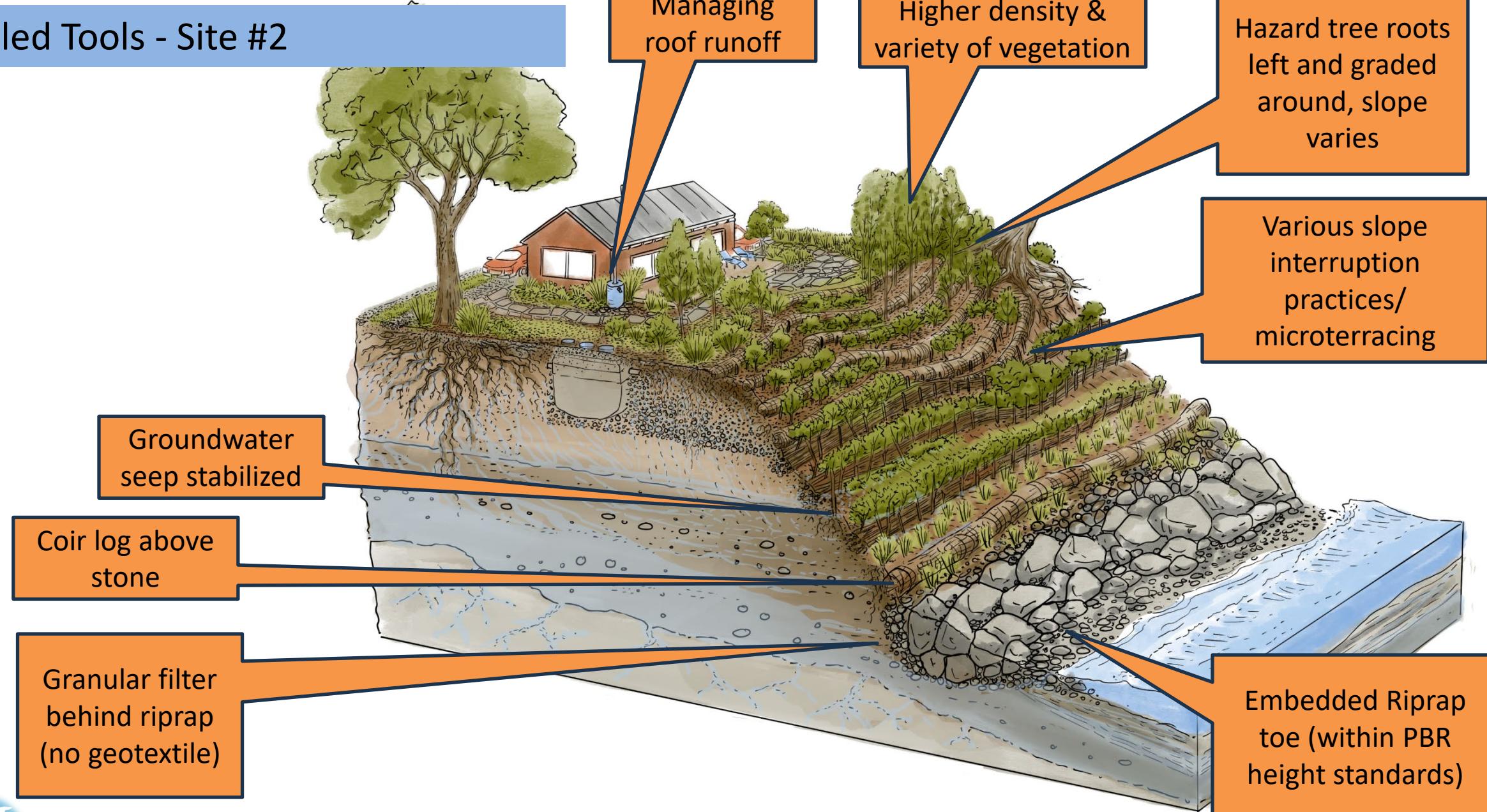
Illustration: Roundwater Design + Waterview Consulting



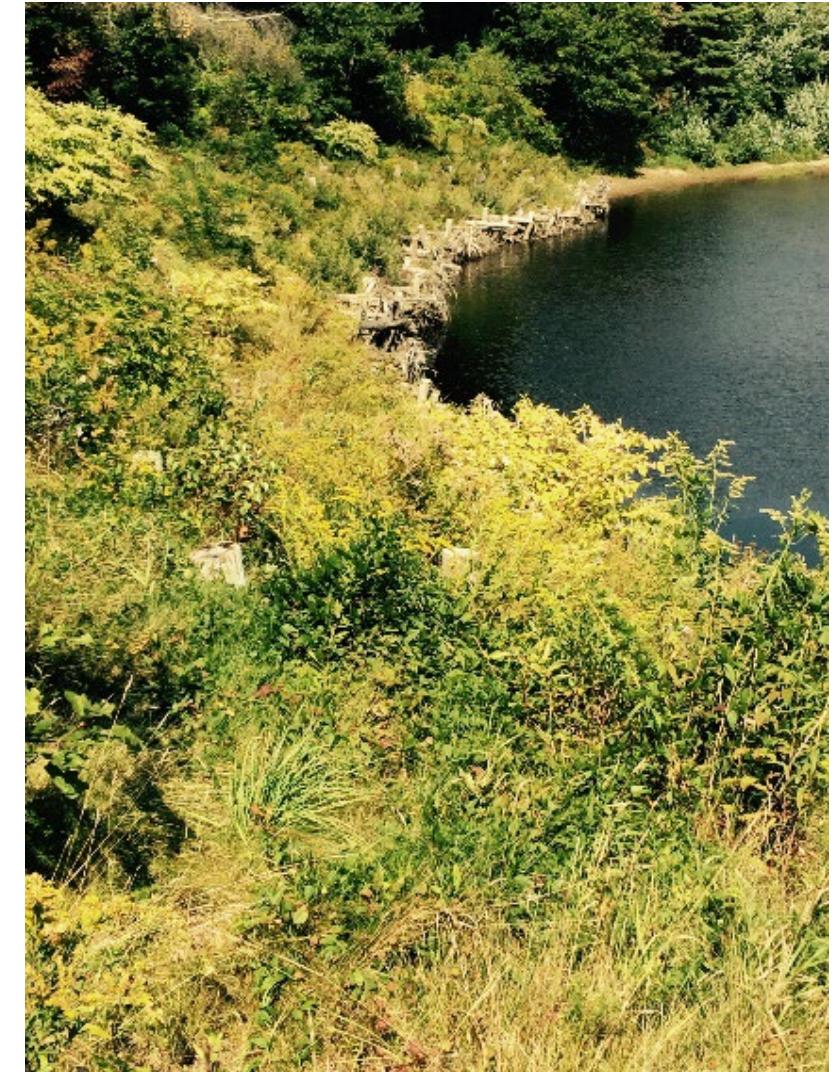
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Installed Tools - Site #2



Sandy River, Farmington Falls



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Advanced Certification & Training



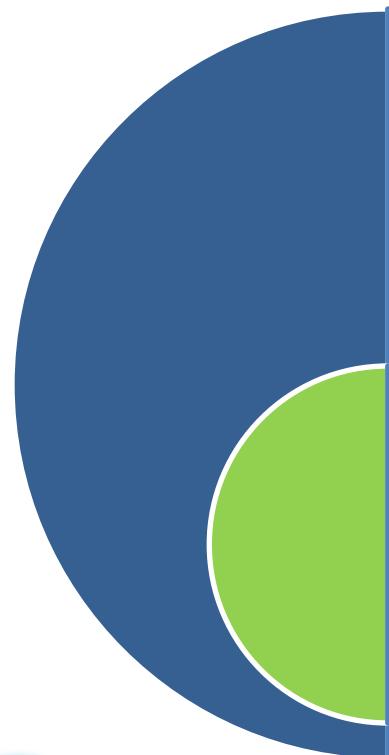
DEP's Nonpoint Source Training Center (NPSTC) will be offering Voluntary Advanced Certifications in specialized areas starting 2026

1. Nature-based Shoreline Stabilization Practitioner List
2. Stream Smart Crossings
3. Other areas such as Erosion & Sediment Control Inspectors, Large site construction will be added



Advanced Certification for Nature-based Shoreline Stabilization

1. Be Certified in ESC by Maine DEP (doesn't apply to provisional certifications)
2. Attend THIS Workshop (will be an annual event)
3. Meet combination of education & experience in design or implementation of OUR SHORE Concepts (Reviewed by Committee)



Demonstration/ Experience

- Submit 2 project examples as “case studies”
- Show projects pre-construction, during and at least 1 year post construction
- Explain how the project considers habitat, natural processes, and will result in a naturalized shoreline
- Show compliance with applicable permits

Education/Training

- Show education and understanding of OUR SHORE Key Concepts, can be formal or informal education.
- DEP NPSTC will be scheduling classes and establishing an online training library to assist meeting this need.



Training & Certification:
Maine.gov/dep/land/training



Resources:
Maine.gov/dep/land/ourshore

Contact:
John Maclaine

NPSTraining.DEP@maine.gov

John.maclaine@maine.gov

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