

Shoreline Erosion Control Techniques 101 Part 1

2011 Wisconsin Lake Convention

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Talking Points

Terminology

Erosion Concepts

Shoreland Zones

Erosion Factors – Active / Passive

Planning Concepts

Site Evaluation

WDNR Links – Permits

Assistance

Terminology

ASNRI Waters

NRCS

Topographic Survey

Bank Height

OHWM

WDNR

Biological Method

PNW

Wind / Wave

DATCP

Public Rights Feature

Energy Category

Riprap

Erosion

Runoff

Erosion Intensity

Seeps

Fetch Calculation

Slope

Geotextile

Storm Wave Height

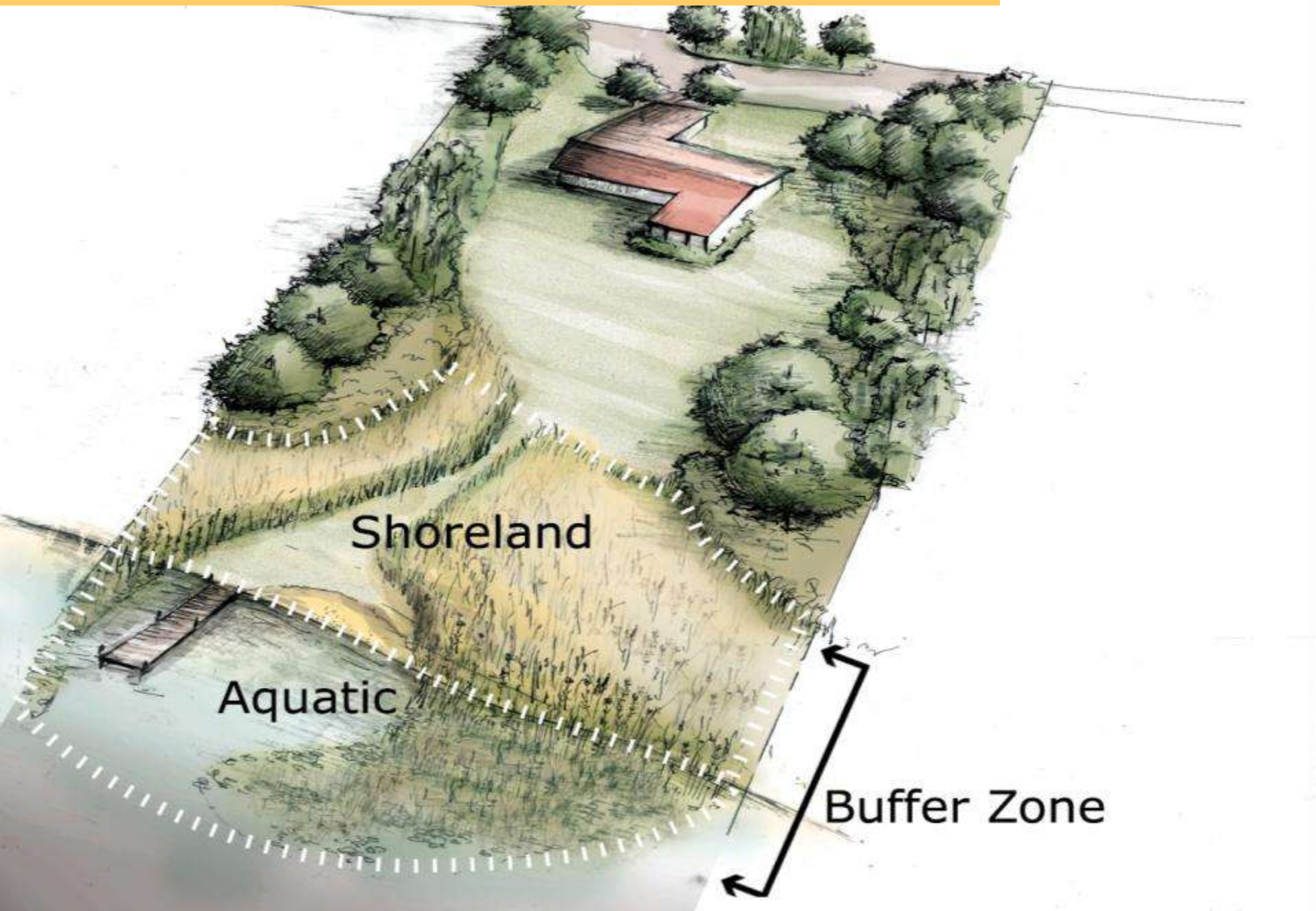
Impervious

Structural Method

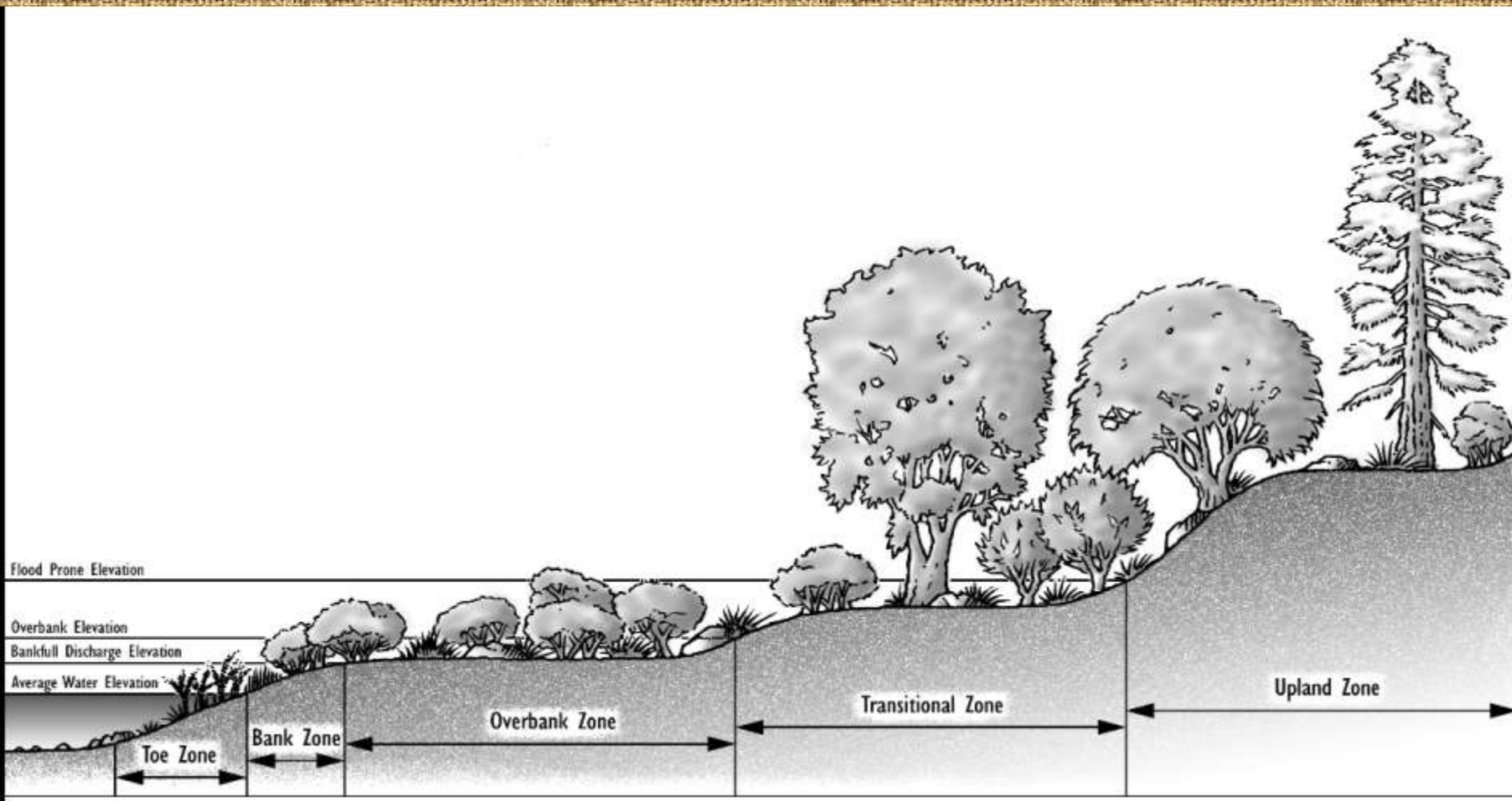
LWCD

Toe Erosion

Erosion Concepts – Shoreland Zones



Erosion Concepts – Shoreland Zones



Erosion Factors – Active / Passive

ACTIVE

- Rainsplash & Runoff
- Waves – wind / boat driven
- Currents
- Ground Water (seeps)
- Frost thaw / ice impact
- Livestock or human disturbance (ie removal of vegetation)

Erosion Factors – Active / Passive

PASSIVE

- Bank or Shoreline Characteristics
 - engineering properties
 - geology
 - geometry
 - vegetative cover
- Adjacent Features/Character
 - land use/development
 - watershed patterns
 - long shore currents
 - tributary areas / flowing water

Upland Runoff Erosion Factor

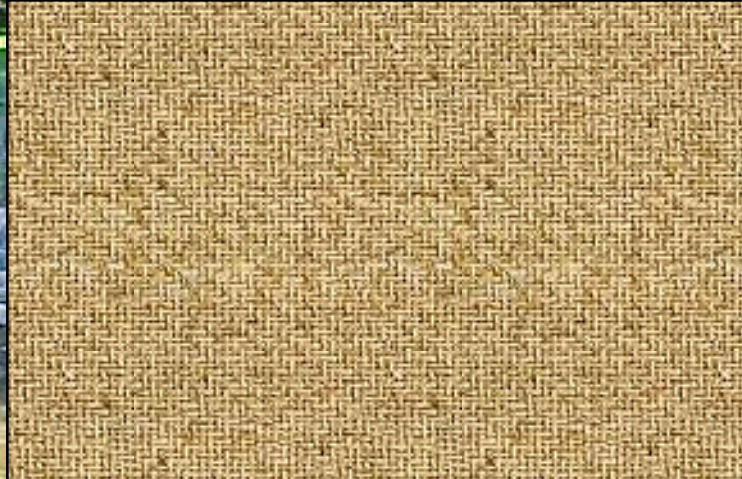
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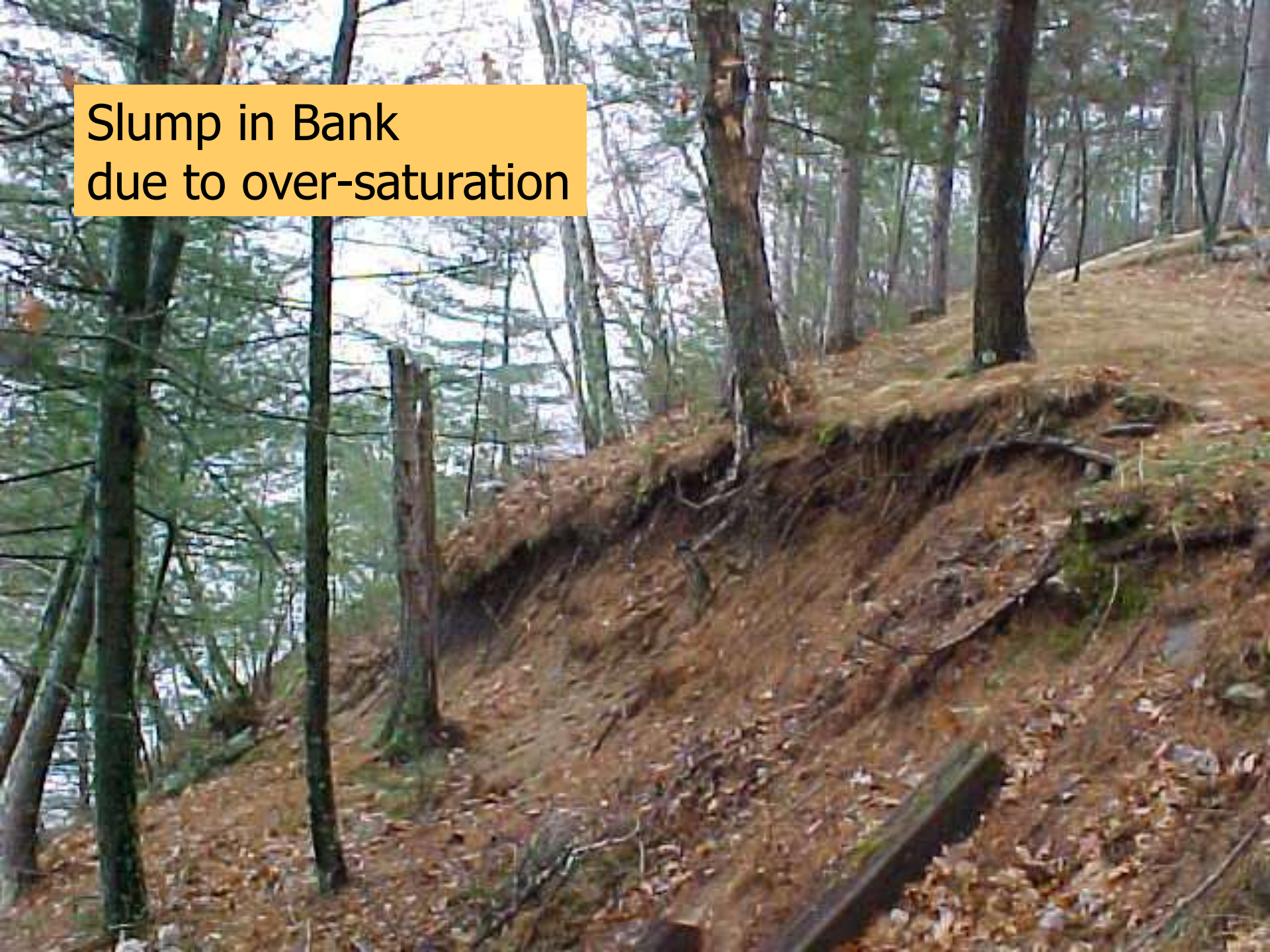
Livestock trampling
of streambank



Ice Action



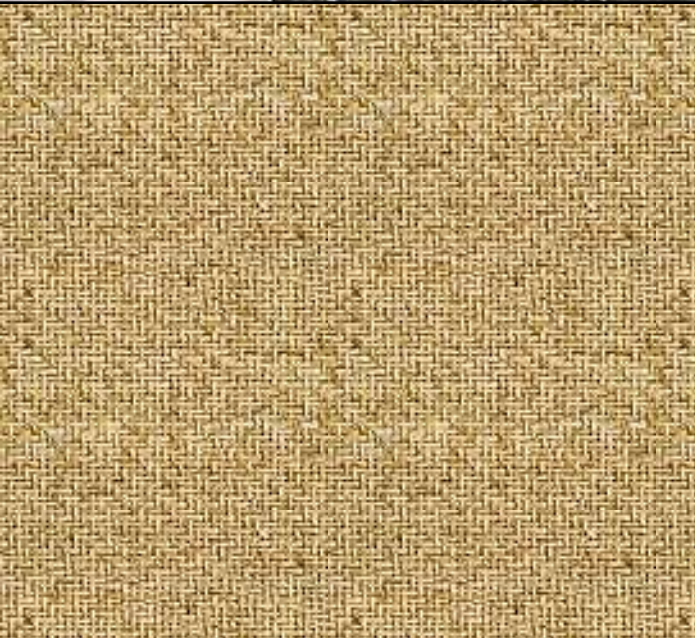
Slump in Bank
due to over-saturation





Human Factor

Unstable Soils
on a steep bank





Seepage



Water Level Fluctuations;
Seawall Overtopping; &
Splash Impacts



Planning Concepts – Site Evaluation

Define the cause(s) of erosion:

- Upland runoff? Impervious areas? Velocities?
- Wave energies? Boat or wind generated?
- Ice action? Prevailing wind direction?
- Water level fluctuations? Floods or Droughts?
- Groundwater seeps?
- Up gradient slope and bank height?
- Stability of native soils? Fill soils?

Planning Concepts – Site Evaluation

Vegetative Treatment Potential:

- Minimal fetch distance (<0.5 - 1 mile)
- Protected cove or bay (not point or island)
- Shoreline is facing such that prevailing winds do not reach it frequently (i.e. faces east and rarely gets a westerly wind)
- When boat traffic waves are not common or constant (i.e. no motorized traffic allowed, no public landing, SLOW NO WAKE zone = increase the wave intensity)
- When water level fluctuations do not harm vegetation survival rates and/or success

Planning Concepts – Site Evaluation

Other Considerations:

- Soil type - conducive to slope stability at given angle without toe protection?
- Parcel development is limiting a stable slope (i.e. home too close to slope break or existing vertical walls)
- Lake channel (narrow areas) or controlled wake areas create constant waves so vegetation can not establish
- Extreme ice action continuously removes or stresses soil/plants
- Erosion intensities are too high for existing vegetation

Technical Planning Assistance

County Land & Water Conservation Departments

Natural Resource Conservation Service

Wisconsin Department of Natural Resources

Department of Ag, Trade, & Consumer Protection

Private Consultants & Businesses

Planning Concepts – WDNR Web Links

http://dnr.wi.gov/waterways/factsheets/Erosion_Intensity_Worksheet.pdf

http://dnr.wi.gov/waterways/shoreline_habitat/erosioncalculator.html

<http://dnrmaps.wisconsin.gov/imf/imf.jsp?site=SurfaceWaterViewer>