

Estuarine Shoreline Stabilization Design & Techniques

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CLASSES OF EROSION MANAGEMENT OPTIONS

- 1. Avoid the problem**
- 2. Plant it**
- 3. Harden the shoreline**
- 4. Trap sand**
- 5. Add sand**



Setbacks for New Construction



Live with it

170'



[Click to move around](#)

CLASSES OF EROSION MANAGEMENT OPTIONS

1. Avoid the problem
2. Plant it

Living Shorelines

3. Harden the shoreline
4. Trap sand
5. Add sand

UPLAND EROSION



MARSH HEADLANDS



WHERE WILL THEY GROW?

Root mat building marsh grasses

- Wet and dry daily
- High salinity to brackish water
- Full sunlight
- Limited wave shelter



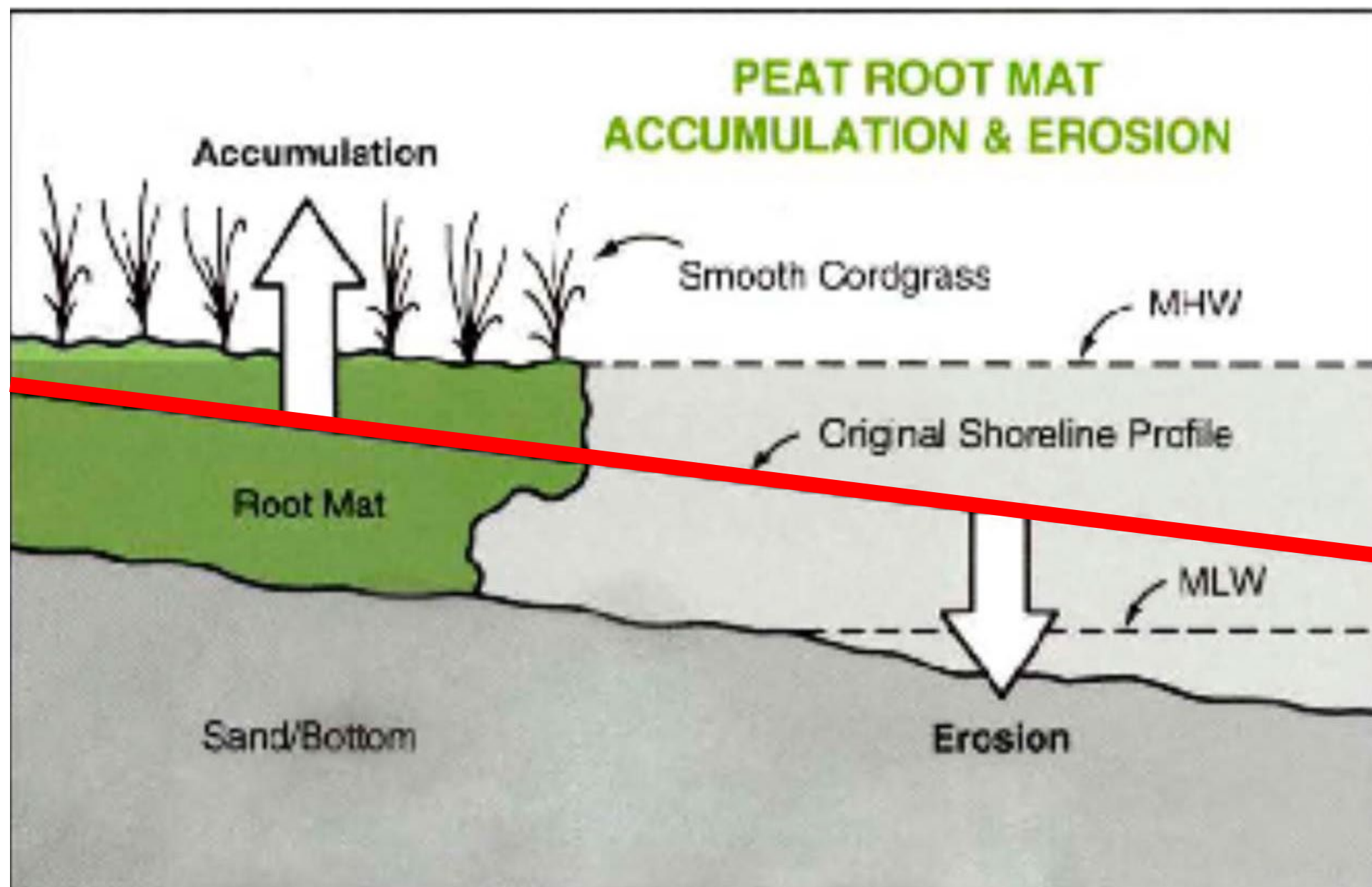
1974

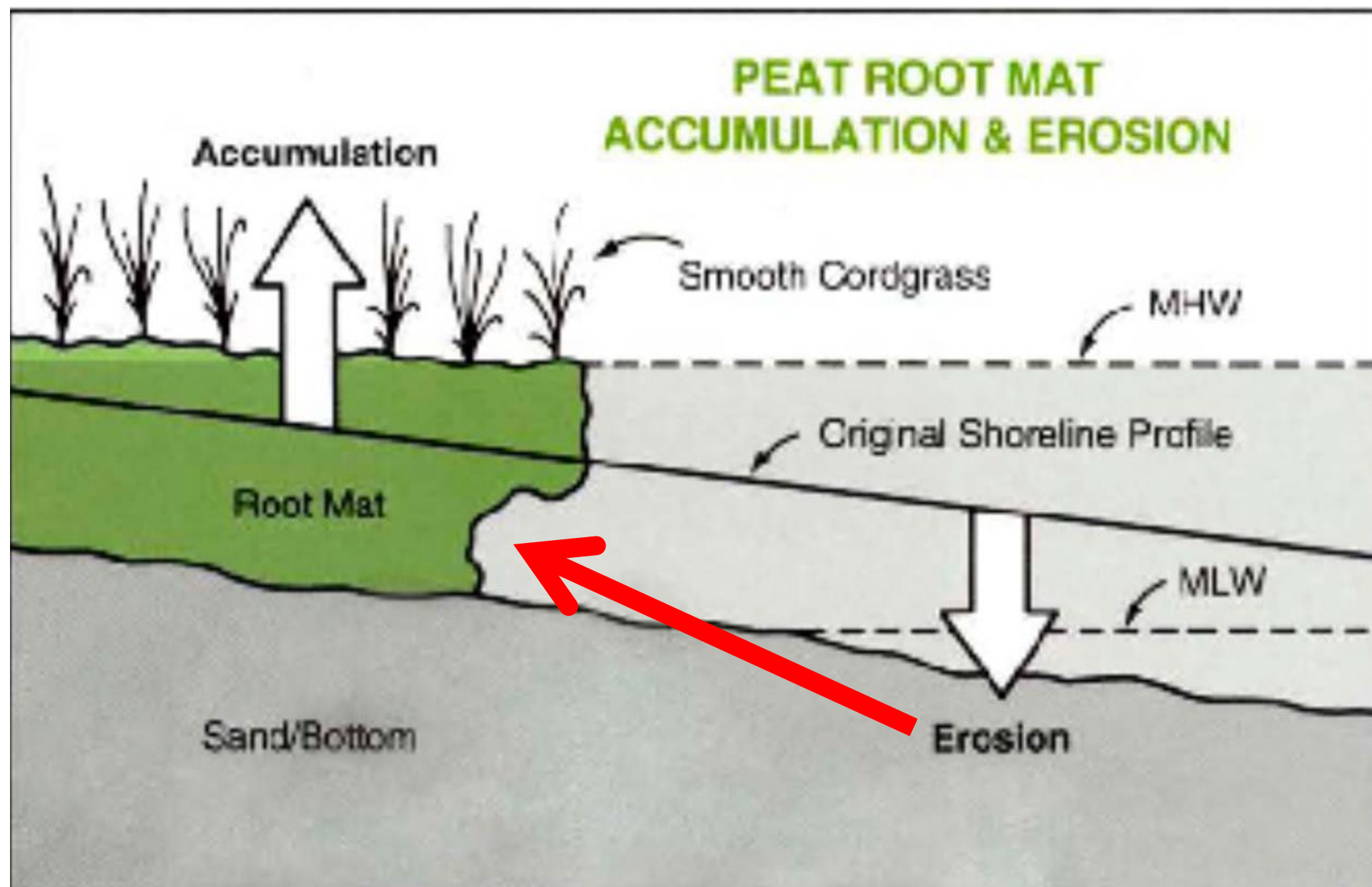


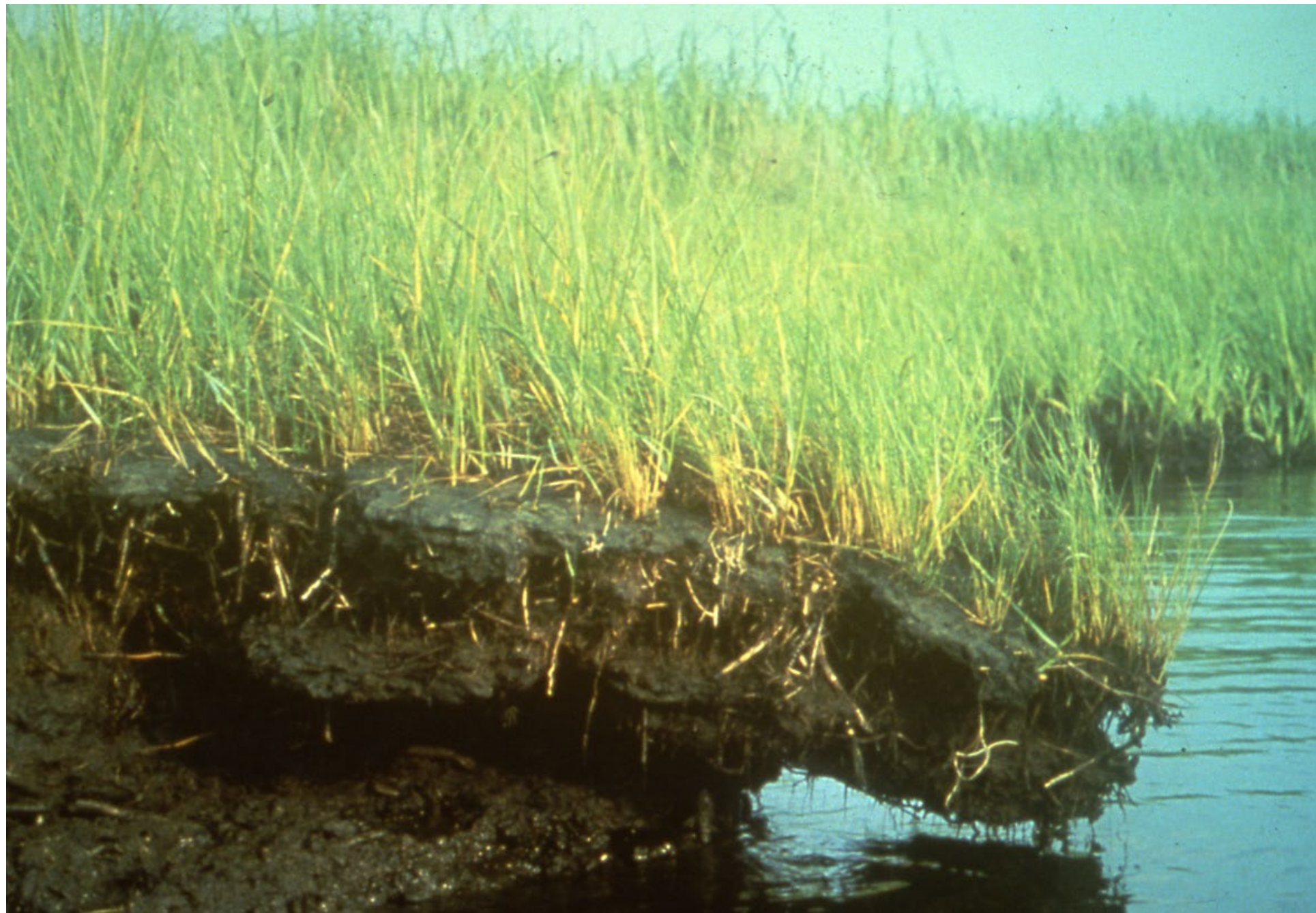
1978



~1984







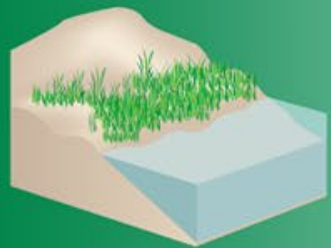
Review of Shoreline Stabilization Techniques

HOW GREEN OR GRAY SHOULD YOUR SHORELINE SOLUTION BE?

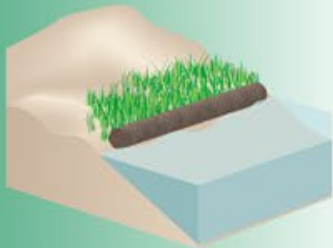
GREEN - SOFTER TECHNIQUES

GRAY - HARDER TECHNIQUES

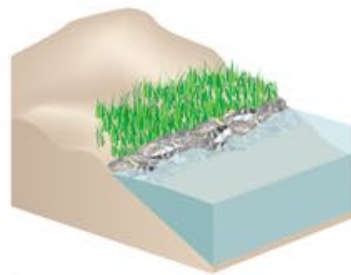
Living Shorelines



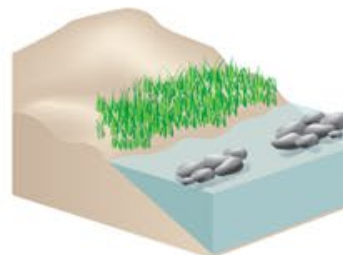
VEGETATION



EDGING -

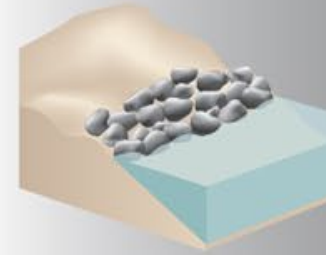


SILLS -

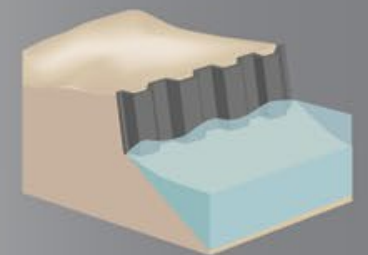


BREAKWATER -

Coastal Structures



REVETMENT -



BULKHEAD -

LIVING SHORELINE STRUCTURE ISSUES

**How low-cost can you build it?
&
How long will it last?**

STRUCTURE DESIGN ISSUES

- Fetch (Wave Height)
- Water Depth
- Structure Material
 - Temporary
 - Shell Bags
 - Vertical
 - Stone

DESIGN ISSUES

- Elevation
 - Keep it low!
- Openings and gaps
- Initial cost
- Structure lifetime
- Maintenance

BIO-LOGS BOUND
TO WOOD ANCHOR
STAKES

NORMAL HIGH WATER

NORMAL LOW WATER

STONE TOE
SUPPORT AS
NEEDED

LOW MARSH

HIGH MARSH

UPLAND



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Coastal Federation
Working Together for a Healthy Coast

illus. Lara Berkley, B+O design studio, PLLC

BIO-LOG SHORELINE
not to scale



**CAMP LEACH
2 YEARS
AFTER CONSTRUCTION**



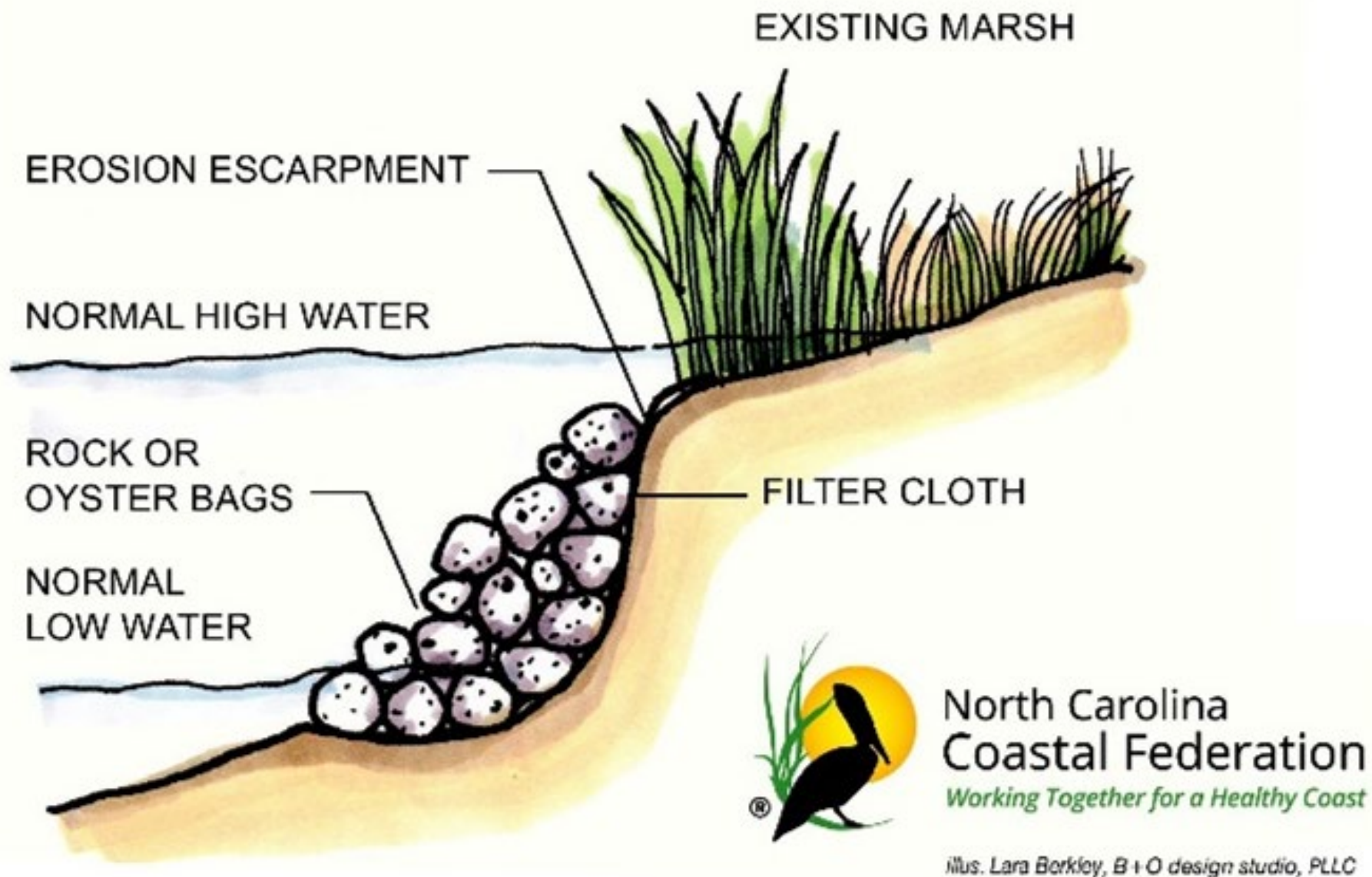
**CAMP LEACH
5 TO 9 YEARS
AFTER CONSTRUCTION**



**CAMP LEACH
9 YEARS INSTALLED
9 MONTHS AFTER REMOVAL**



**CAMP LEACH
9 YEARS INSTALLED
2 YEARS AFTER REMOVAL**

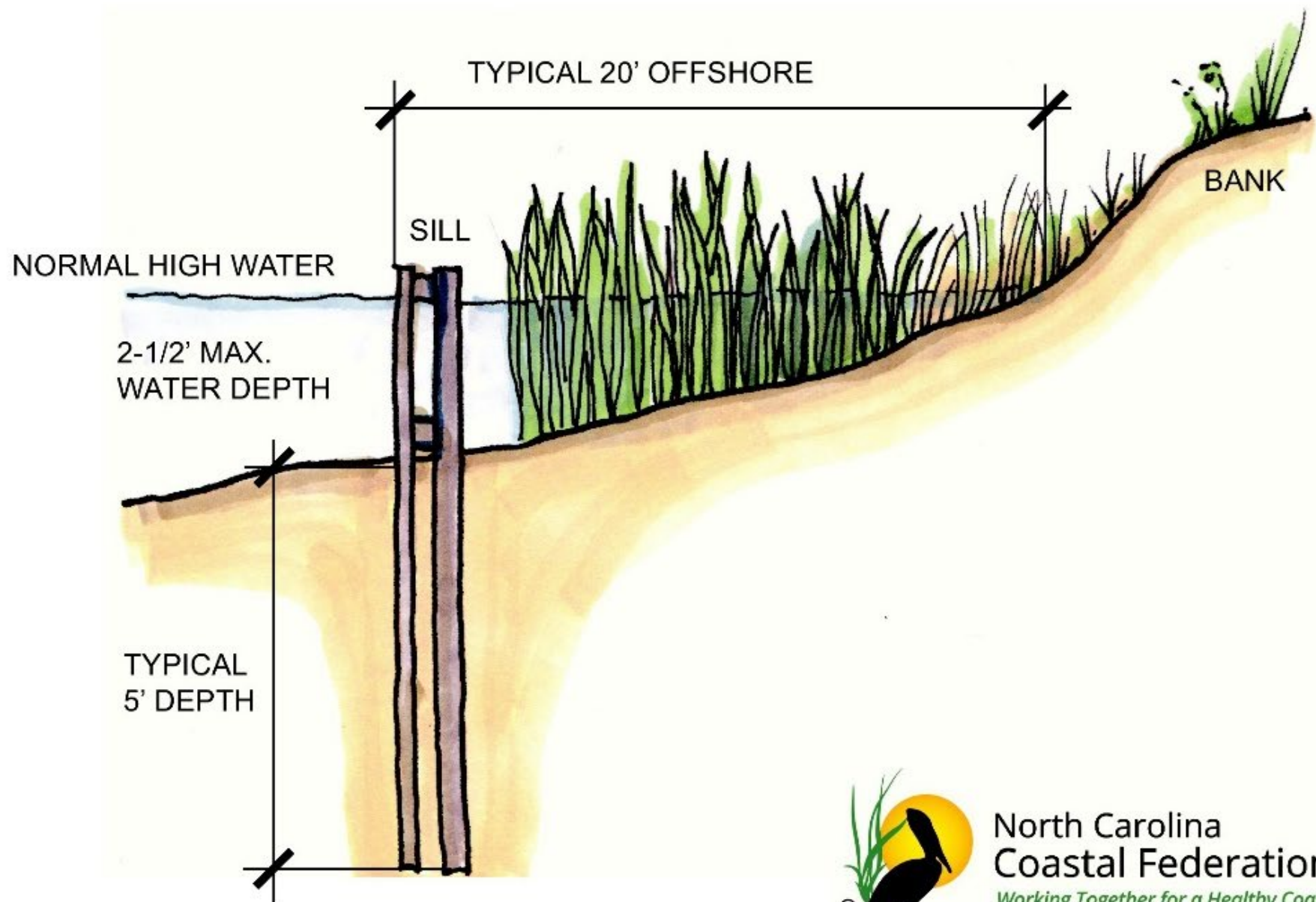


MARSH TOE REVETMENT

not to scale







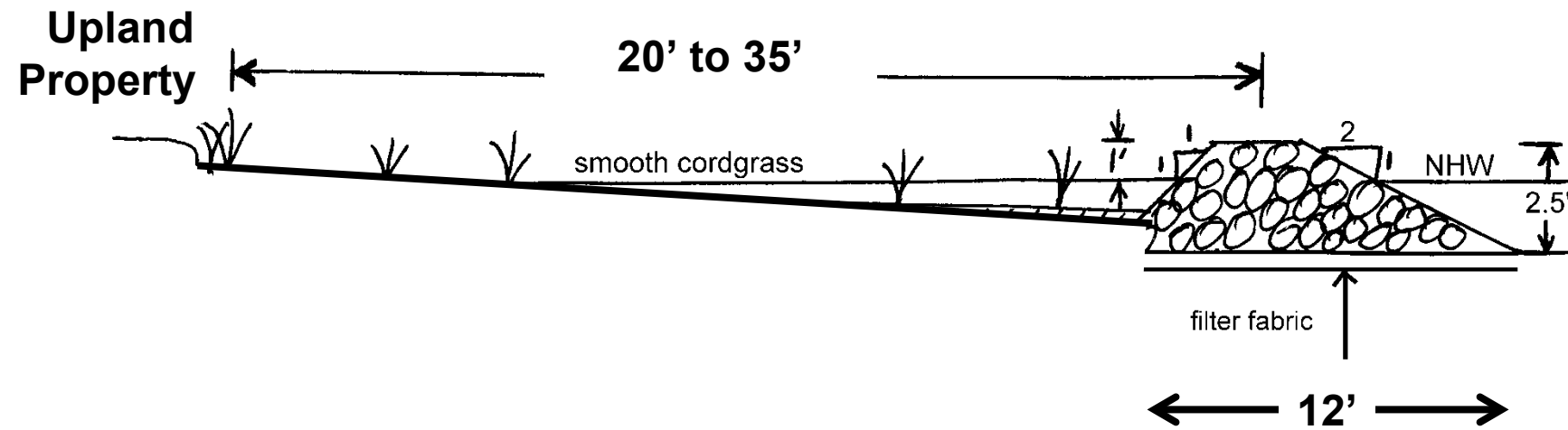
VERTICAL WALL SILL
not to scale



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illus. Lara Berkley, B+O design studio, PLLC







Ruler [X]

Line Path Polygon Circle 3D path 3D polygon

Measure the distance between two points on the ground

Map Length:	50.03	Miles
Ground Length:	50.03	
Heading:	24.50 degrees	

☒ Mouse Navigation

Save Clear

50 miles



QUESTIONS?