

Saltmarsh Ecosystem Restoration on Intertidal/Submerged Cap in an Urban System

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9th International Wetland Conference June 3-8, 2012

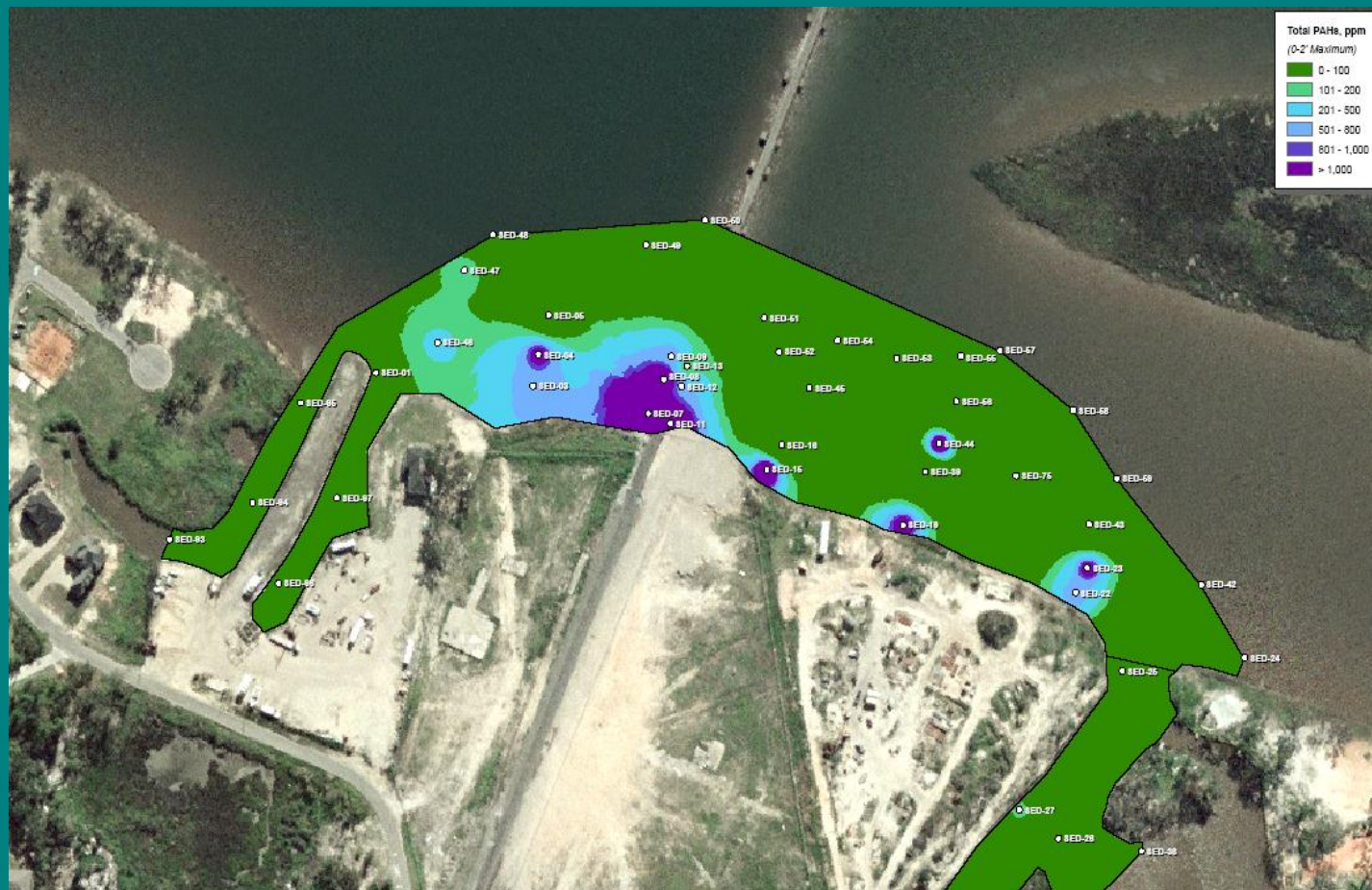


Agenda

- Problem
- Solution
- Objectives
- Goals
- Implementation
- Evaluation



Problem - Pascagoula River – PAH Distribution



Accepted Solution

- Cap sediments in the River & Bayou
- Cap soils of the upland
- Vertical slurry wall to contain subsurface liquid wood treating compounds
- Recover liquid wood treating compounds



Accepted Solution Implementation

- Submerged Aquatic Vegetation
- Threatened & Endangered Species
- Wetlands
- Mitigation of Impacts



T&E HABITAT STATUS/MITIGATION

No Habitats on Site

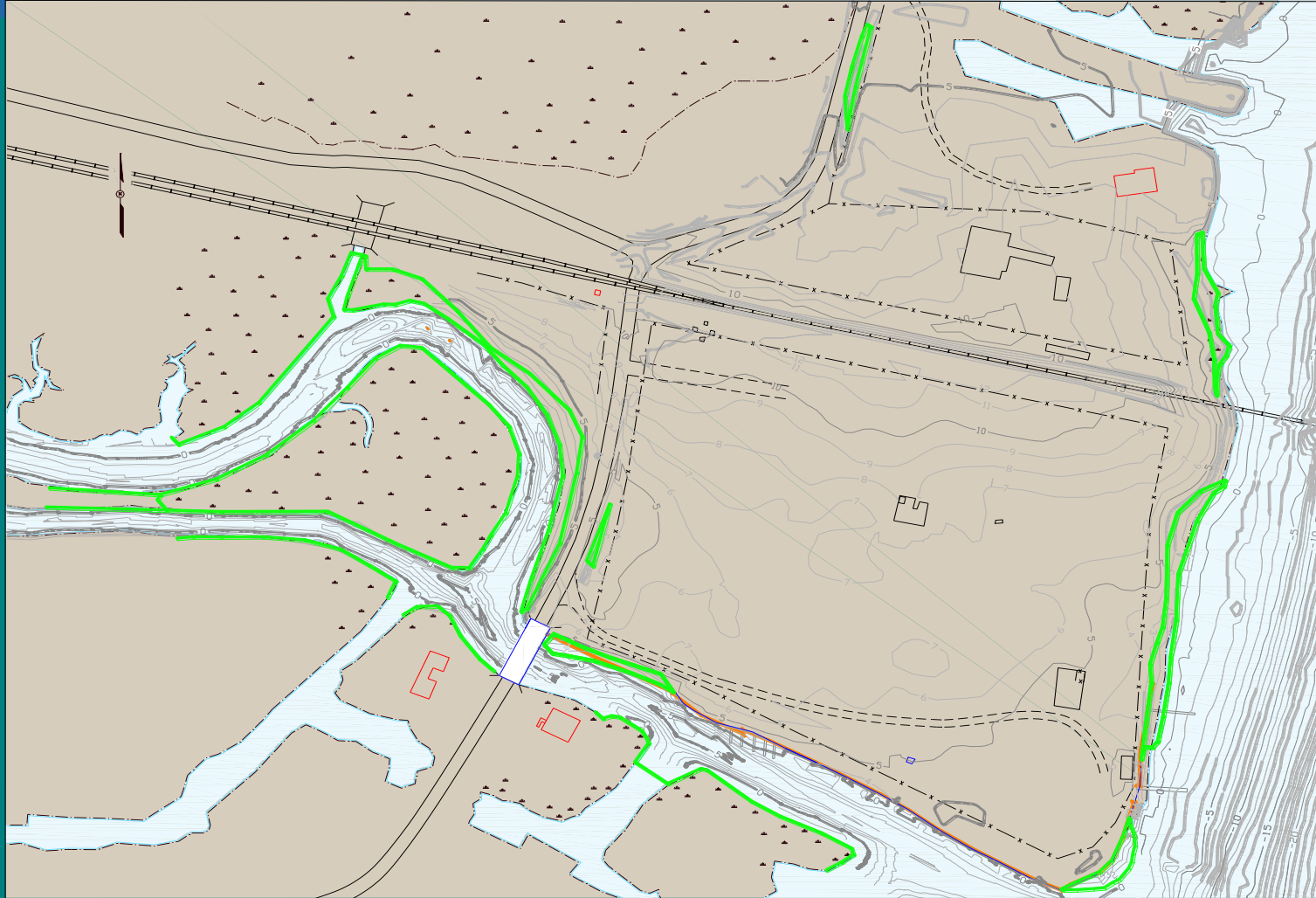
- Gopher Tortoise - Upland sandhill forest
- Tall Prairie-Gentain – Upland fields
- Georgia Tickseed - Wet longleaf pine savannahs
- Twig Rush – Freshwater marshes
- Alabama Redbelly Turtle – Northern Mobile Bay
- Southern Red Cedar – Not identified on Site

Potentially on Site

- Mississippi Diamondback & Gulf Salt Marsh Snake – fringe tidal marshes
 1. Silt curtains during construction
 2. Increase fringing tidal marshes and habitat
- Gulf Sturgeon
 1. Silt curtains during construction



Tidal Fringe Wetland Delineation



Wetland Mitigation Evaluation

- Hydrogeomorphic (HGM) Approach will be incorporated
- Tidal fringing wetlands will be compared to reference wetlands in the USACE *Regional Guidebook for Applying the Hydrogeomorphic Approach to Assessing the Functions of Tidal Fringe Wetlands Along the MS and AL Gulf Coast*
- Pre-construction monitoring



Objectives

- Remediate the impacts
- Restore/create wetlands
- Increase habitat diversity
- Increase wildlife utilization



Wetland Mitigation Plan

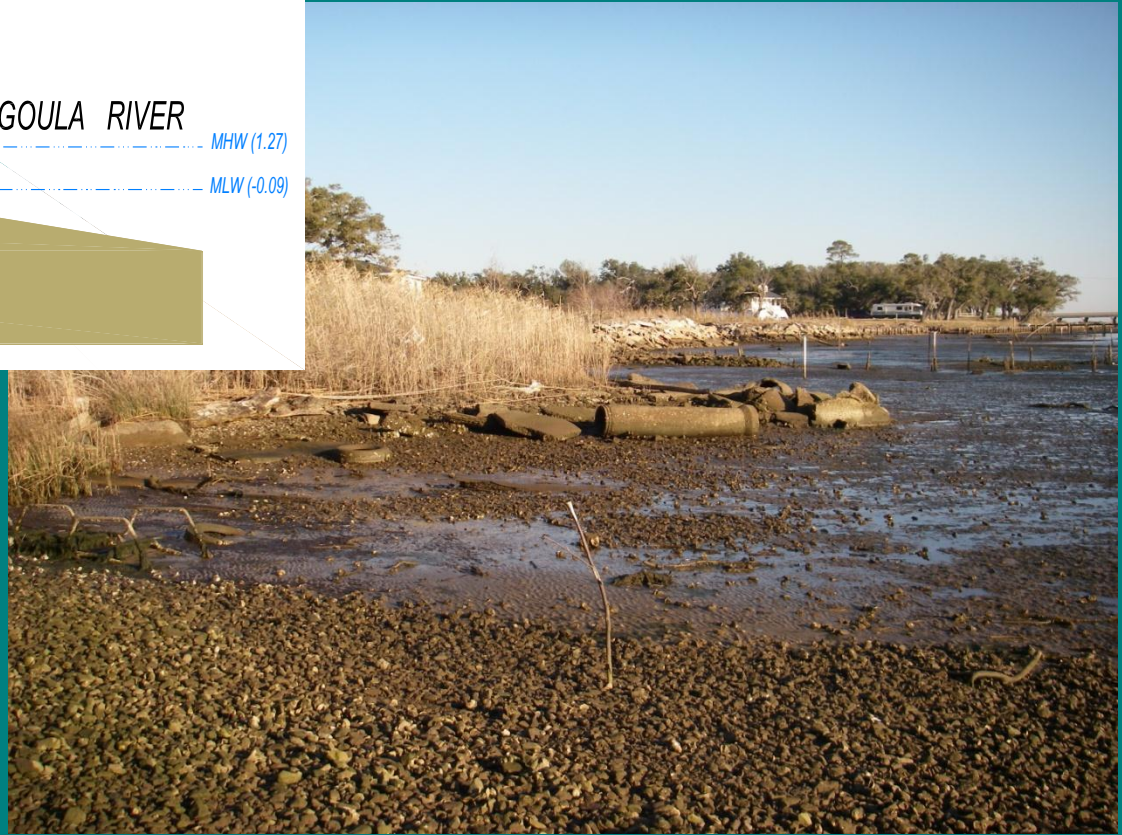
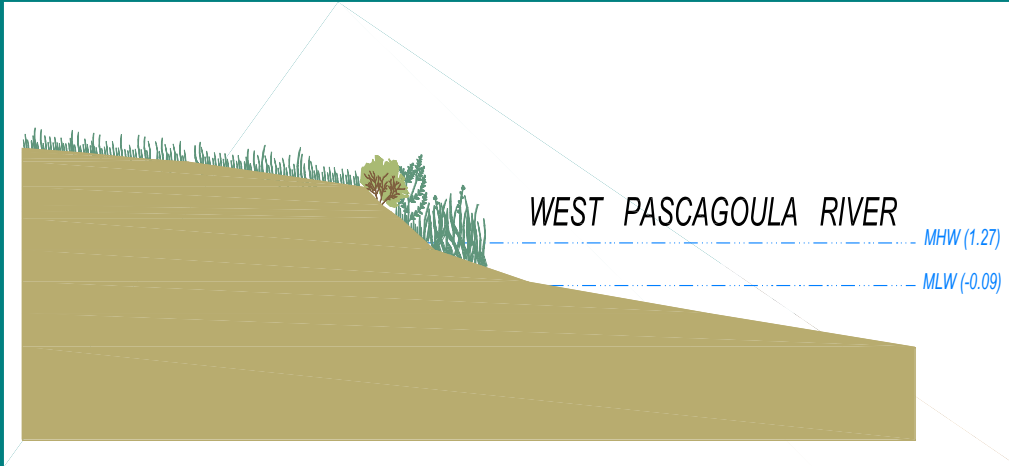
- Restore/Mitigate tidal fringe wetlands
- Pre and post monitoring (5 years)
- Adaptive management program
- Monitoring of restored/constructed wetlands until objectives are met



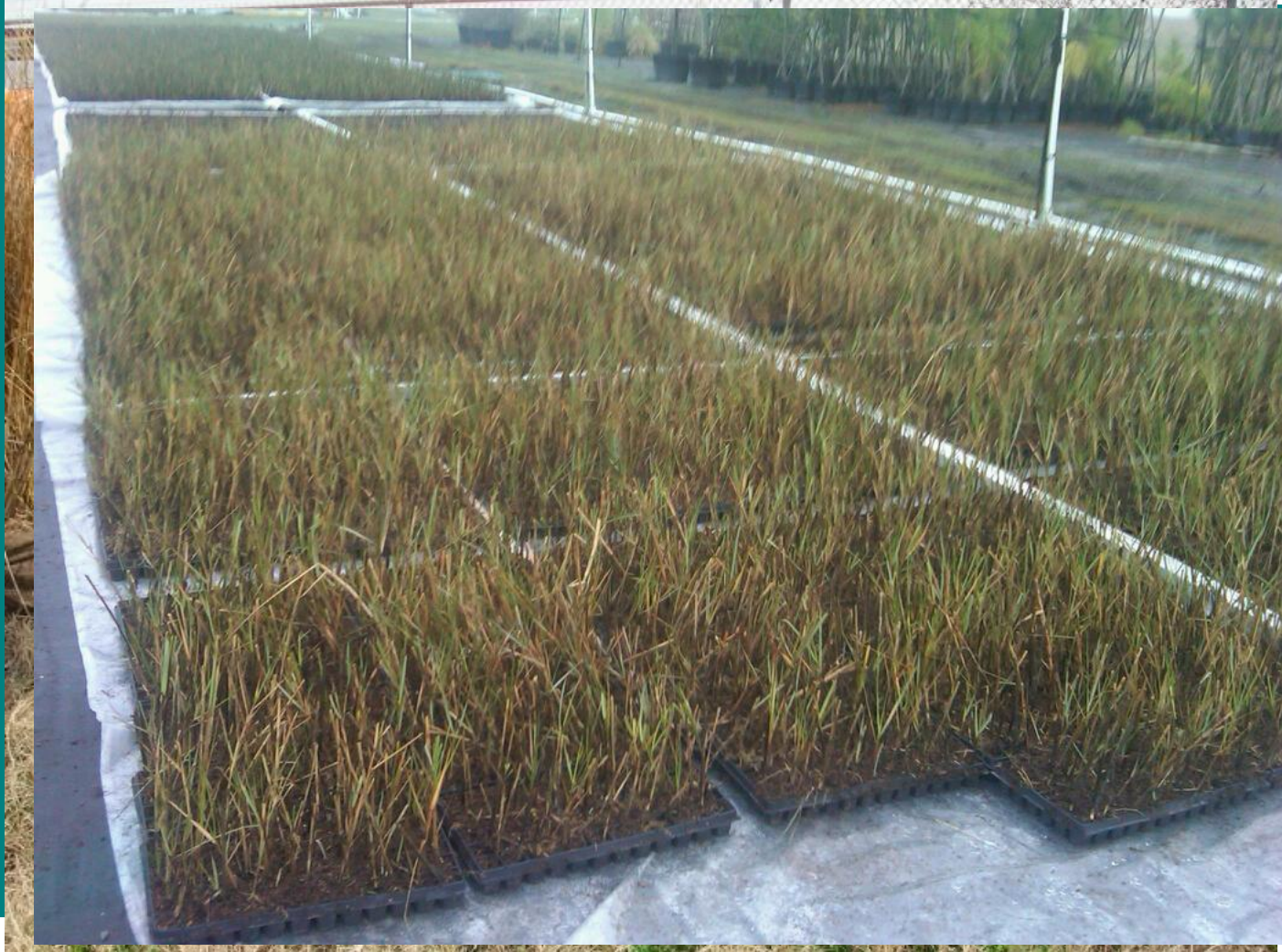
Pre-remedial Conditions



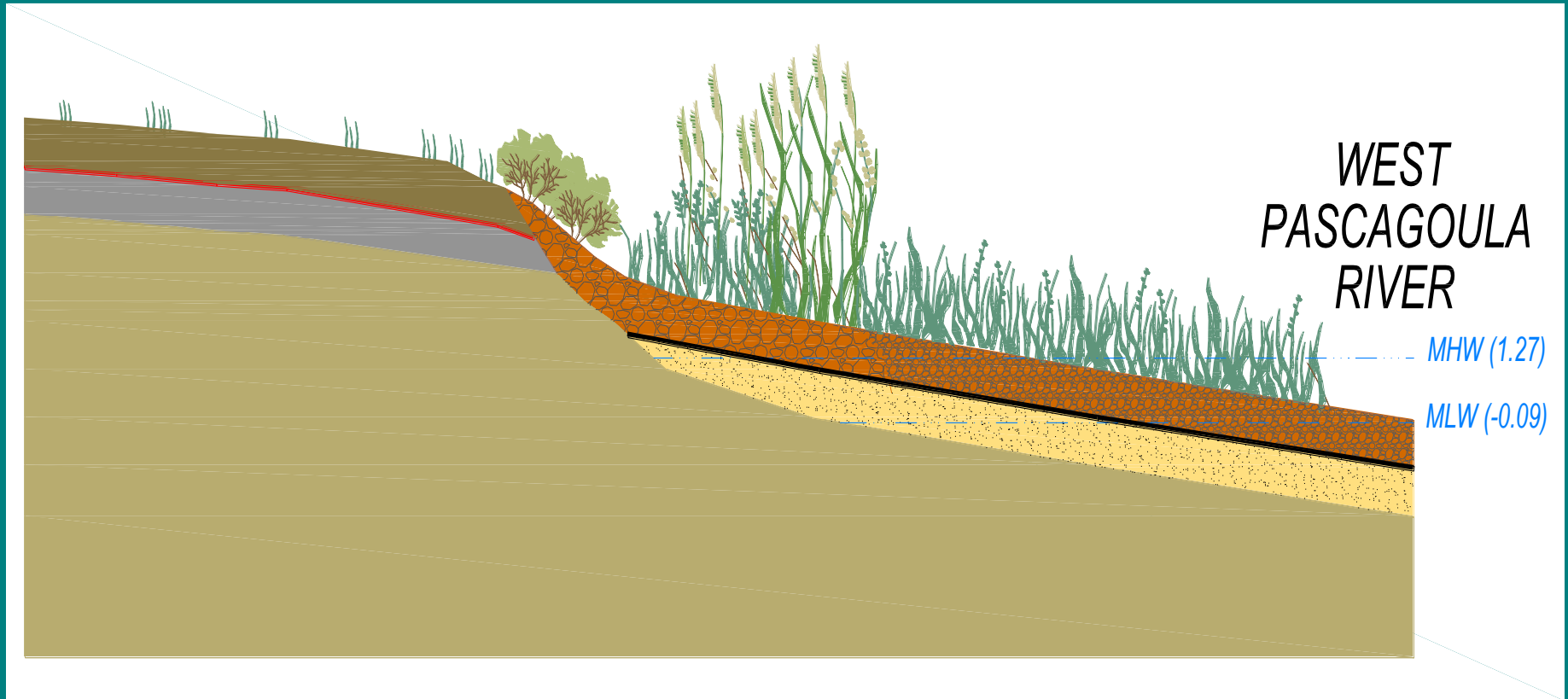
Pre-remedial Conditions



Removal of Plants for Transplanting



Capping Design



Capping Activities



Planting the Wetland



Past and Present



Spring of 2012

- Planted species in three major zones of the wetlands

	River	Bayou
– Saltmarsh Habitat		
• <i>Spartina alterniflora</i>	X	X
• <i>Spartina cynosuroides</i>		X
• <i>Juncus roemerianus</i>	X	X
• <i>Scirpus robustus</i>	X	X
– High Marsh Drift Habitat		
• <i>Spartina patens</i>	X	X
– Transition Edge		
• <i>Spartina patens</i>	X	X
• <i>Ilex vomitoria</i>	X	X
• <i>Myrica cerifera</i>	X	X
• <i>Quercus virginiana</i>	X	X
• <i>Sabal minor</i>	X	X



Spring of 2012

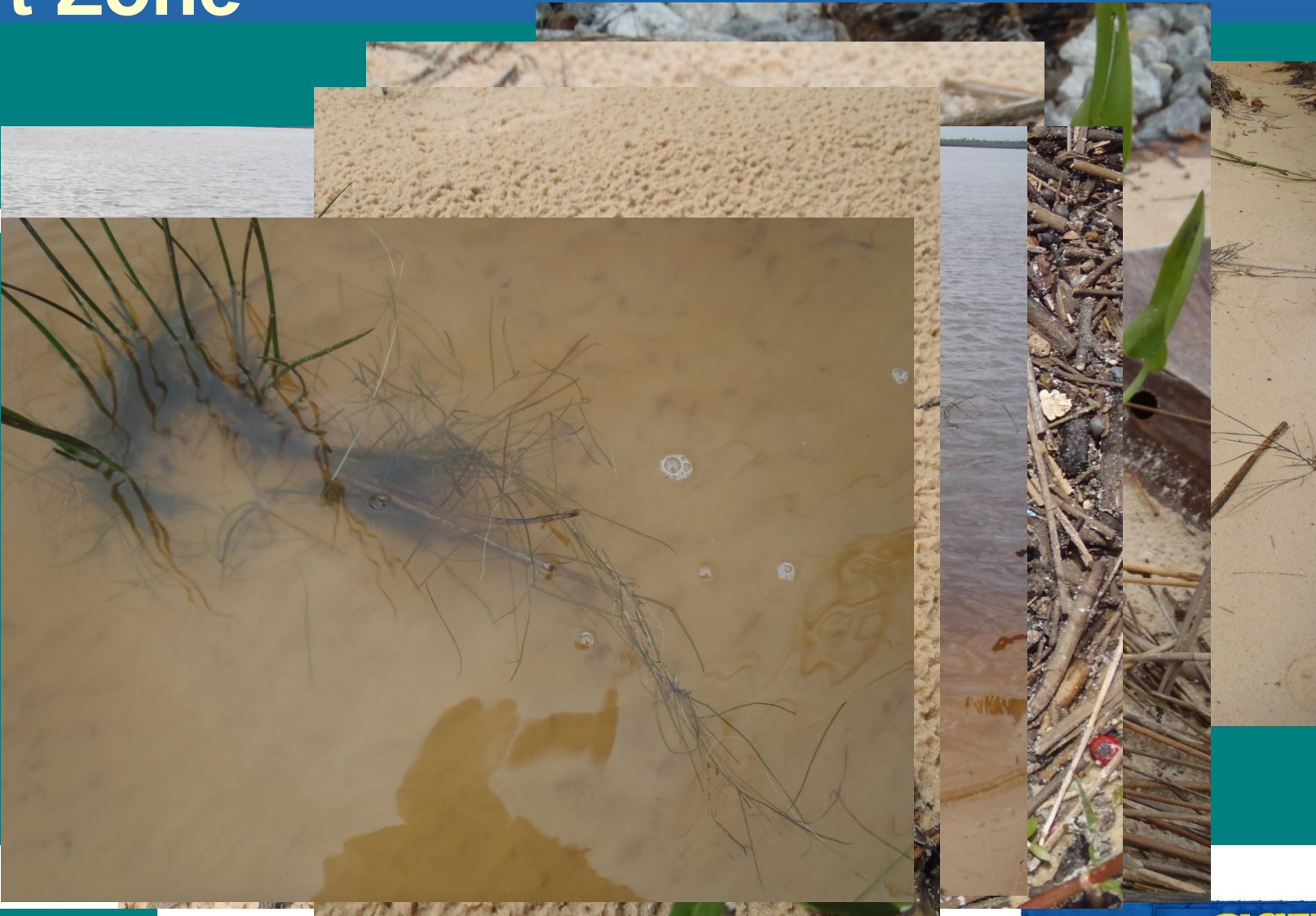
- Additional species colonizing in three major zones of the wetlands

	»	River	Bayou
– Saltmarsh Habitat	»	3	5
– High Marsh Drift Habitat	»	7	11
– Transition Edge	»	6	14
	»	Total	16
			30



Drift Zone

- In



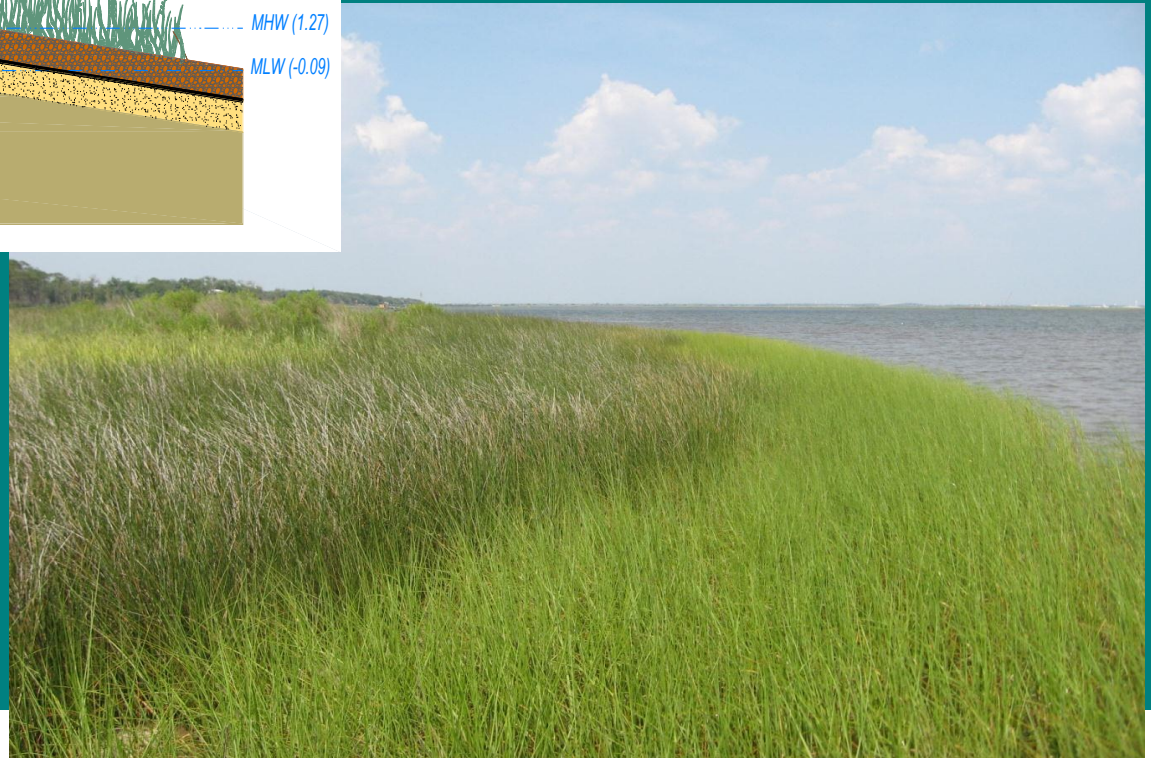
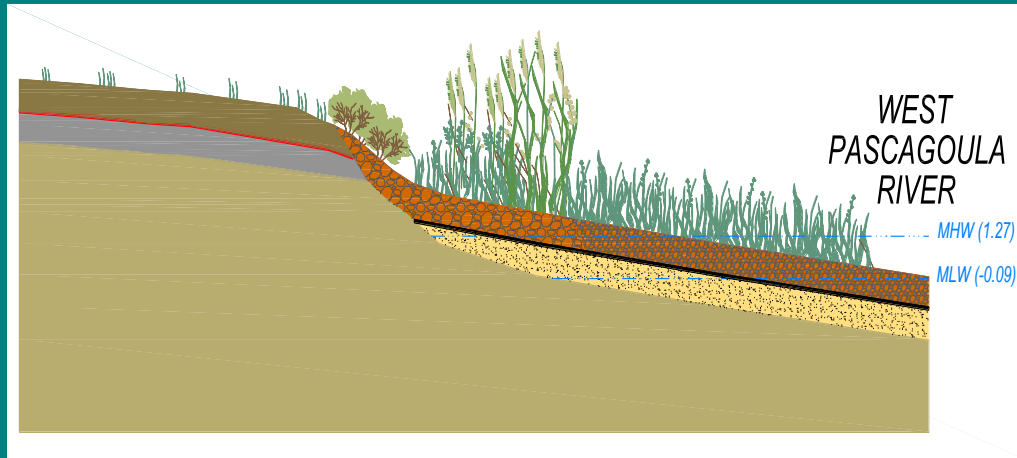
Bayou Edge



April 2012



Post Remedial Conditions



Conclusions

- Effective control of contamination
- Alternative to bare riprap
- Increase of wetland habitat
- Increase in habitat diversity
- Threatened and endangered species utilization



Adjacent Model Wetland



Questions?

