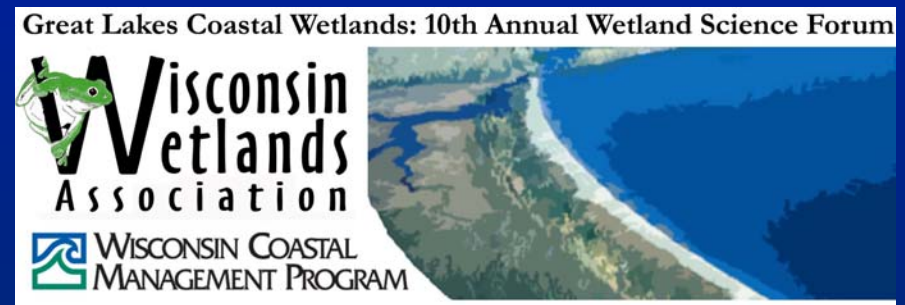


Cat Island Chain Restoration, Green Bay

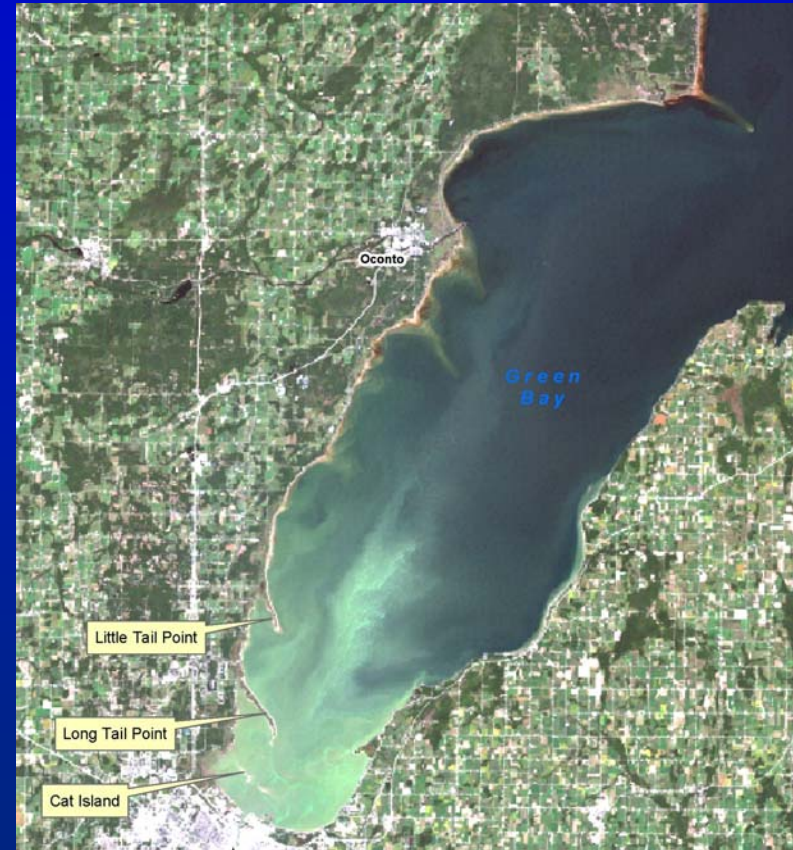


January 27, 2005

— Baird —

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

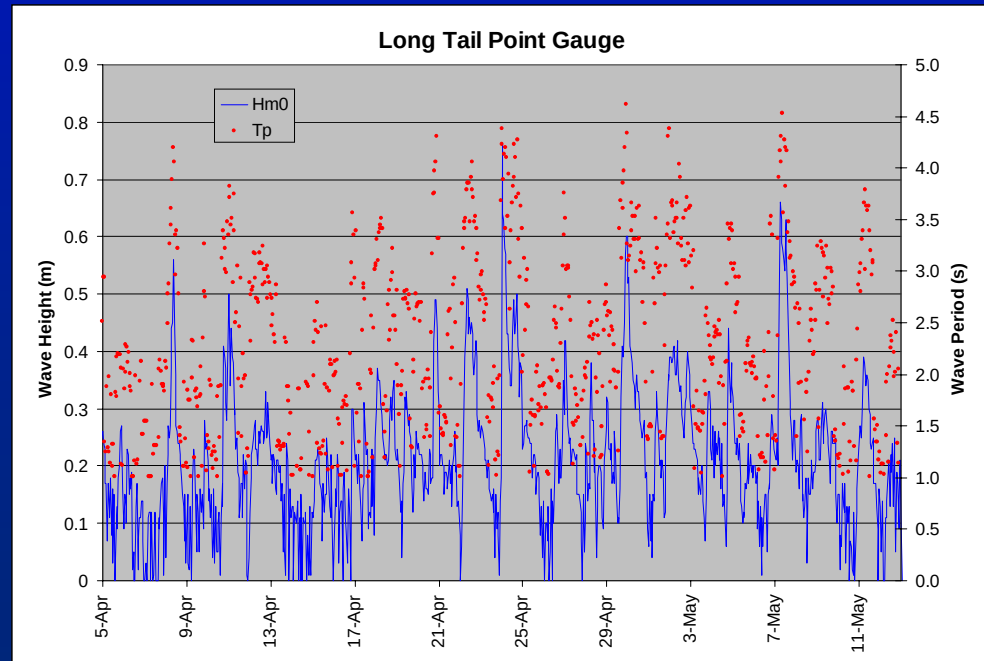
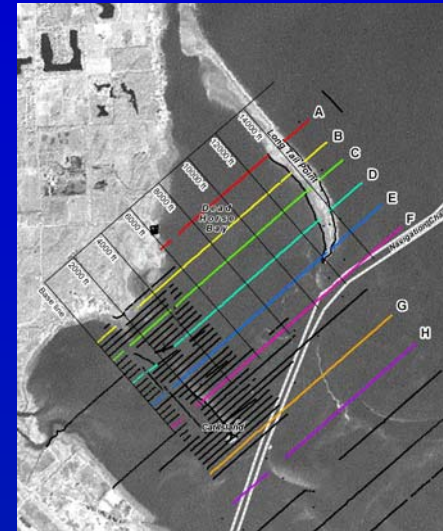


Project Overview

- 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

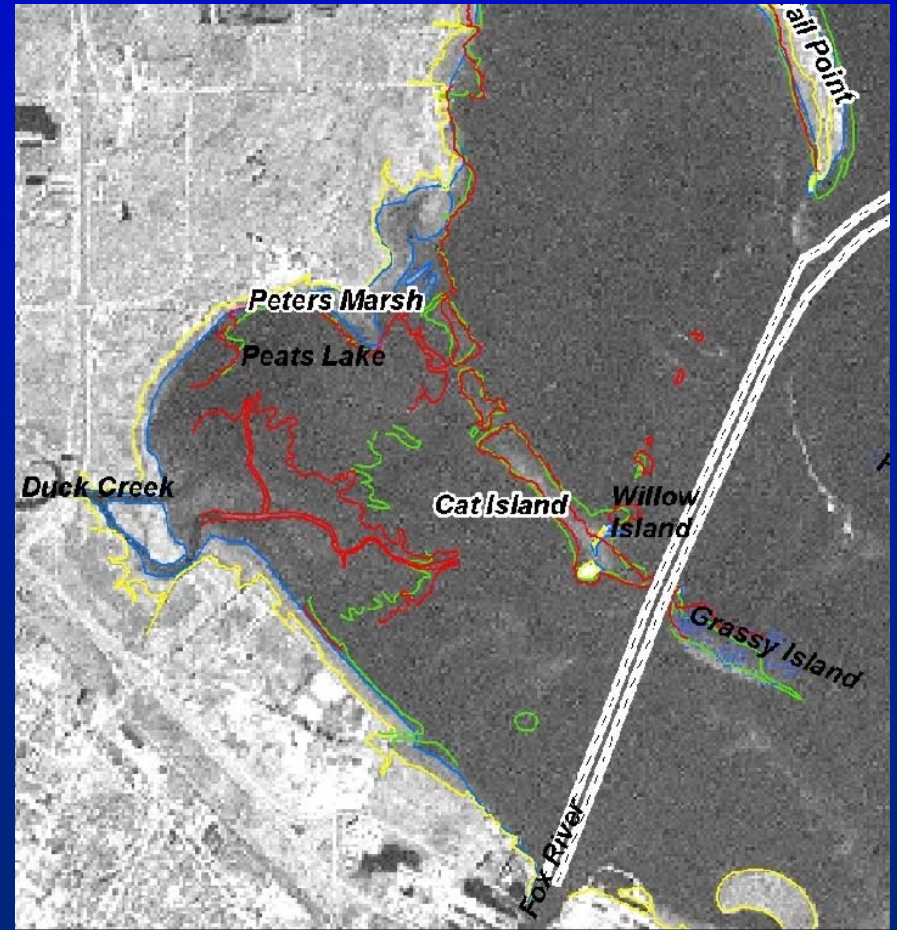


Geomorphologic Analysis

- 1965

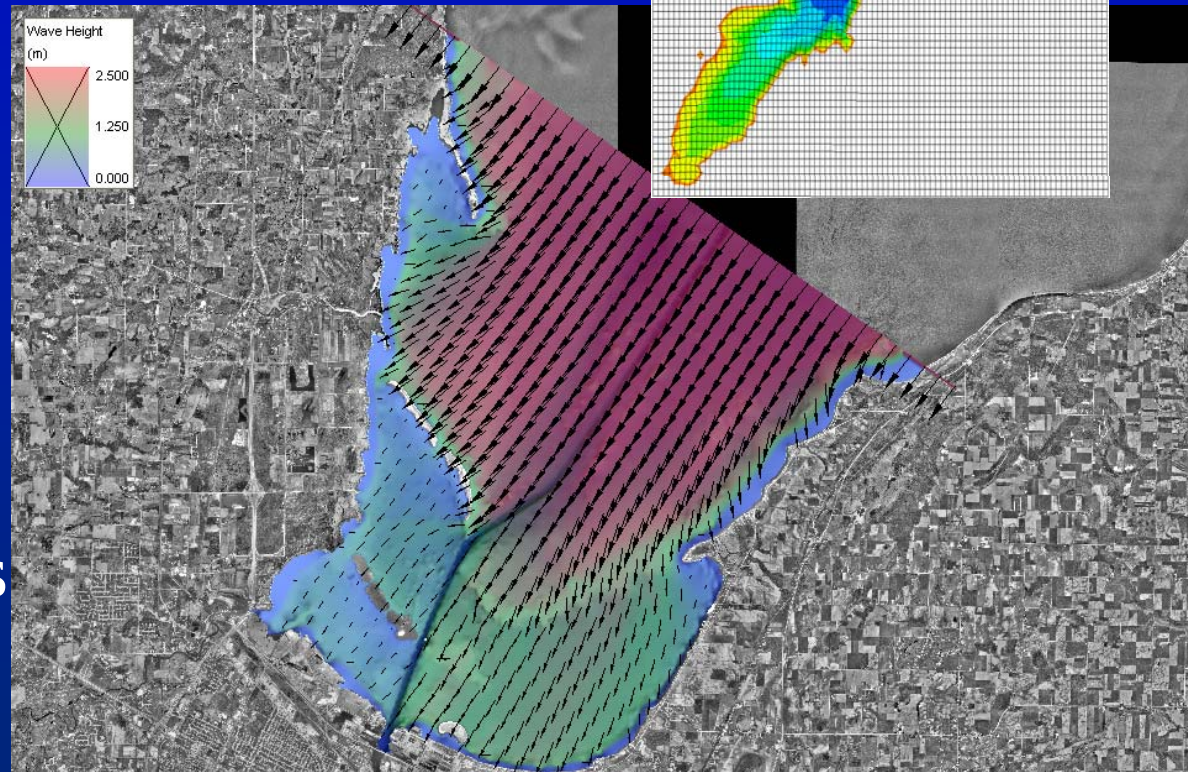


- 2000

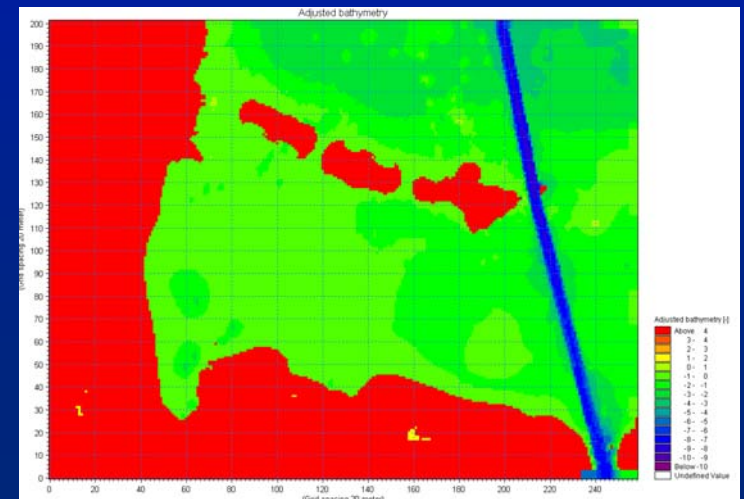
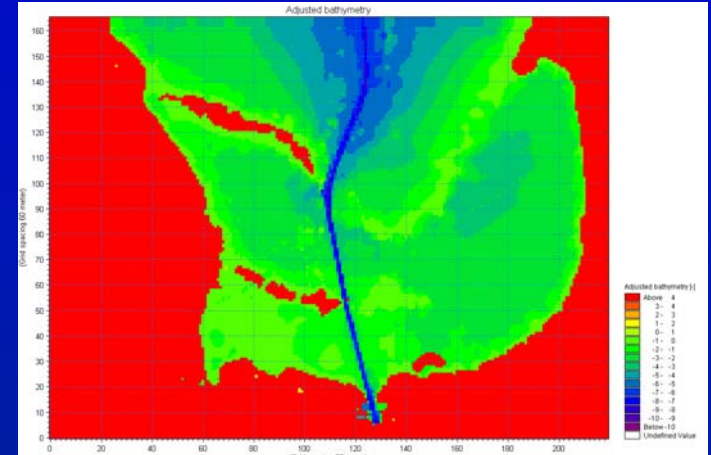
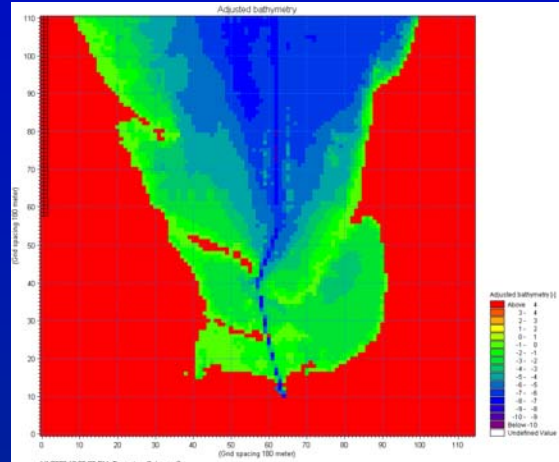
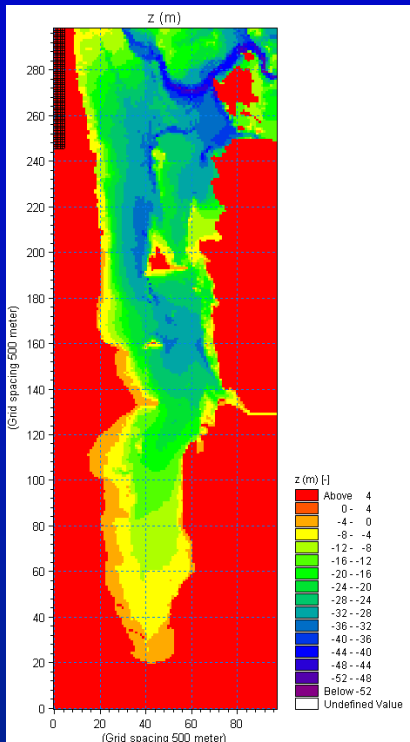


Wave Modeling

- WAVAD
 - Wave Generation
- STWAVE
 - Wave Transformations



Hydrodynamics



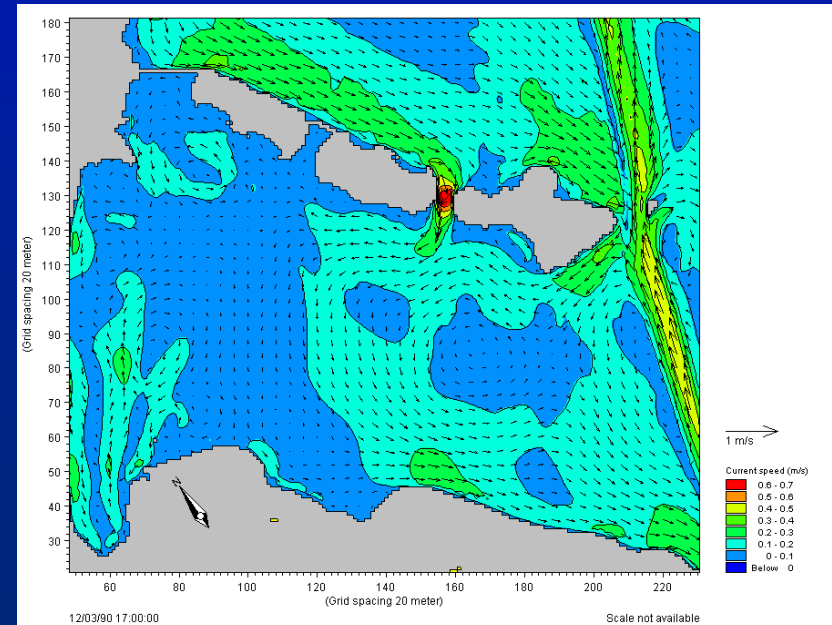
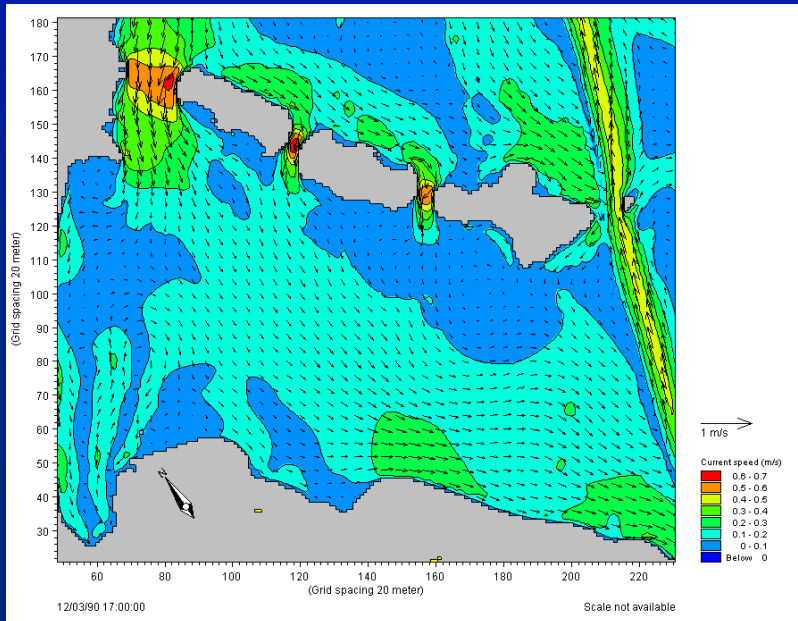
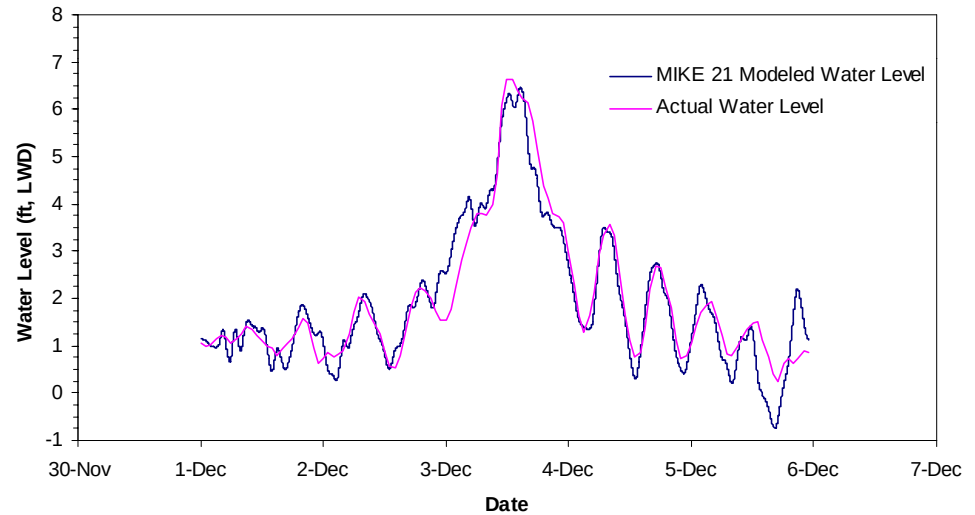
- Nested MIKE 21 Model
- Bathymetry
 - 500m, 180m, 60m, 20m

Baird

Hydrodynamics

- Calibration, Results

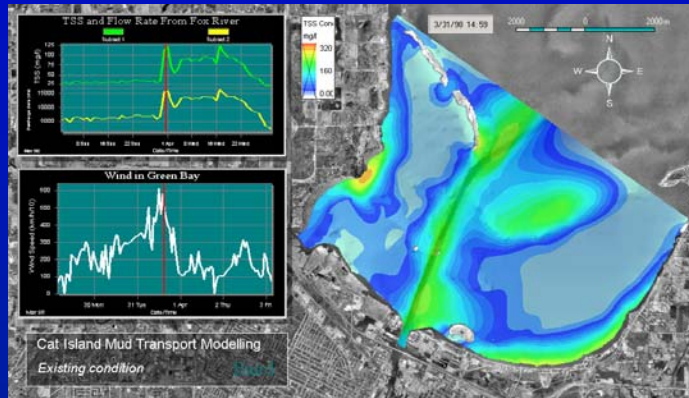
Green Bay Surge Event
December 3, 1990



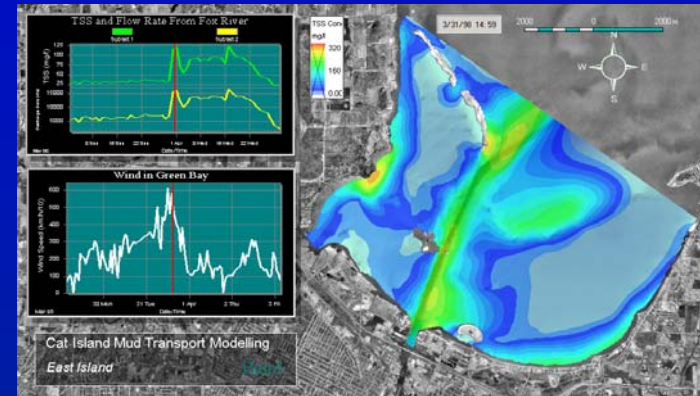
Sediment Transport Analysis

- MIKE 21- MT Module

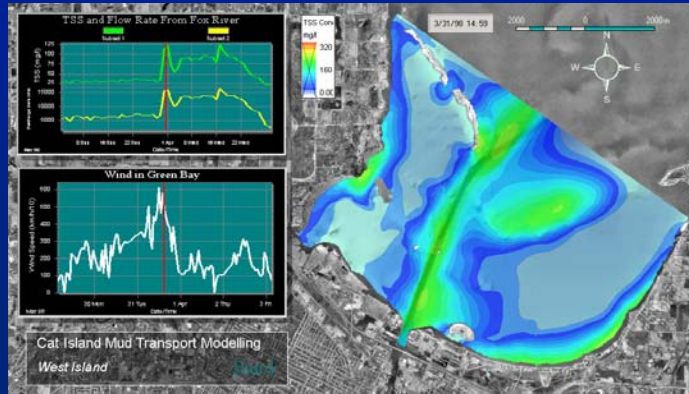
Existing



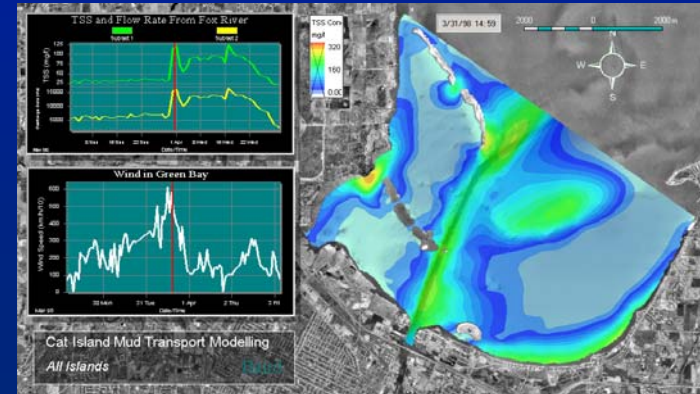
East Island



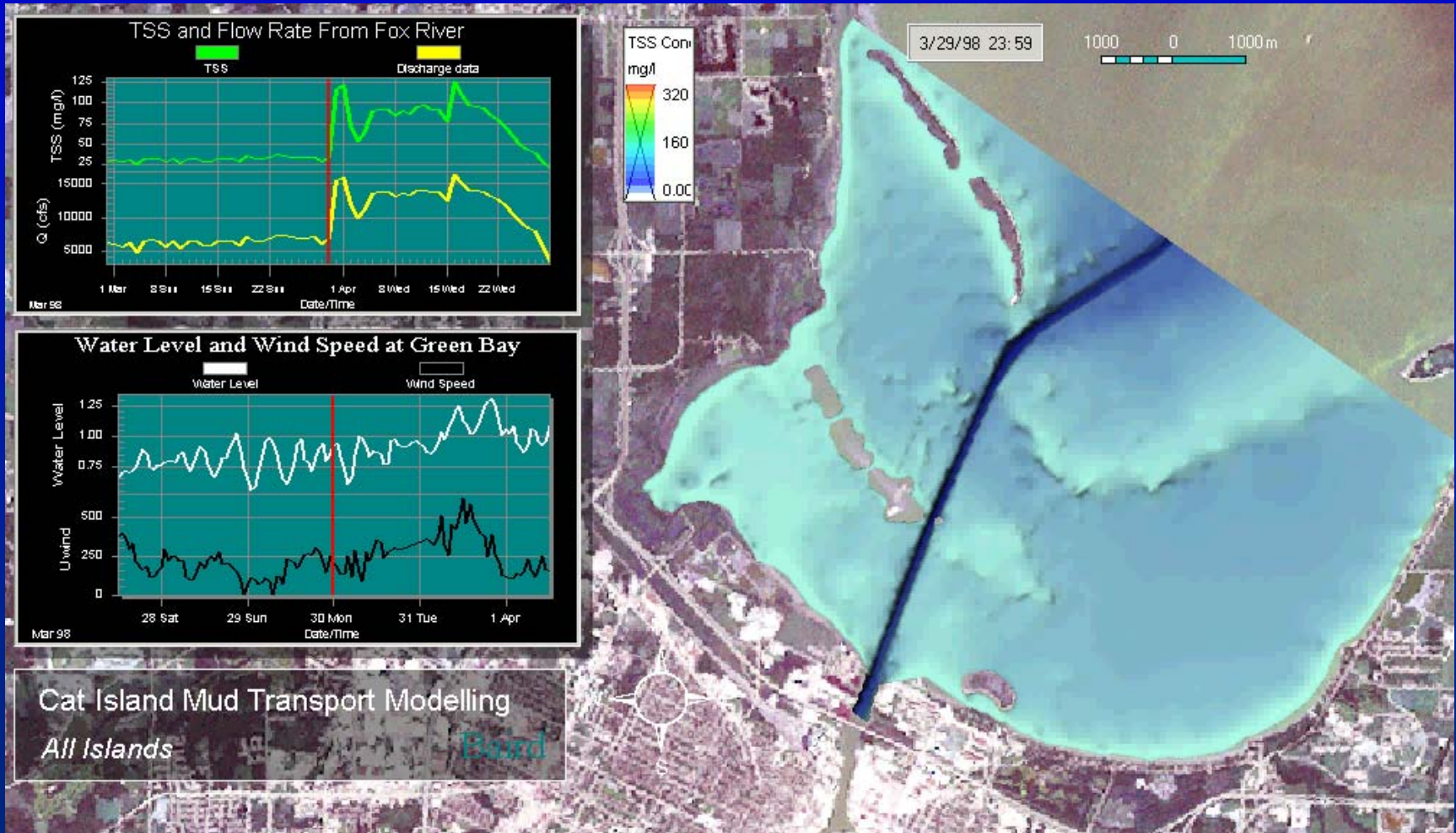
West Island



Proposed



Sediment Transport Analysis



Vegetation Analysis

- Aquatic vegetation survival criteria

Existing



East Island



West Island



Proposed



Depth < 2 * Secchi Depth

Orbital Velocity < 0.6 m/s

1. Baird & Associates (1996a).

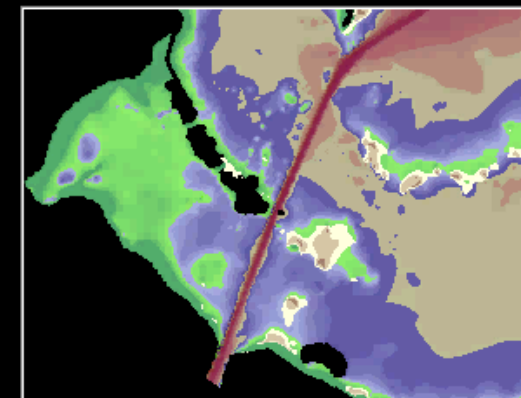
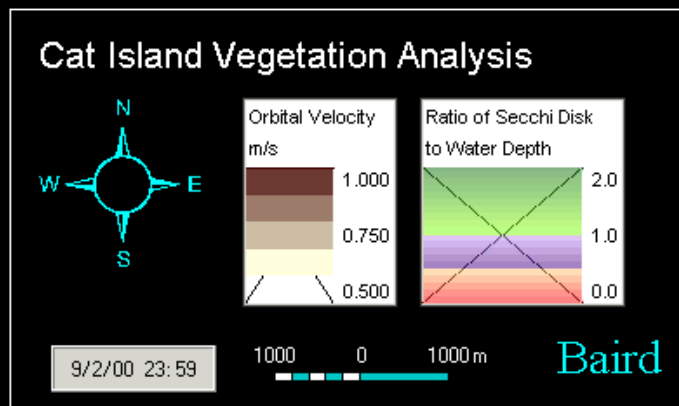
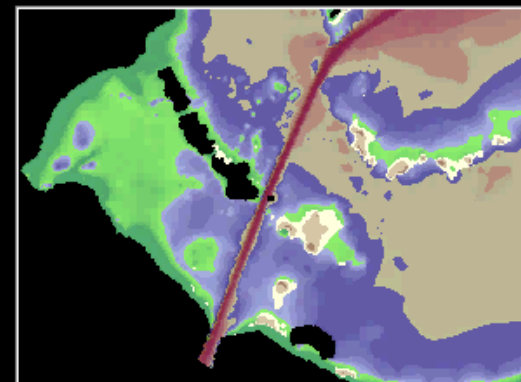
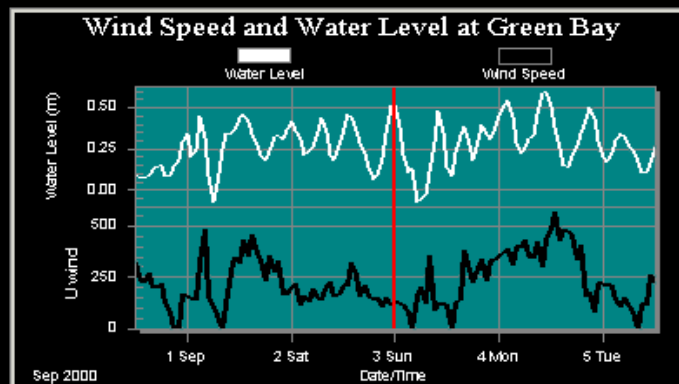
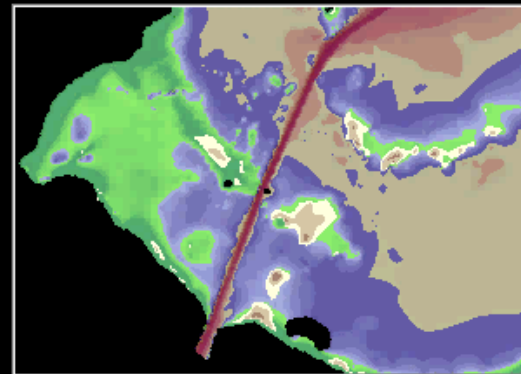
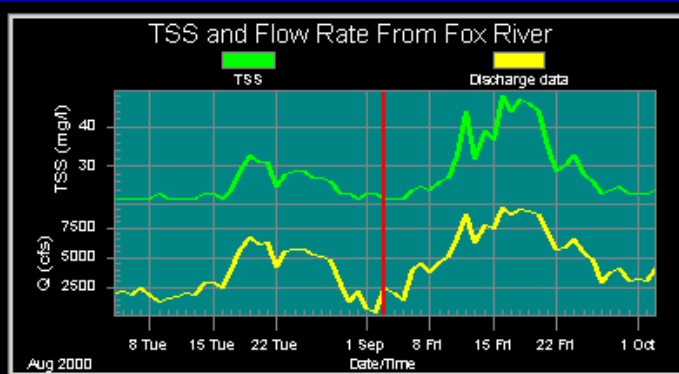
Approach to the Physical Assessment of Developments Affecting Fish Habitat in the Great Lakes Nearshore Regions. Can. Manu. Rep. Fish. Aquat. Sci. 2352: v + 96 pp.

2. Baird & Associates (1996b). Defensible Methods of Assessing Fish Habitat: Physical Habitat Assessment and Modelling the Coastal Areas of the Lower Great Lakes. Can. Manu. Rep. Fish. Aquat. Sci. 2370: vi + 95 pp.

3. Minns, C.K. and Nairn, R.B. (1999). Defensible Methods: Applications of a procedure for assessing developments affecting littoral fish habitat of the Lower Great Lakes. In Aquatic Restoration in Canada. Backhuys Publishers. Ed. T. Murphy.

— Baird —

Vegetation Analysis



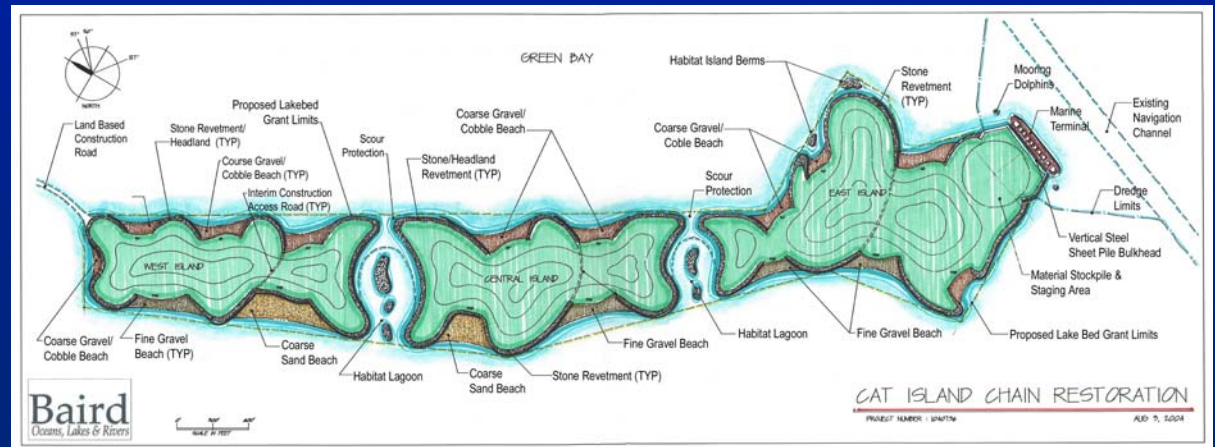
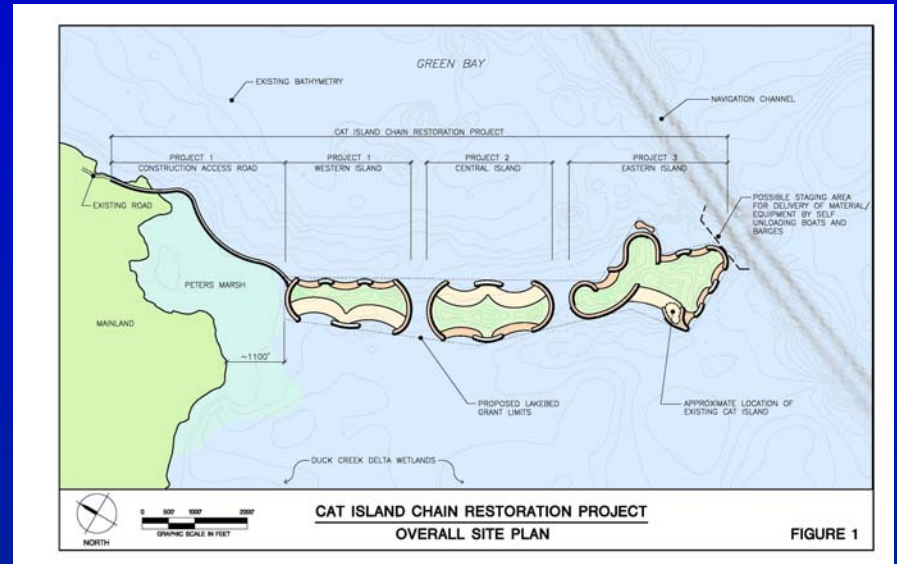
Physical Modeling

- Test Beach Profiles & Revetment Stability of Locally Available Products

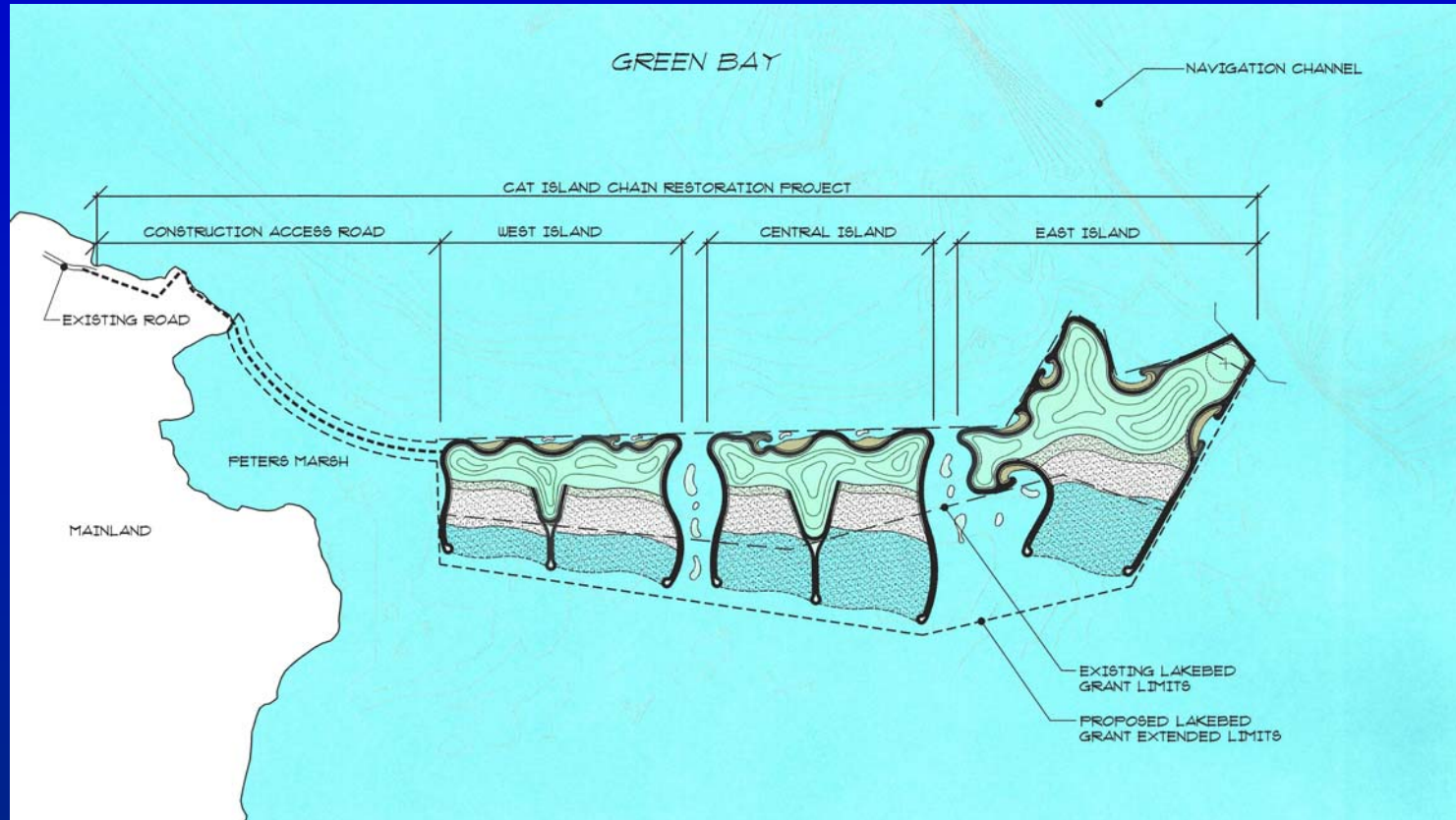


Concept Plans

- Beach / Revetment Systems
- Stay in Footprint
- Increase Capacity while Providing Desired Habitat



Design Development Plan



- Revetment / Coarse Gravel-Cobble Beaches on Exposed Side
- Dredged Material Beaches on Protected Side

Baird

Questions