Coastal Wetland Natural Resource Damage Assessment Plan for the Deepwater Horizon Oil Spill

Mark W. Hester[1], Jonathan M. Willis[1], and **Marla Steinhoff[2]**

[1]University of Louisiana, Lafayette, LA, USA; NOAA contractors

[2]National Oceanic and Atmospheric Administration, Seattle, WA, USA

Goal of Natural Resource Damage Assessment and Restoration

- Provide restoration for injuries to natural resources and for lost human uses

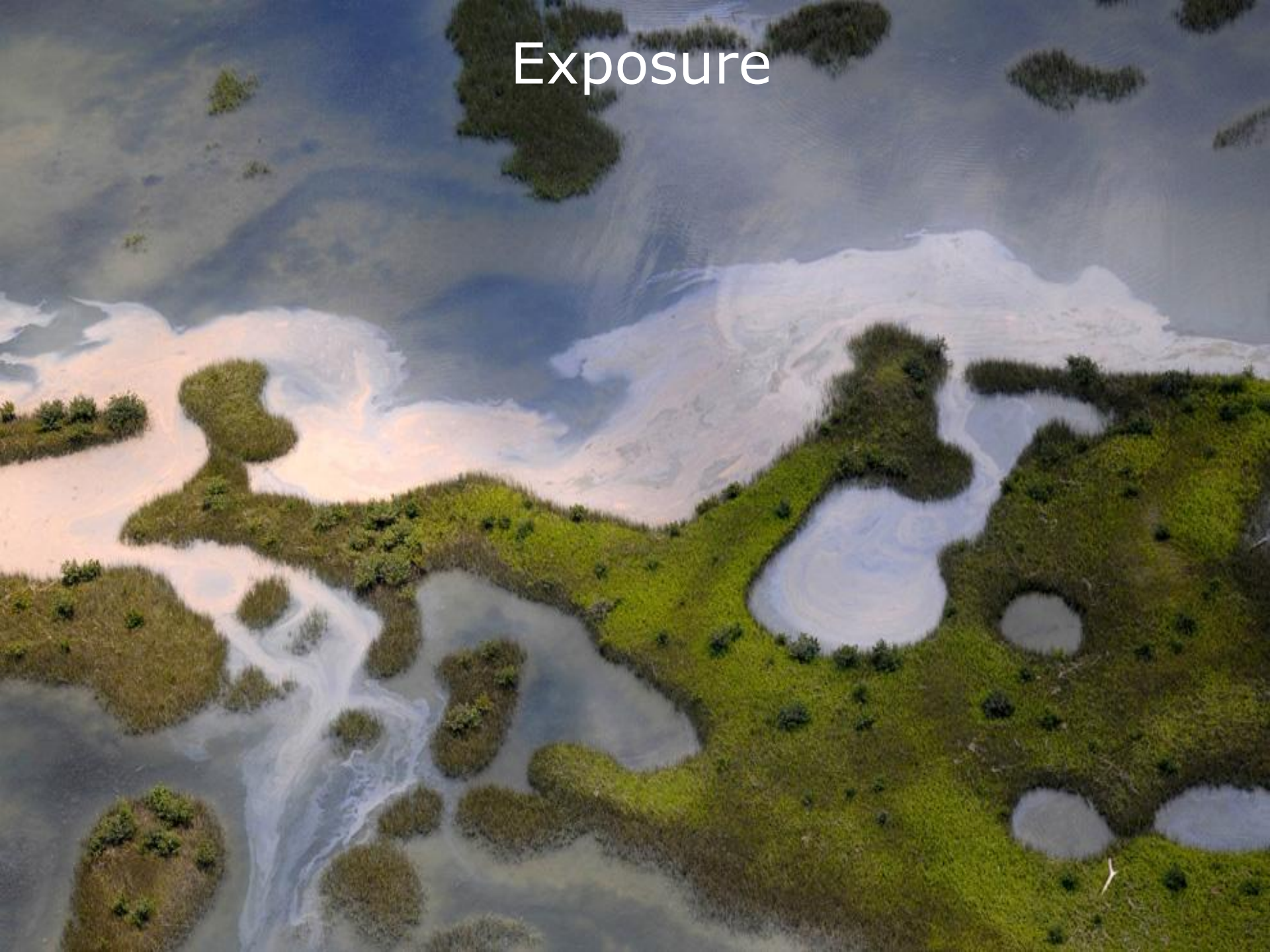
Natural Resource Damage Assessment (NRDA) Process

- Release
- Pathway
- Exposure
- Injury Assessment
- Restoration

Release

Pathway

Exposure



Exposure

Natural Resource Damage Assessment (NRDA) Process

- Release
- Pathway
- Exposure
- Injury Assessment
- Restoration

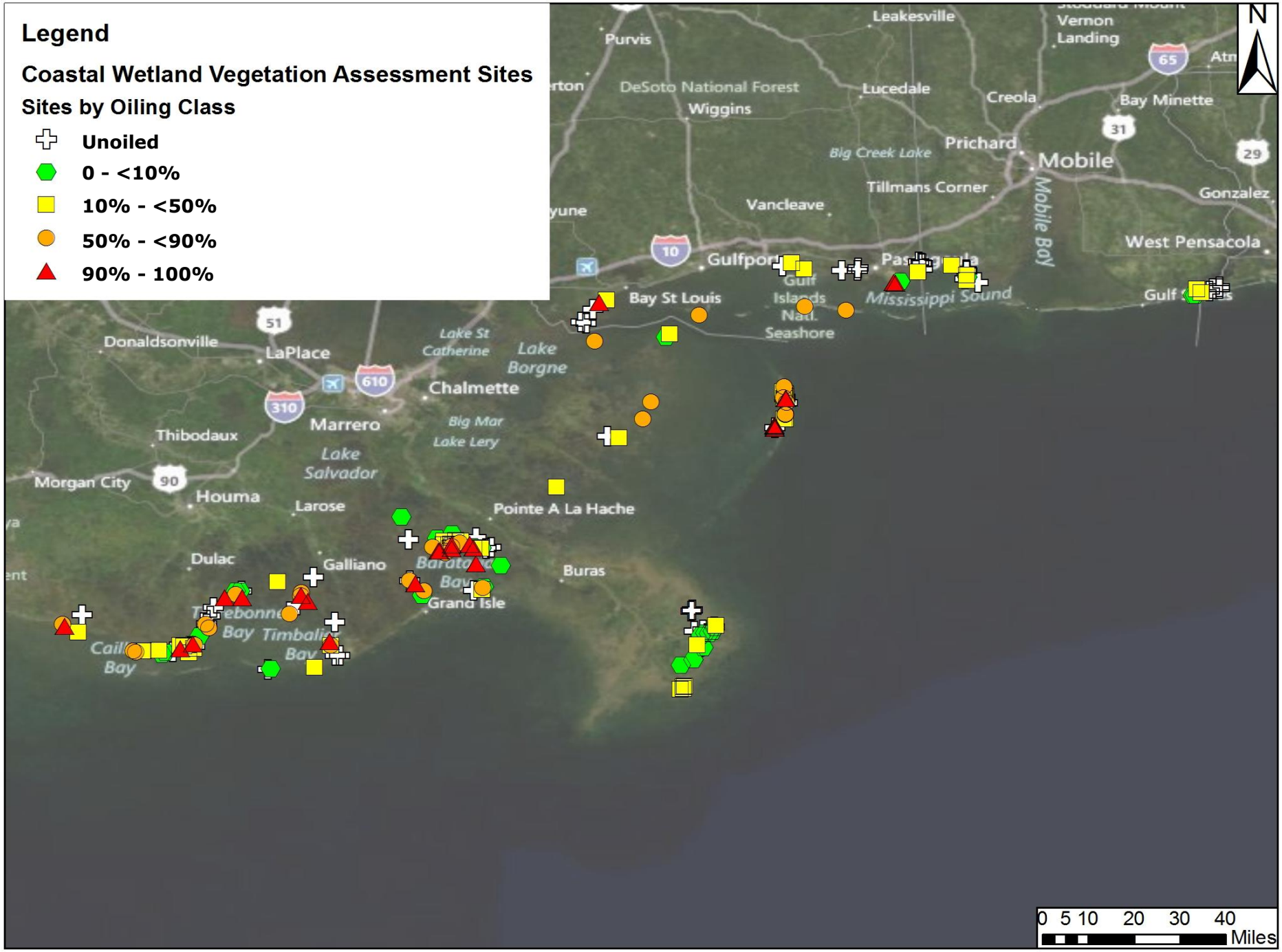
Coastal Wetland Vegetation Plan

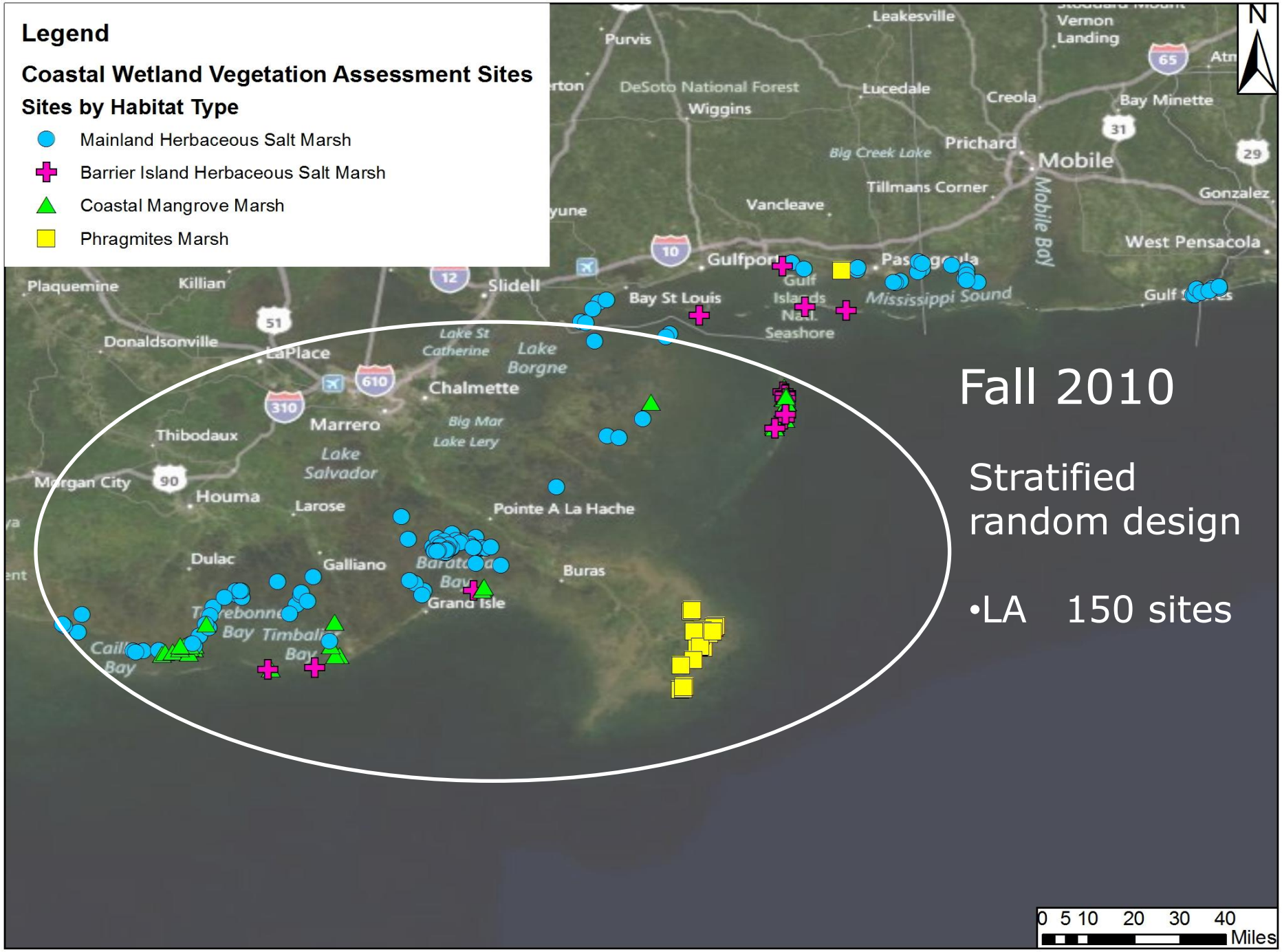
- Goal: to assess impacts of MC252 oil along the Gulf of Mexico coast
  - Coastal wetland vegetation
  - Soil characteristics
  - Elevation

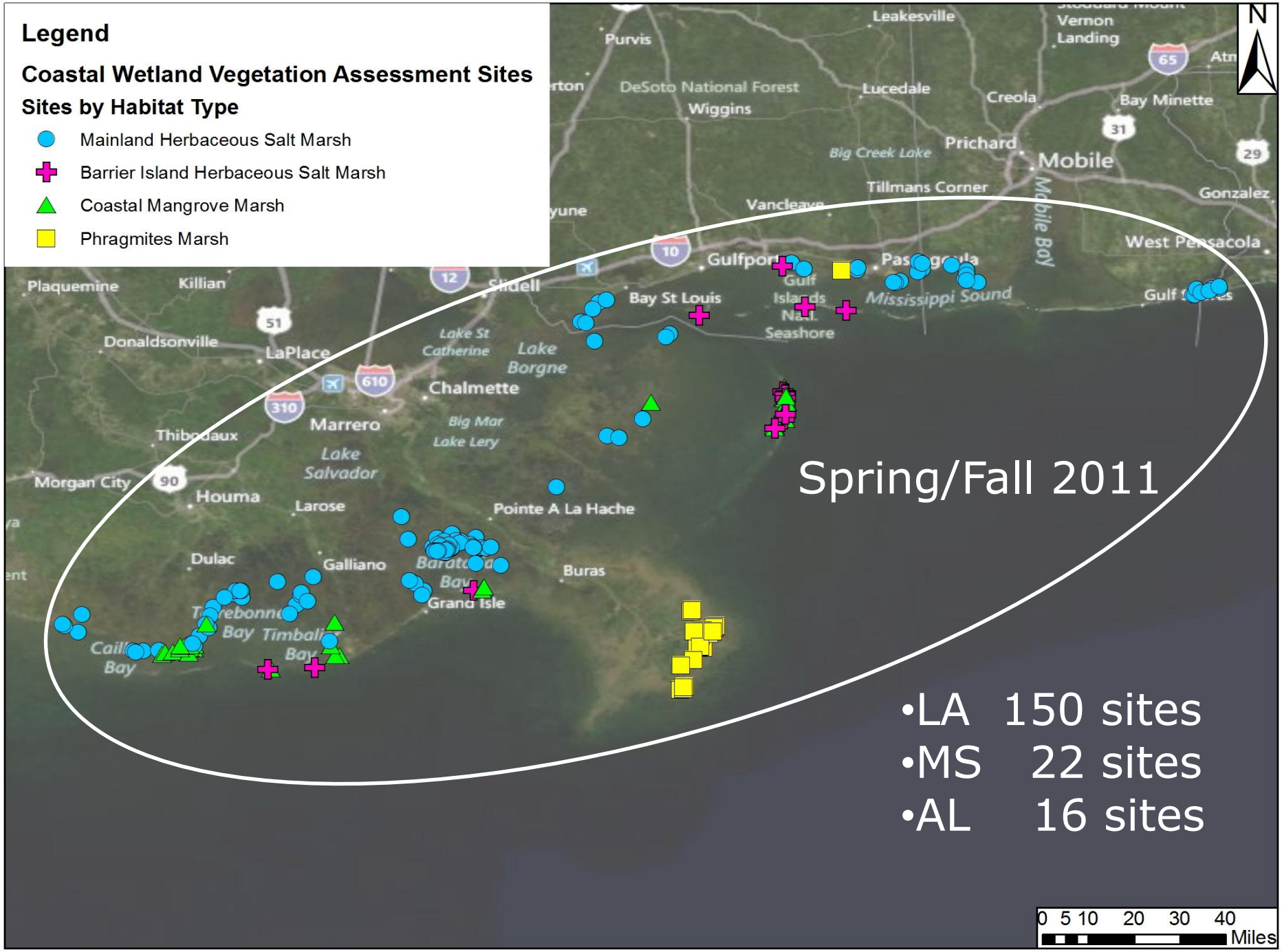
- Stratified random design
  - Based on wetland habitat type
  - Degree of oiling of vegetation

Oiling Classifications

- Unoiled
- Trace - < 10%
- 10%- < 50%
- 50%- < 90%
- 90% - 100%


Legend
Coastal Wetland Vegetation Assessment Sites
Sites by Oiling Class
Unoiled
0 - <10%
10% - <50%
50% - <90%
90% - 100%
N
Leakesville
Purvis
Vernon Landing
DeSoto National Forest
Wiggins
Lucedale
Creola
Bay Minette
Prichard
Mobile
Big Creek Lake
Tillmans Corner
Vancleave
Mobile Bay
Gonzalez
West Pensacola
Gulfport
Bay St Louis
Gulf Islands Nat. Seashore
Mississippi Sound
Donaldsonville
LaPlace
Lake St Catherine
Lake Borgne
Chalmette
Marrero
Thibodaux
Big Mar
Lake Lery
Lake Salvador
Morgan City
Houma
Larose
Pointe A La Hache
Dulac
Galliano
Buras
Grand Isle
Terrebonne Bay
Timbalier Bay
Caillou Bay
0 5 10 20 30 40
Miles


Legend
Coastal Wetland Vegetation Assessment Sites
Sites by Habitat Type
Mainland Herbaceous Salt Marsh
Barrier Island Herbaceous Salt Marsh
Coastal Mangrove Marsh
Phragmites Marsh
Fall 2010
Stratified random design
•LA 150 sites
N
0 5 10 20 30 40
Miles
Leakesville
Purvis
Vernon Landing
DeSoto National Forest
Wiggins
Lucedale
Creola
Bay Minette
Prichard
Mobile
Big Creek Lake
Tillmans Corner
Vancleave
Mobile Bay
Gonzalez
West Pensacola
Gulfport
Bay St Louis
Gulf Islands Nat. Seashore
Mississippi Sound
Plaquemine
Killian
Slidell
Donaldsonville
LaPlace
Lake St Catherine
Lake Borgne
Chalmette
Marrero
Big Mar
Lake Lery
Lake Salvador
Thibodaux
Morgan City
Houma
Larose
Pointe A La Hache
Dulac
Galliano
Buras
Grand Isle
Terrebonne Bay
Timbalier Bay
Caillou Bay


Legend
Coastal Wetland Vegetation Assessment Sites
Sites by Habitat Type
Mainland Herbaceous Salt Marsh
Barrier Island Herbaceous Salt Marsh
Coastal Mangrove Marsh
Phragmites Marsh
Spring/Fall 2011
•LA 150 sites
•MS 22 sites
•AL 16 sites
N
0 5 10 20 30 40
Miles
Leakesville
Purvis
Vernon Landing
DeSoto National Forest
Wiggins
Lucedale
Creola
Bay Minette
Prichard
Mobile
Big Creek Lake
Tillmans Corner
Vancleave
Gonzalez
West Pensacola
Mobile Bay
Gulfport
Bay St Louis
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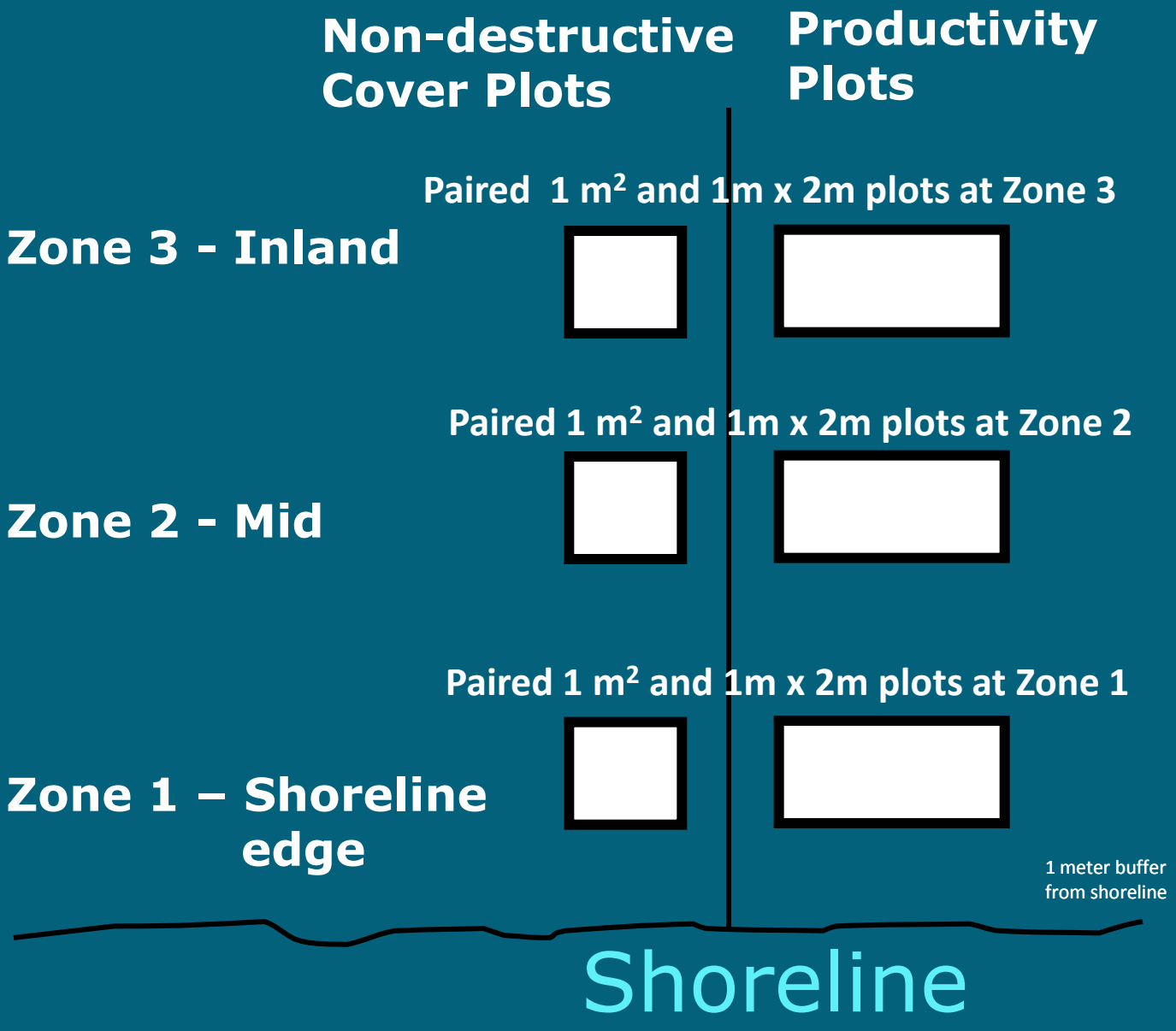
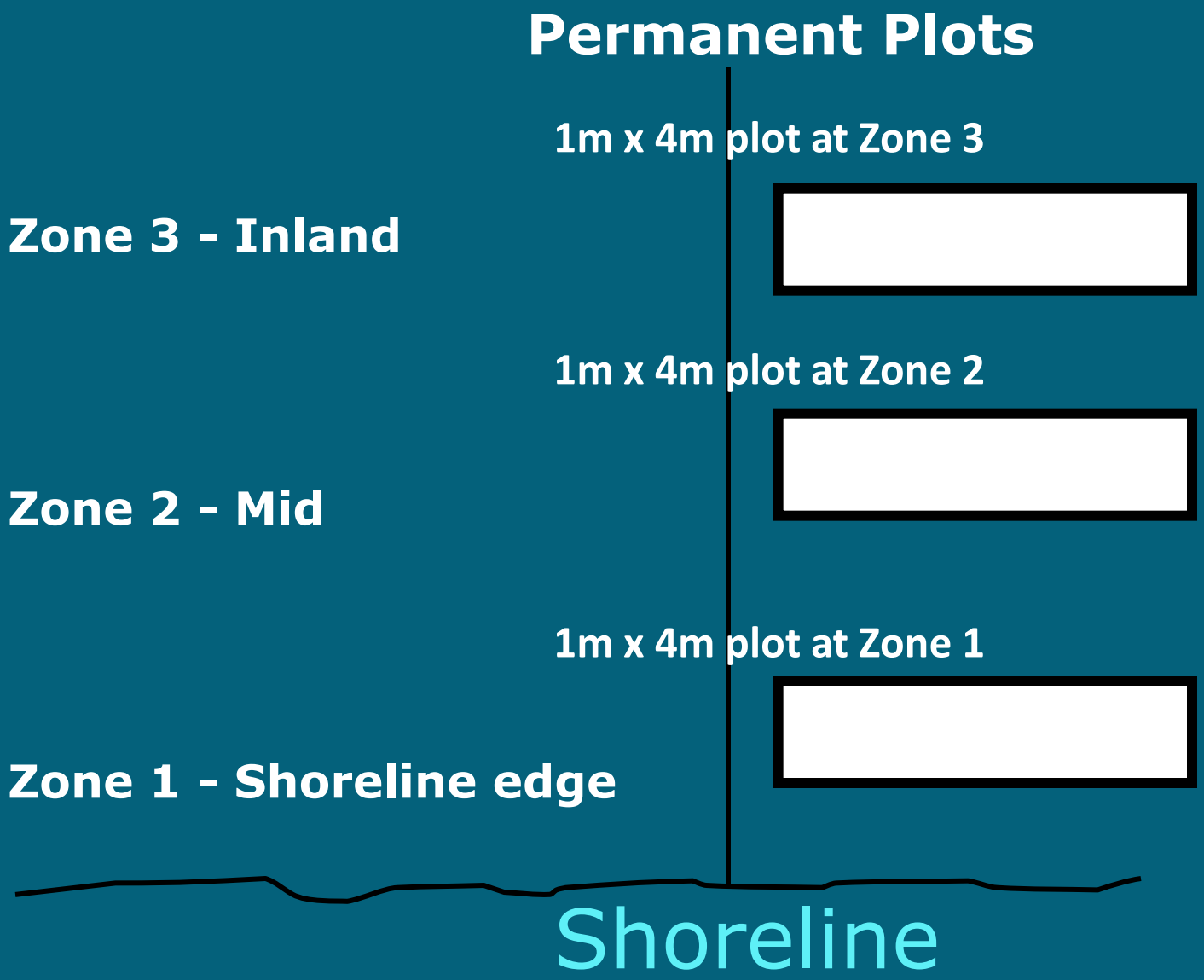
Site diagram – Herbaceous Marsh



Site diagram - Mangrove



Coastal Wetland Vegetation Metrics

- Associated ecological processes

- Address the following ecosystem services
  - Primary production
  - Provision of wetland habitat
  - Nutrient cycling
  - Biogeochemical processes
  - Shoreline stabilization

Primary Production

- Herbaceous coastal wetland vegetation metrics
  - Light adapted fluorescence, chlorophyll content index
  - Oiling impact extent
  - Above/below ground biomass
  - Stem height/density

Primary Production

- Louisiana mangrove metrics
  - Tagged seedling and adult tree survivorship
  - Tree heights
  - Trunk diameter
  - Canopy area
  - Pneumatophore density/height
  - Fall propagule production
  - Seedlings
    - Counts
    - Height
    - Stem node measurements
    - Survival
    - Canopy extent
    - Number of leaves

Provision of Wetland Habitat

- Herbaceous coastal wetland metrics
  - Live/dead cover of plant species
  - Average canopy height of dominant species
  - Oiling impact extent
    - Vegetation condition index
    - Oiling height
- Louisiana mangrove metrics
  - Pneumatophore measurements
    - Density, oiling, height
  - Seedlings
    - Count
    - Height

Nutrient cycling

- Extractable ammonia
- Extractable nitrate-nitrite
- Extractable total P

Biogeochemical processes

- Soil redox potential (Eh)
- Extractable elements/ions
- Contaminants (TEH, PAH)
- Modulating factors (extractable salinity, pH, sand/silt/clay/OM)

Shoreline Stabilization

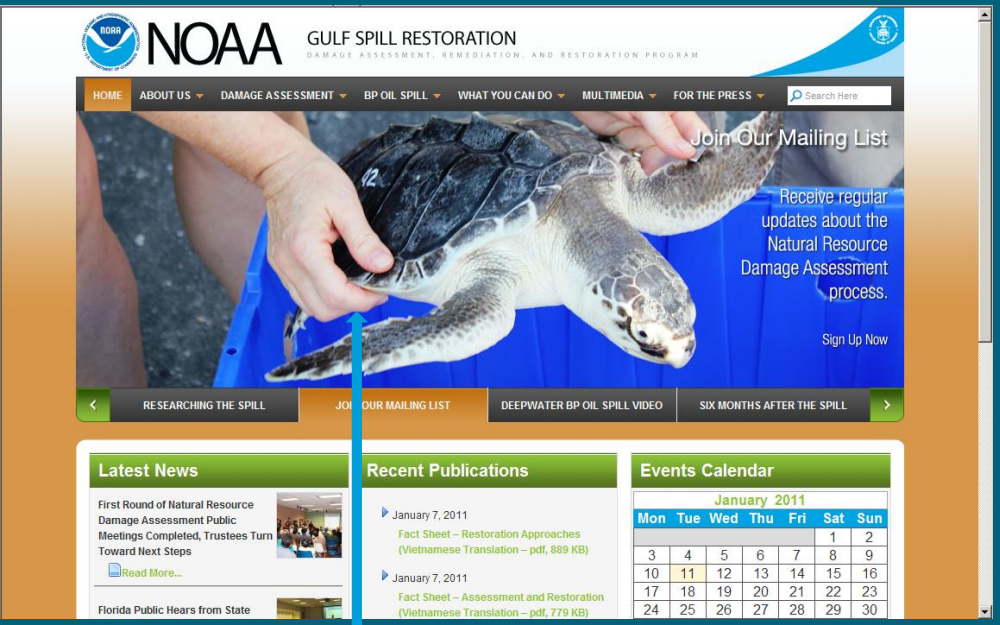
- Change of shoreline position (erosion)
  - Staked locations
  - LiDAR
  - Real Time Kinematic (RTK) surveys
- Plot and transect profiles
  - RTK surveys (NAVD88)

Status/Next Steps

- Sampling complete
  - Fall 2010 (LA)
  - Spring and Fall 2011 (LA, MS, AL)

- Next steps
  - Potentially Fall 2012 sampling
  - Interest in long-term monitoring of impacted areas

NOAA Deepwater Information Resources



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  - www.restorethegulf.gov
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