Cat Island Chain Restoration, Green Bay
Project Objectives

• Re-establishment of emergent and submerged aquatic vegetation southwest of the Cat Island Chain

• Restoring terrestrial habitat associated with the islands

• Providing capacity for placement of clean dredge spoils of Green Bay Federal Navigation Channel dredging activities

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Project Overview

- Field Investigations
- Geomorphic Analysis
- Numerical Modeling of
  - Waves
  - Hydrodynamics
  - Sediment Transport
- Vegetation Analysis
- Physical Modeling
- Design Development Plan
Field Investigations

- Bathymetric Survey
- Sediment Samples
- Wave Gauge
Geomorphic Analysis

- 1965

- 2000

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Wave Modeling

- WAVAD
  - Wave Generation

- STWAVE
  - Wave Transformations

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Hydrodynamics

- Nested MIKE 21 Model
- Bathymetry
  - 500m, 180m, 60m, 20m

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Hydrodynamics

- Calibration, Results
Sediment Transport Analysis

• MIKE 21- MT Module
Sediment Transport Analysis

TSS and Flow Rate From Fox River

Water Level and Wind Speed at Green Bay

Cat Island Mud Transport Modelling

All Islands
Vegetation Analysis

• Aquatic vegetation survival criteria

Existing

Depth < 2 * Secchi Depth
Orbital Velocity < 0.6 m/s


East Island

West Island

Proposed
Vegetation Analysis

TSS and Flow Rate From Fox River

Wind Speed and Water Level at Green Bay

Cat Island Vegetation Analysis
Physical Modeling

- Test Beach Profiles & Revetment Stability of Locally Available Products
Concept Plans

- Beach / Revetment Systems
- Stay in Footprint
- Increase Capacity while Providing Desired Habitat
• Revetment / Coarse Gravel-Cobble Beaches on Exposed Side
• Dredged Material Beaches on Protected Side
Questions