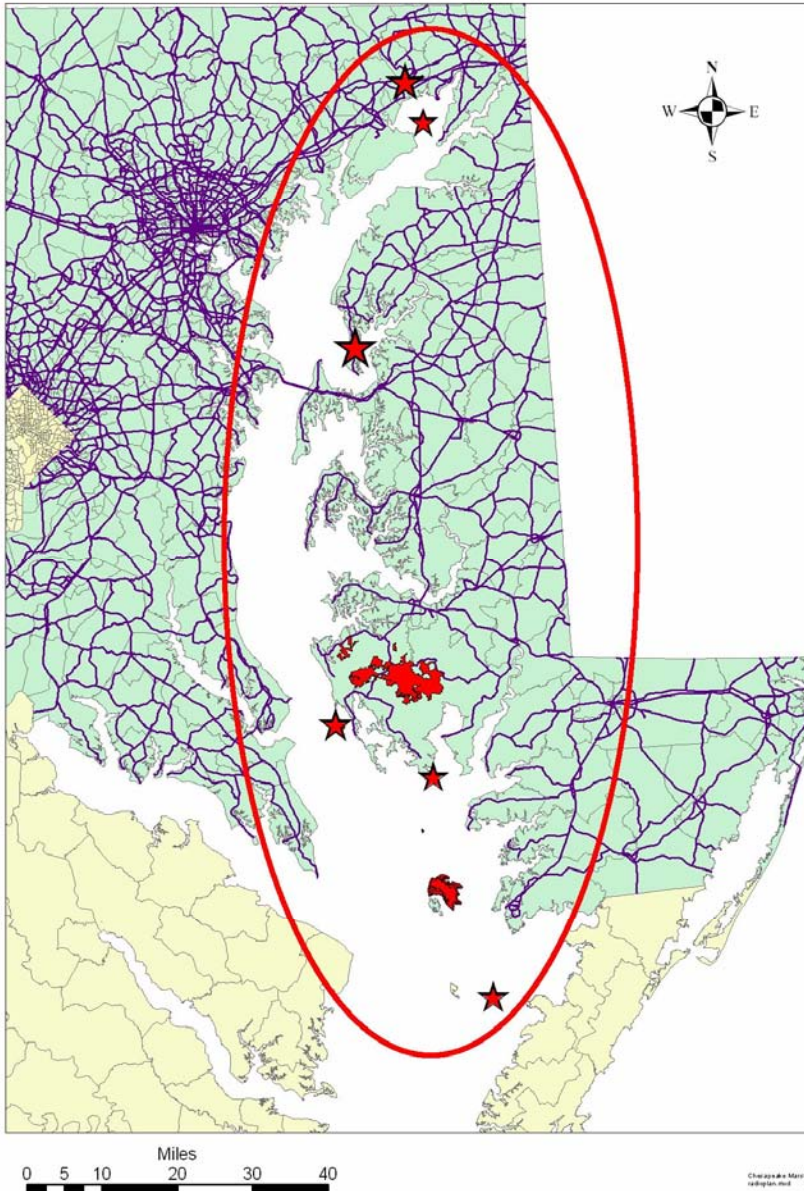


# **Restoring Wetlands in the Chesapeake Marshlands NWR Complex**



## Chesapeake Marshlands National Wildlife Refuge Complex

Radio Plan Coverage Area



Blackwater NWR is part of the **Chesapeake Marshlands National Wildlife Refuge Complex**:

- Blackwater NWR
- Eastern Neck NWR
- Martin NWR
- Susquehanna NWR
- Watts Island
- Bishops Head Point
- Spring Island
- Barren Island

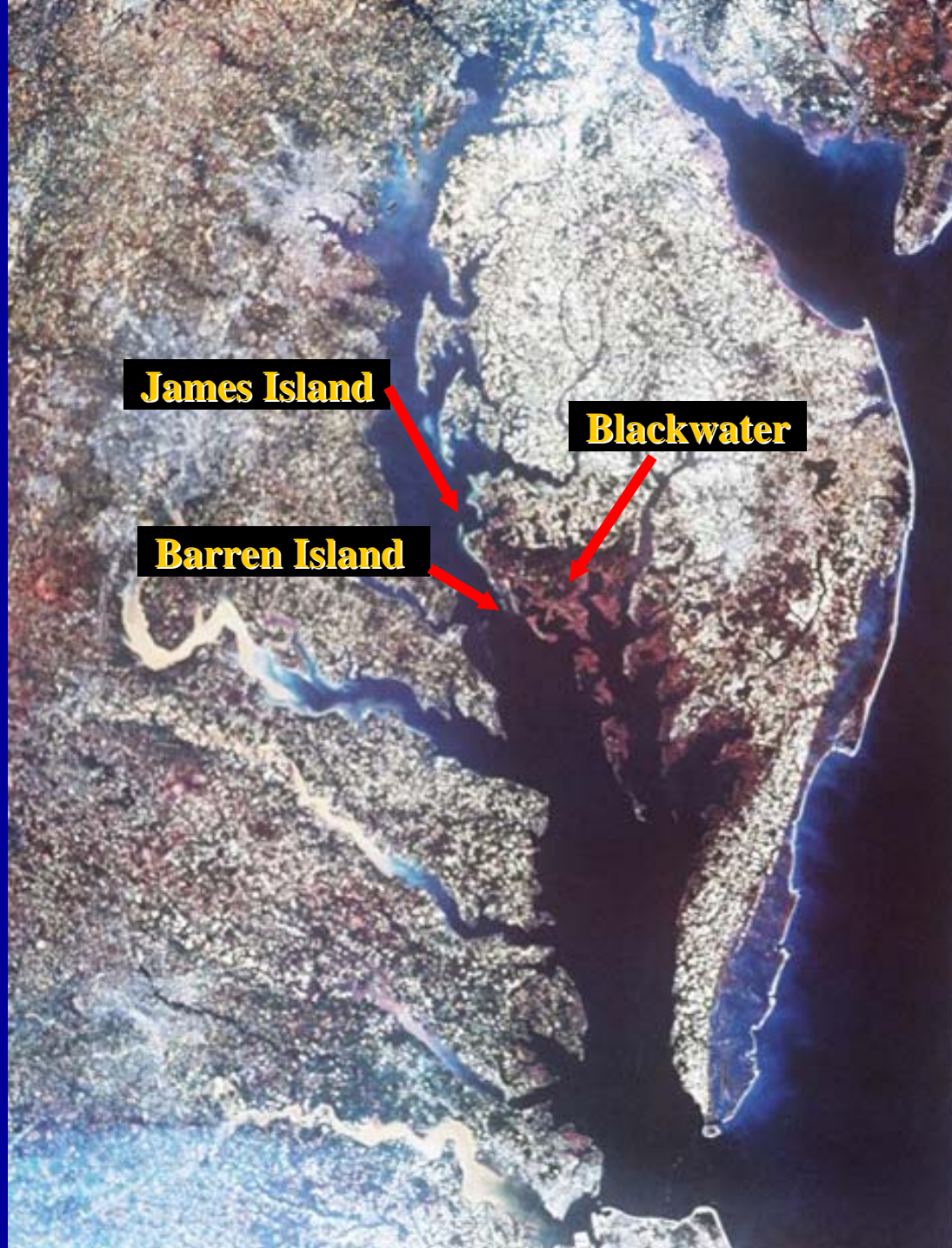


# Wetland Restoration

An aerial photograph of a vast wetland landscape. The terrain is a mix of dark green and light green, indicating different types of vegetation. A complex network of winding waterways, including rivers and streams, meanders across the land. In the foreground, a large, dark blue body of water, possibly a bay or a large pond, is visible. The background shows a hazy horizon under a pale sky.

- 1. Barren Island & James Island**
- 2. Blackwater/Dorchester County**

Remaining  
marsh  
shown  
in red





# Global Warming increases Sea Level Rise and Wetland Loss

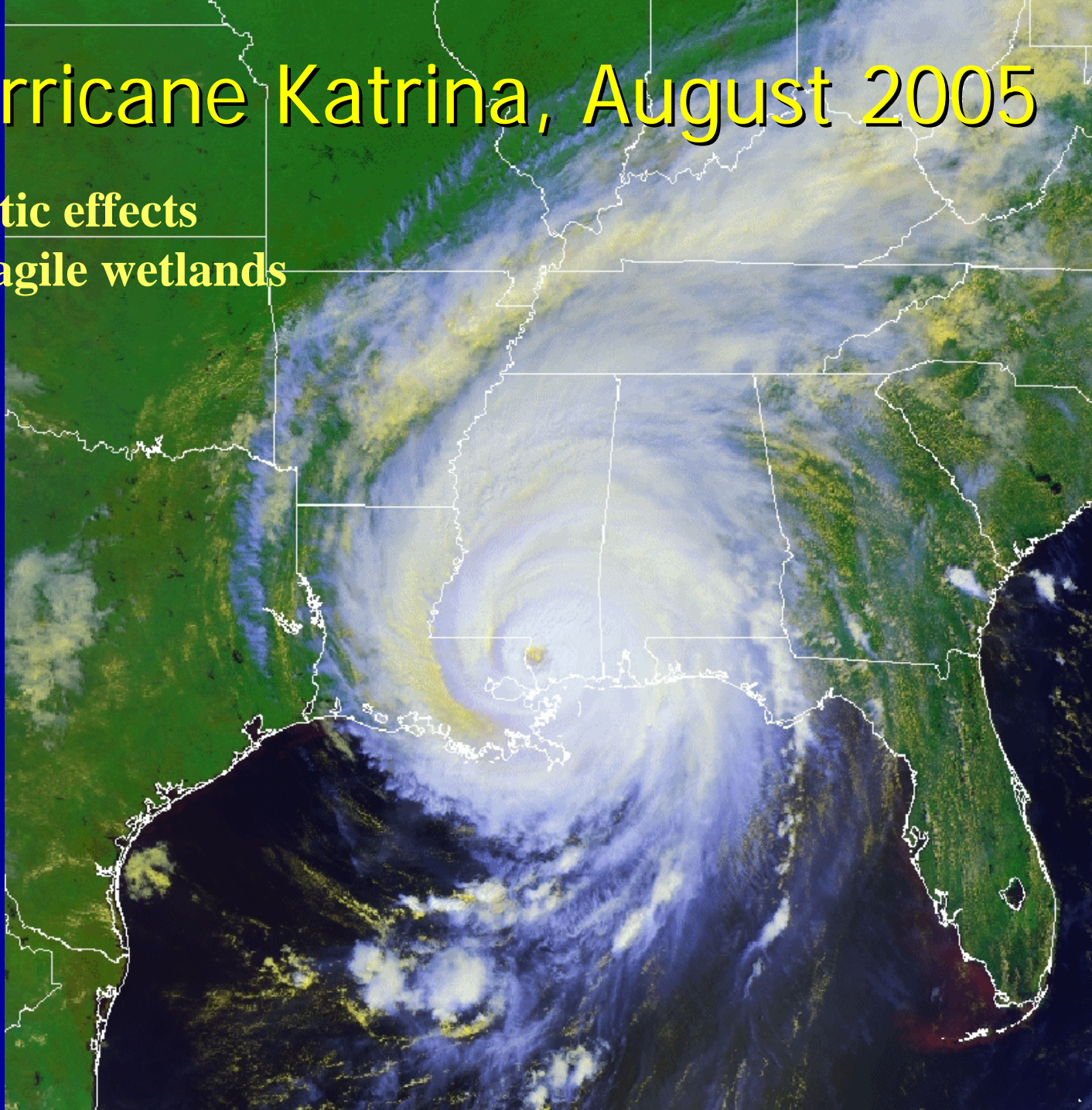


James Island, June 2007



# Hurricane Katrina, August 2005

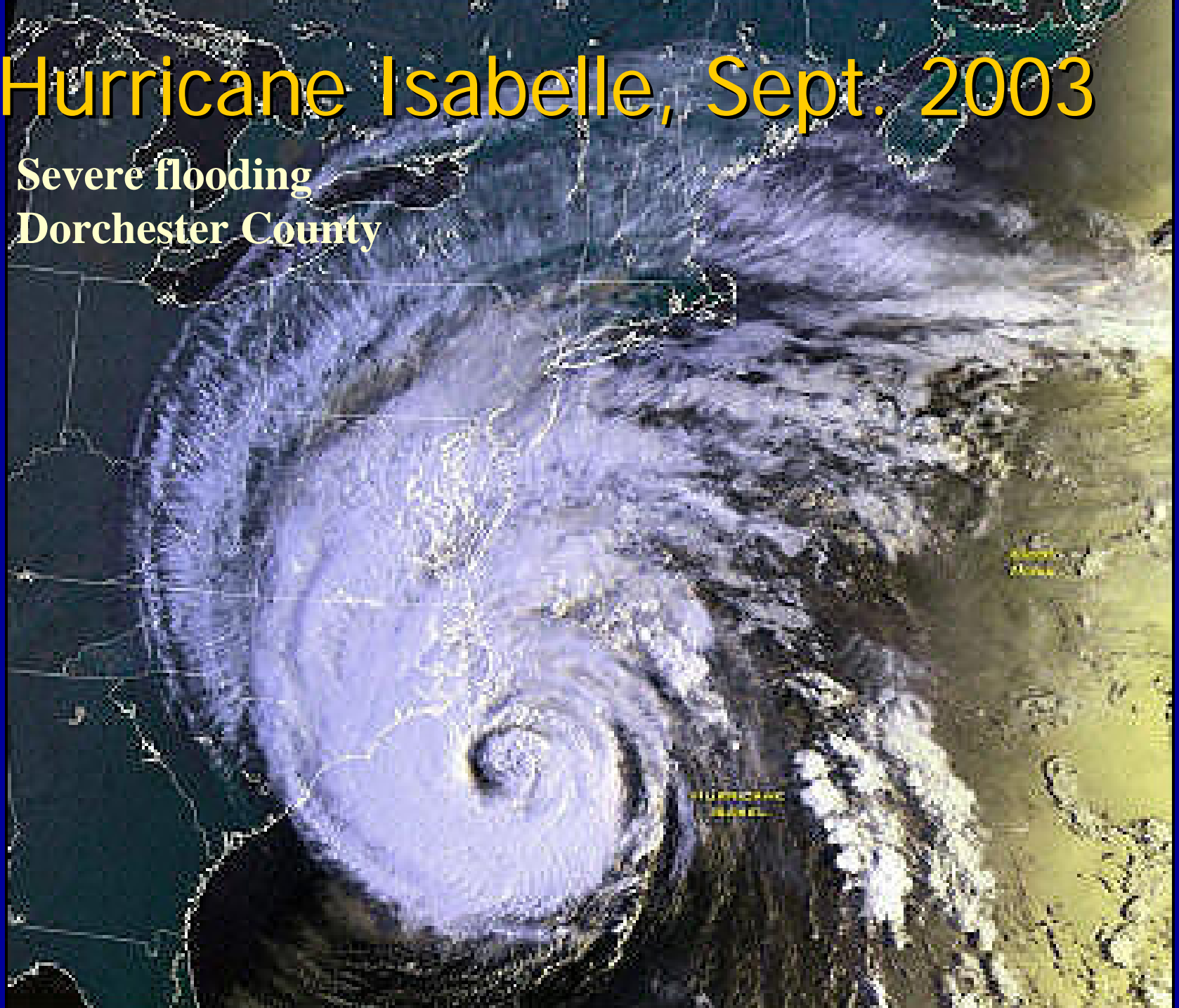
**Drastic effects  
to fragile wetlands**

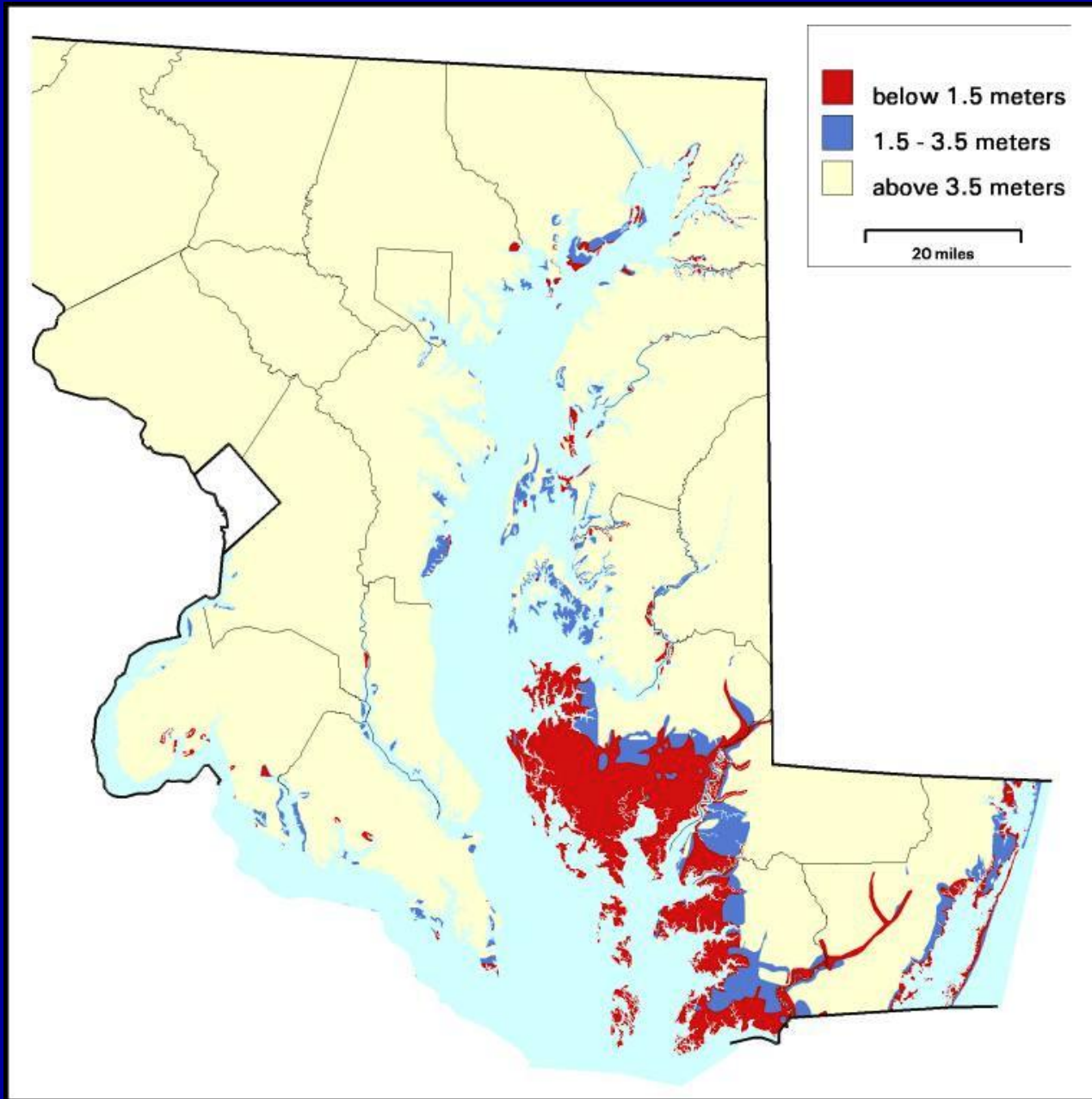




# Hurricane Isabelle, Sept. 2003

Severe flooding  
Dorchester County





**Inundation Model:  
Towson State Uni.  
2006**

**Dorchester County  
is at the greatest  
risk from rising  
sea levels**

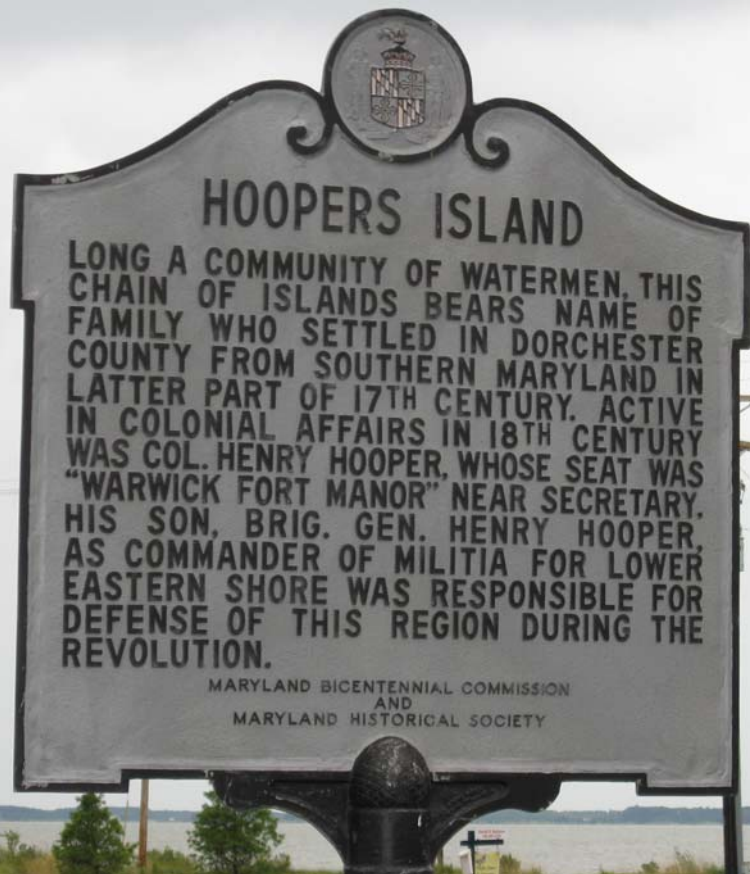


# Barren Island

**Managed by FWS**

**Protects Hooper's Island**





# Hooper's Island

Population Est.: 500

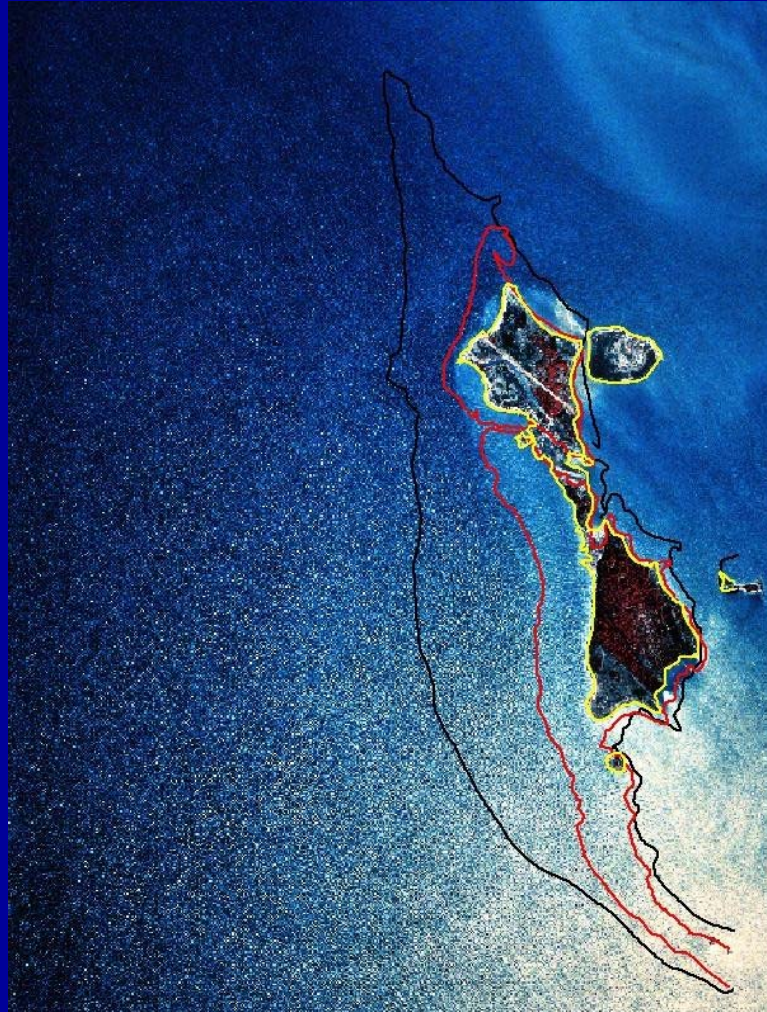
Seafood Industry





# BARREN ISLAND (1847-1994)

147 Years



**Barren Island  
has lost 78%  
of its acreage  
since 1884.**

839 acres (1847)

175 acres (1994)

664 acres lost

Date of photography 1994



# James Island

- Privately owned and part of the mid-Bay restoration project
- Will be used as a staging area for Blackwater restoration



**James Island protects  
Taylor's Island  
Population 300**



**James Island also  
Protects Madison  
and Woolford**



Population about 400 residents

WOOLFORD 2

Madison 5



# JAMES ISLAND (1847 - 1994)

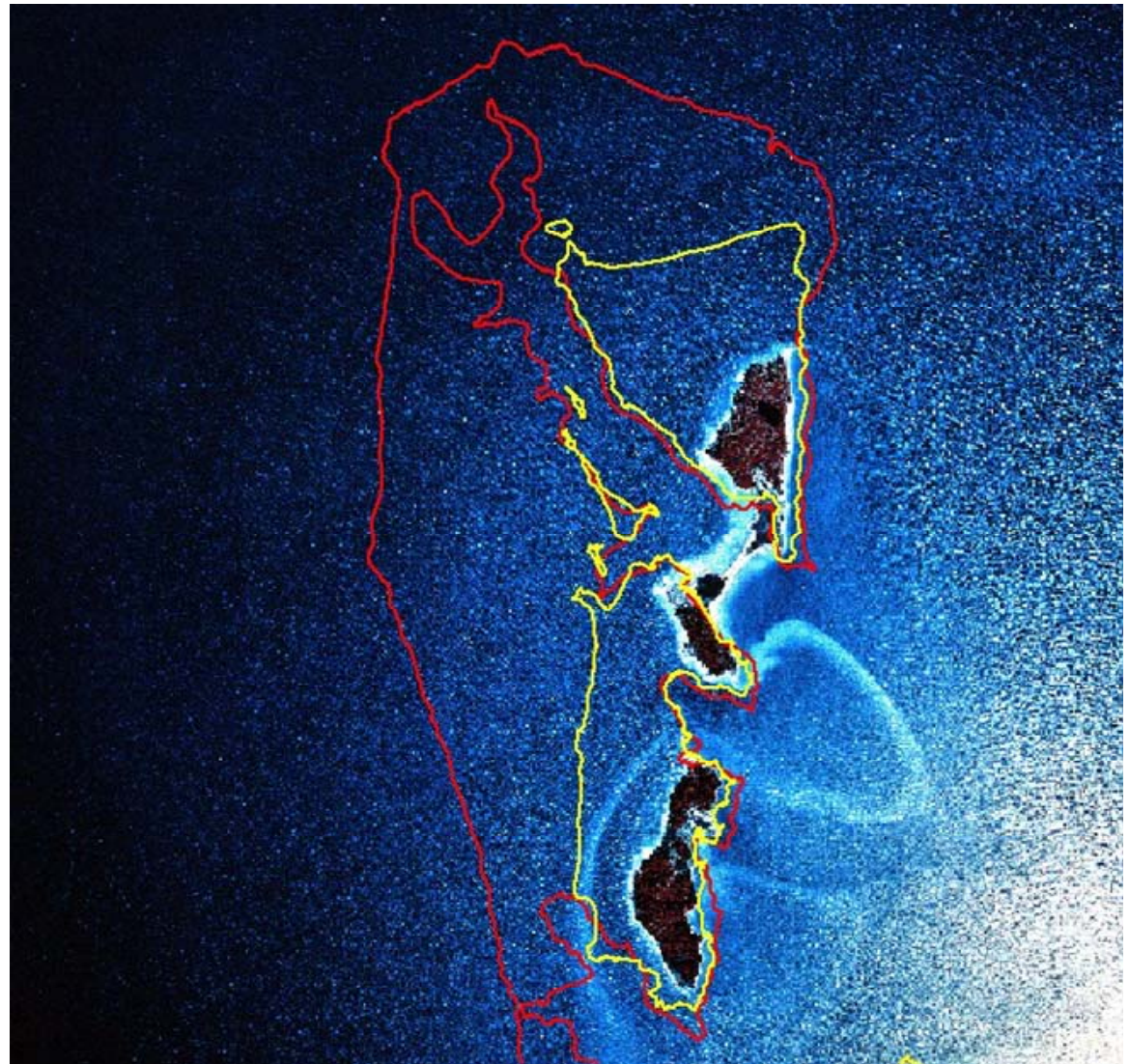
147 years

James has lost 91% of its acreage since 1847

976 acres (1847)

92 acres (1994)

884 acres lost



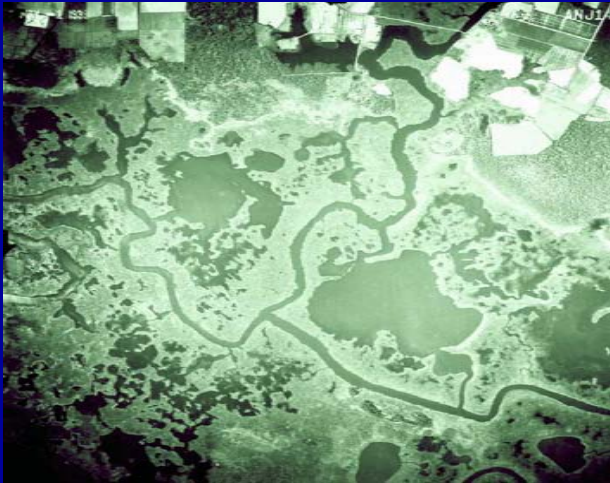
— 1847

— 1942

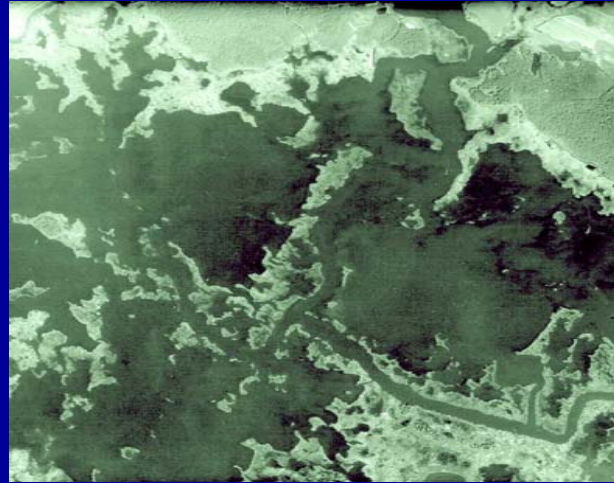
Date of Photography: 1994



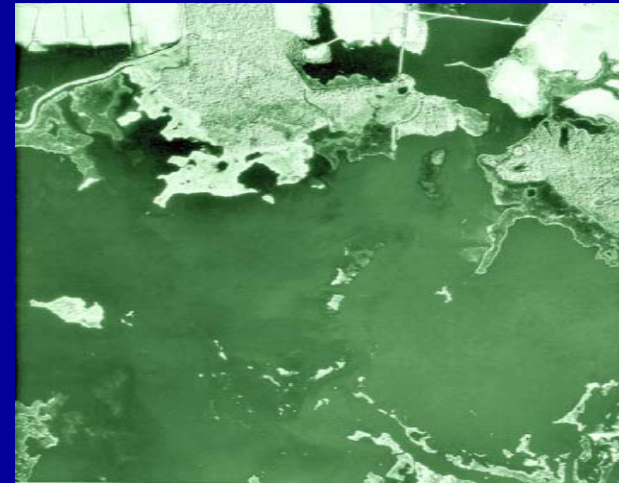
# Blackwater's Disappearing Wetlands



1938



1974



1989

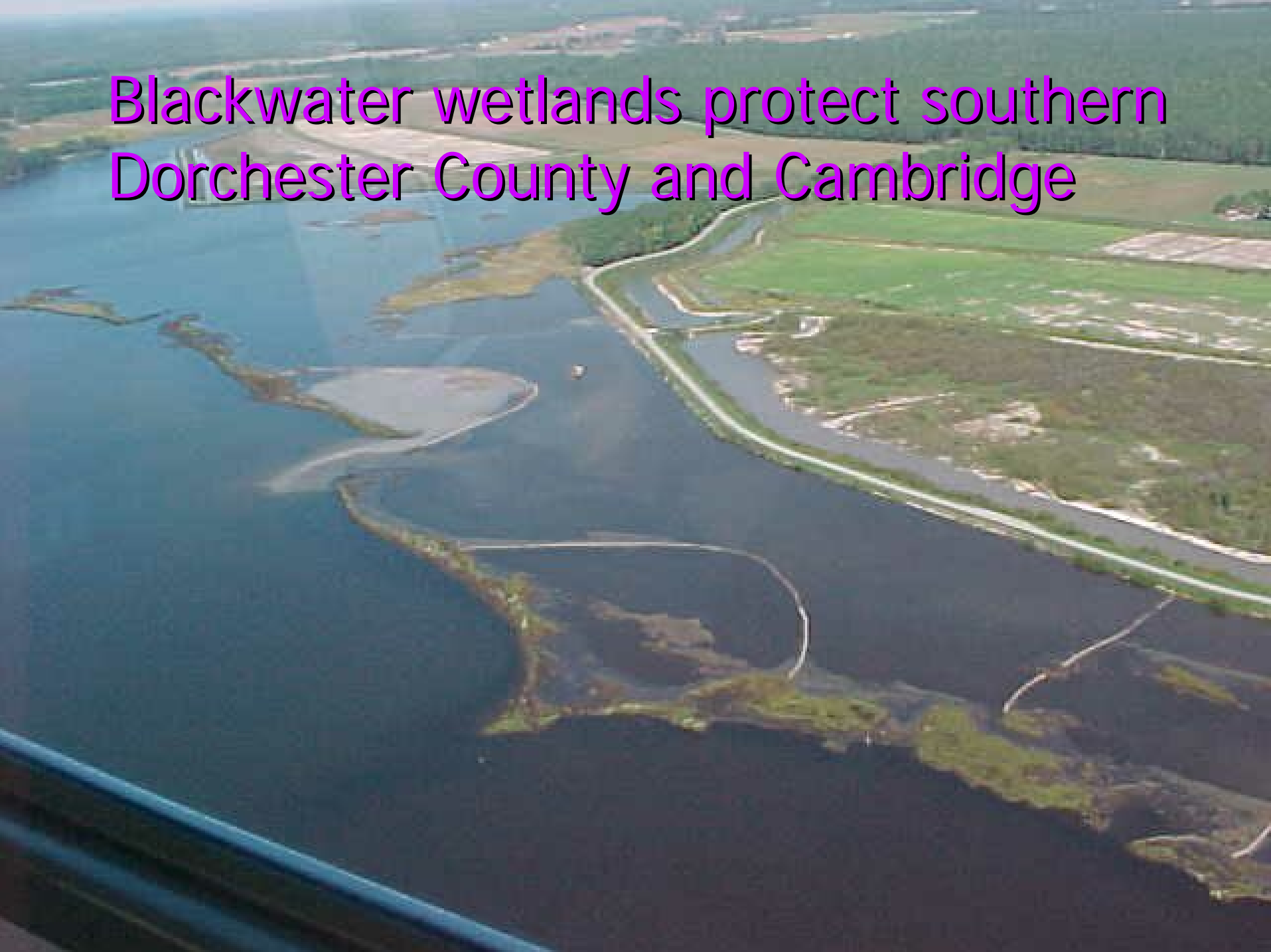
# 2007: "Lake Blackwater"



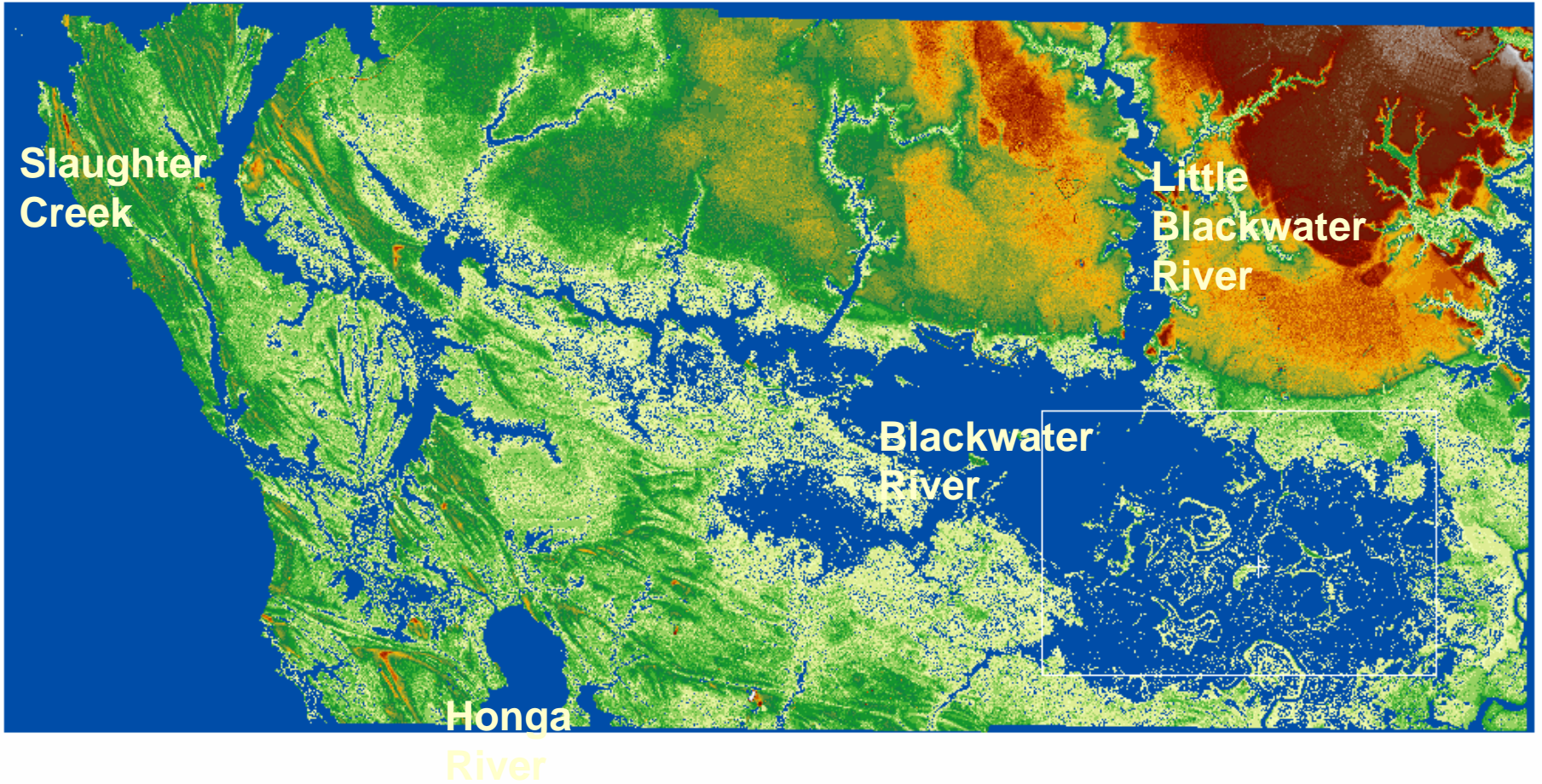
**Over 8,000 acres lost**



# Blackwater wetlands protect southern Dorchester County and Cambridge



# Curt Larsen (USGS) Model of Sea Level Rise over next 50 years

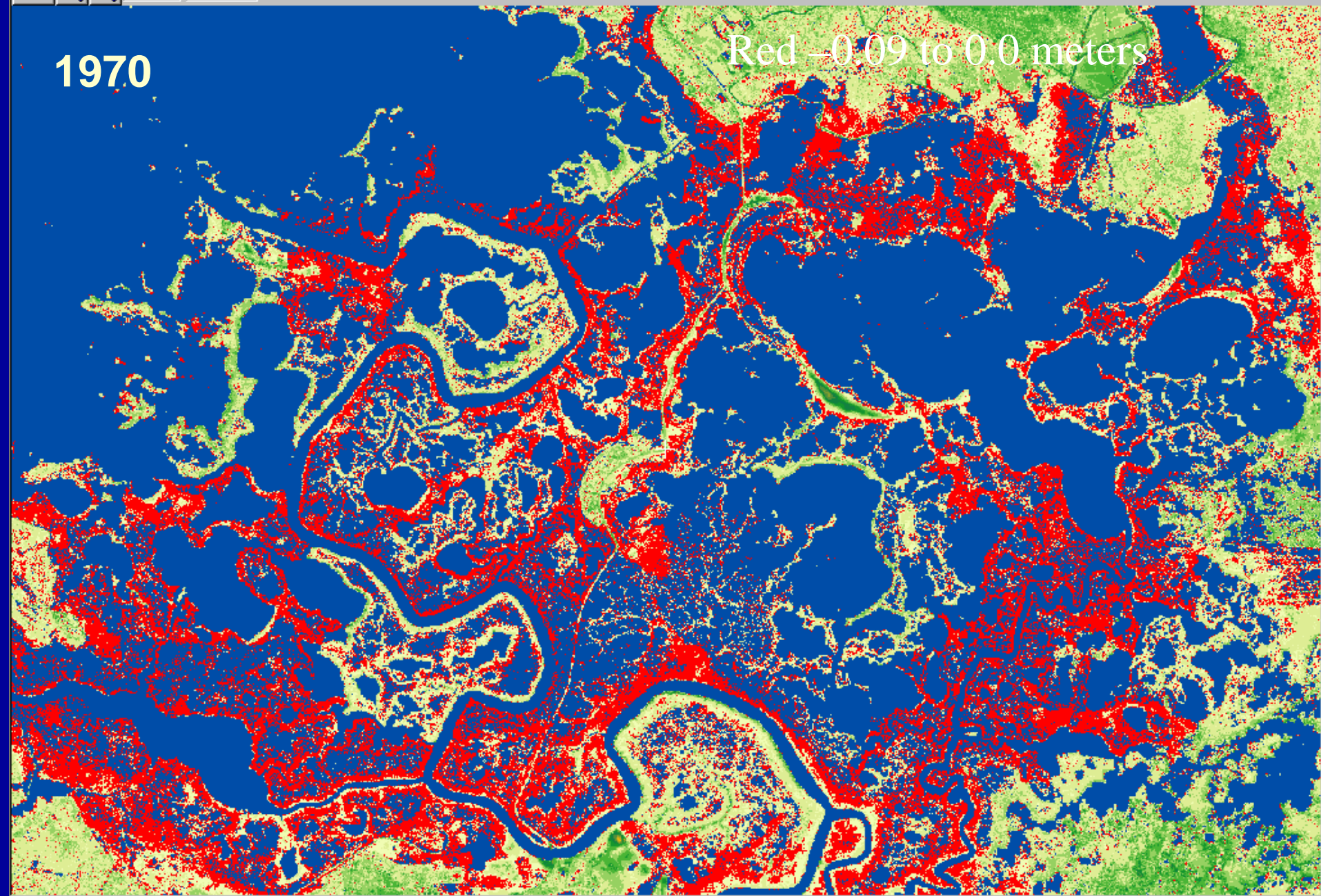


Blackwater National Wildlife Refuge LIDAR NAVD88 @ 0.0ft



1970

Red -0.09 to 0.0 meters

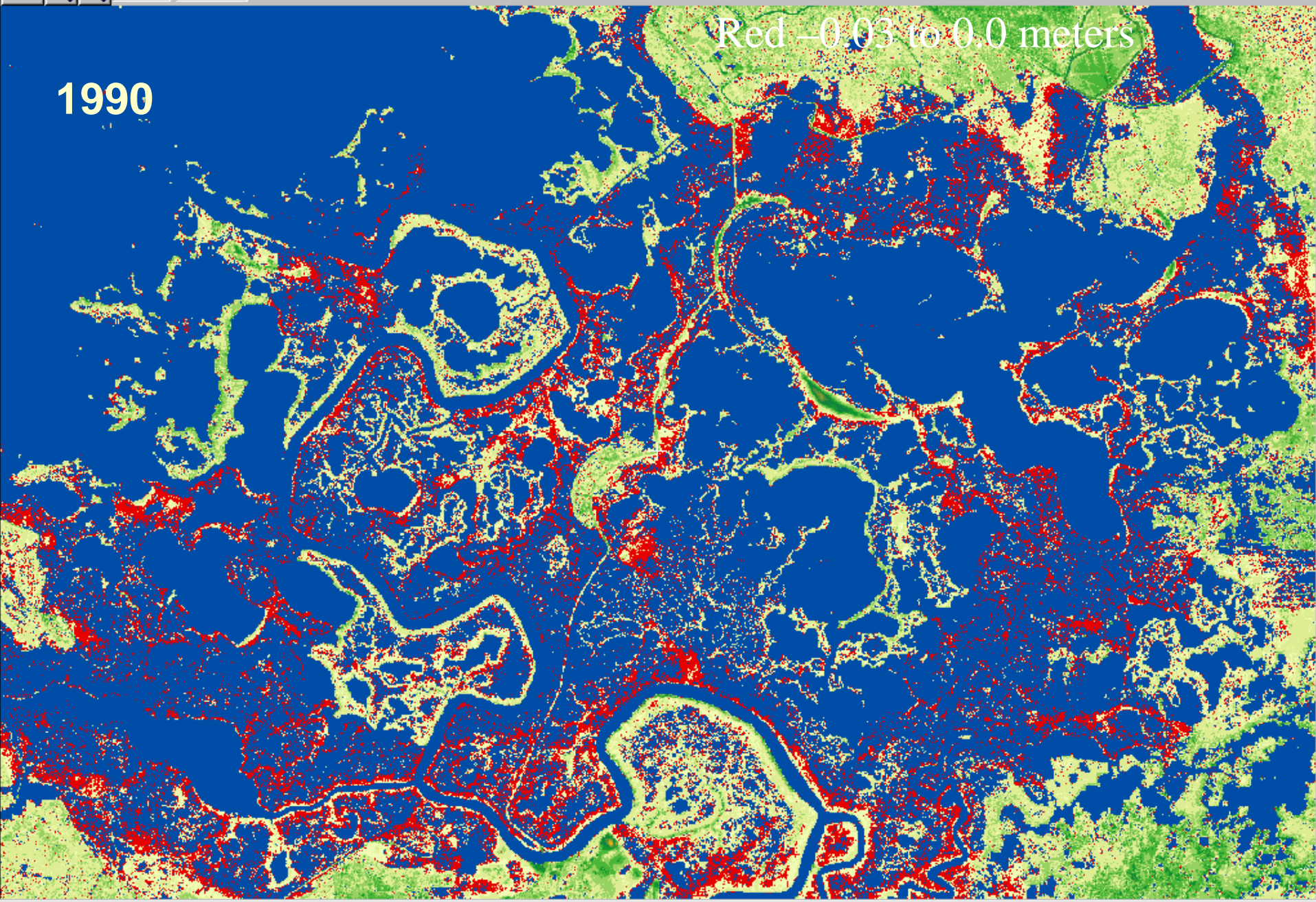


MHHW 1970



Red -0.03 to 0.0 meters

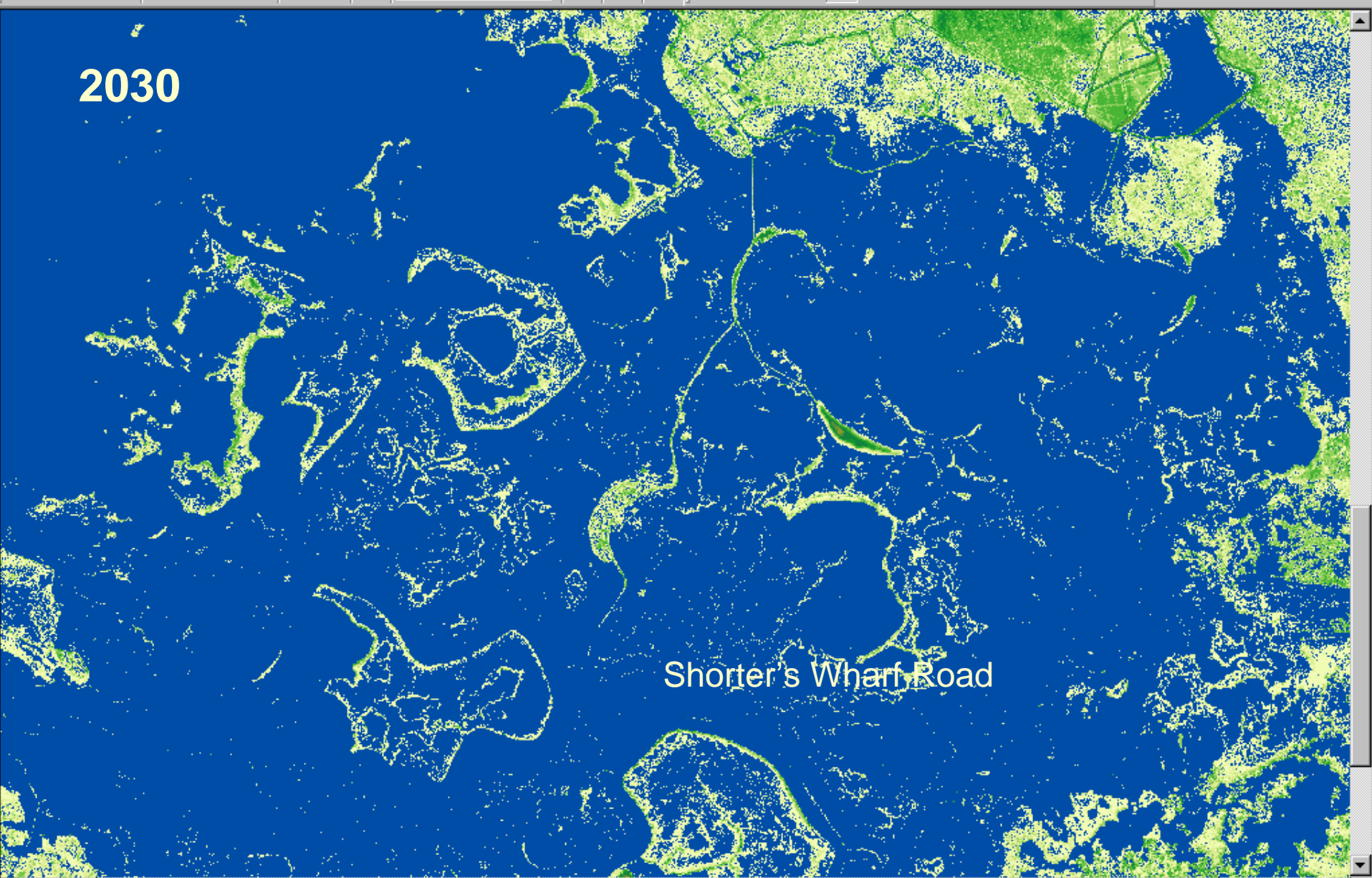
1990



MHHW 1990



2030



Shorter's Wharf Road

MHHW + 30 years

Blue is 0.09 meters

2050



MHHW + 50 years

Blue is 0.15 meters



# Efforts to Restore Blackwater Wetlands



- Reduce salt water intrusion
- Extirpate nutria
- Reduce resident Canada geese
- 1980s Wetland Restoration of 12 acres
- 2003 Wetland Restoration of 8 acres



# Installation of Weir: Stewart's Canal





**Control  
Resident  
Canada Geese**

**Eliminate  
Nutria**



**Three-square transplanted in 1982 restoration project**





# 1982 Restoration Site in 2005



FEB 13 2005



# 2003 Wetland Restoration

- Restore 8 acres of tidal wetlands at 3 sites
- Plant 70,000 marsh grass units
- Monitor plant success
- Sediment containability



# *Initial Containment*

**Installation of Straw Bales and Wooden Stakes**



**Water Depths were often too deep for thin layering and required 1 to 1.5 feet of fill**



**Floating Excavator moved pipeline**



**2003: 8 acres restored using  
on-site material**





**May 2003**





**June 2003**





**August 2003**





**August 2004**





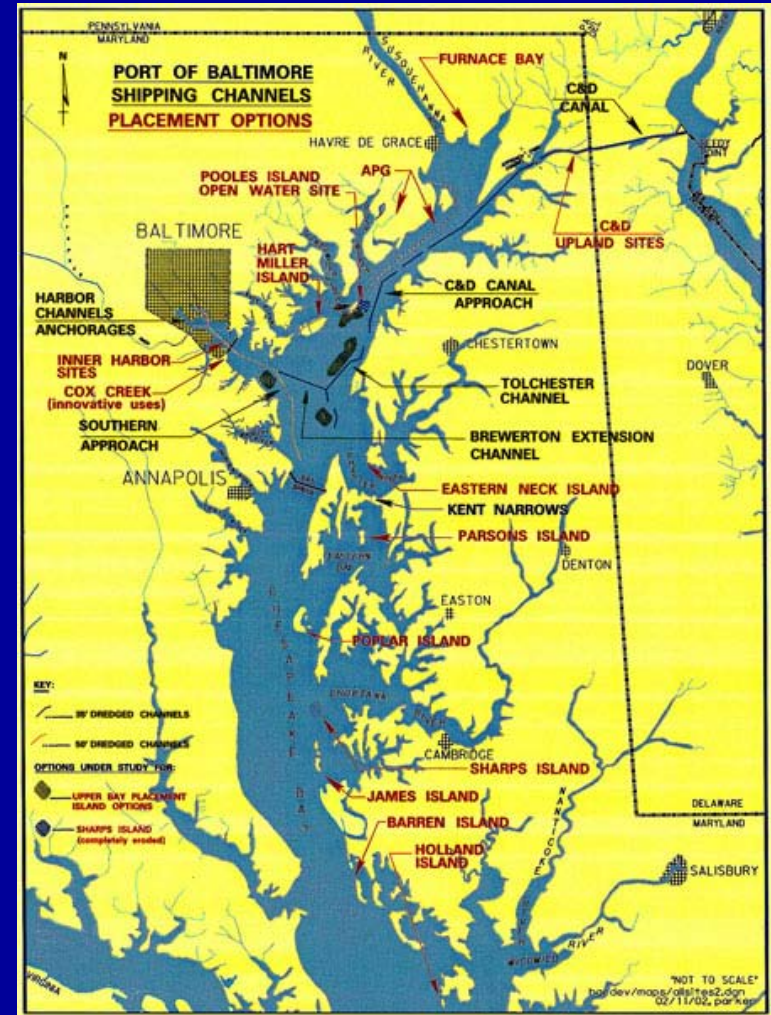
**August 2006**





# MD Port Administration: Channel Dredging to maintain access to Port of Baltimore

- Maintenance dredging of 3.5 to 4 million cubic yards per year



# Chesapeake Channel Sediments Used To Restore Wetlands: Poplar Island





# U.S. Army Corps Env. Impact Statement

## 3 Options:

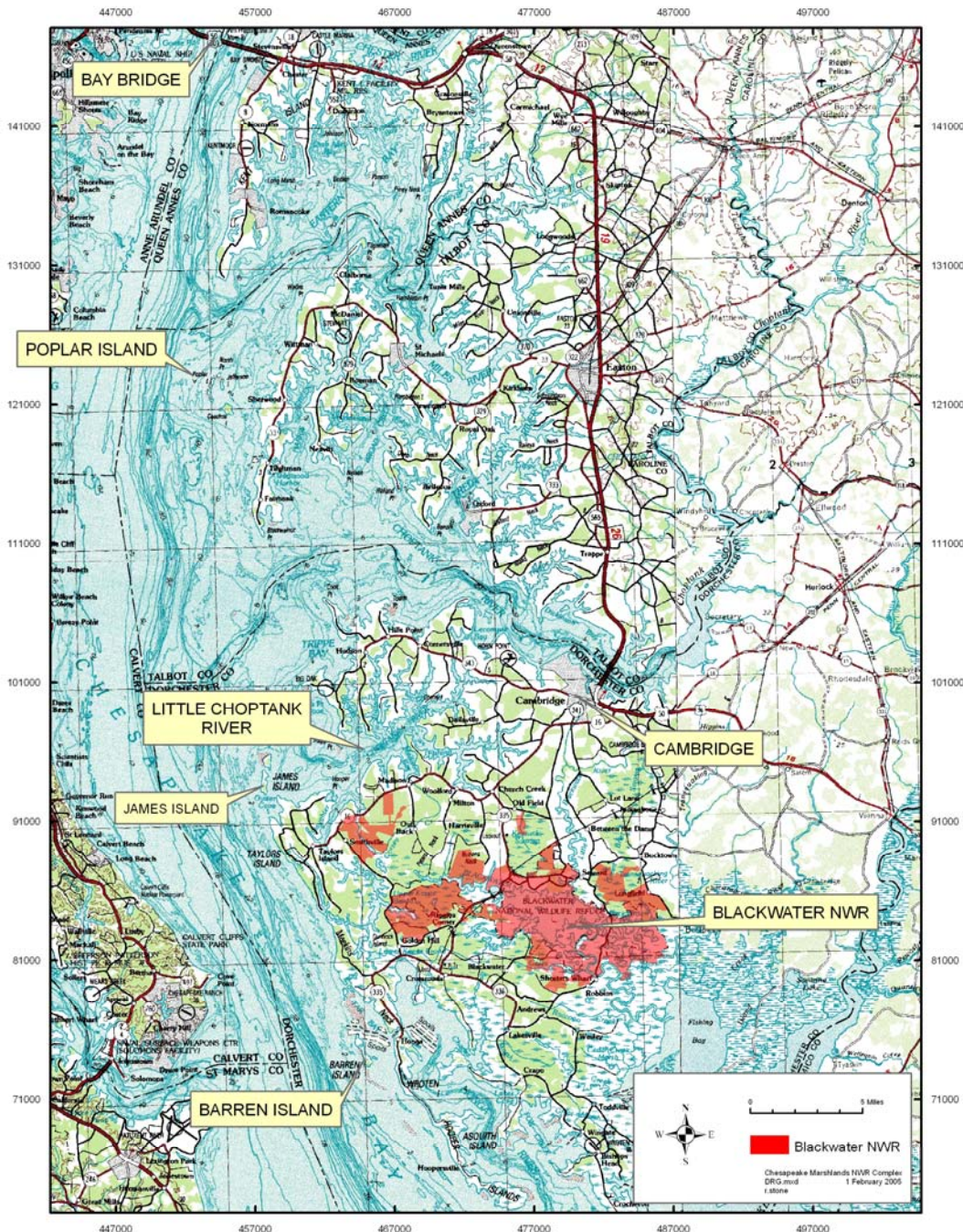
1. Expansion of  
Poplar Island

2. Barren & James Islands

3. Blackwater/Dorchester  
County







**Roughly 60 miles  
from the  
Bay Bridge  
by land**

**Blackwater is  
31 miles from  
Poplar Island and 5  
Miles from James  
Island by water**



**Dorchester Restoration  
provides placement  
opportunities  
for dredged material  
for over 50 years**



Demonstration Strategy Group (March 2007)

MD Port Administration

U.S. Army Corps

FWS

Aquarium

MD DNR

GBA/MES

Uni. of MD







**Public Meeting: May 30, 2007**

**Dorchester Citizen's Advisory Group:  
July 9, 2007**

**Technical Advisory Group:  
July 16, 2007**

- 
-



# 3 Wetland Restoration Projects

## 1. Small

Demonstration  
Using Off-site material

## 2. Medium

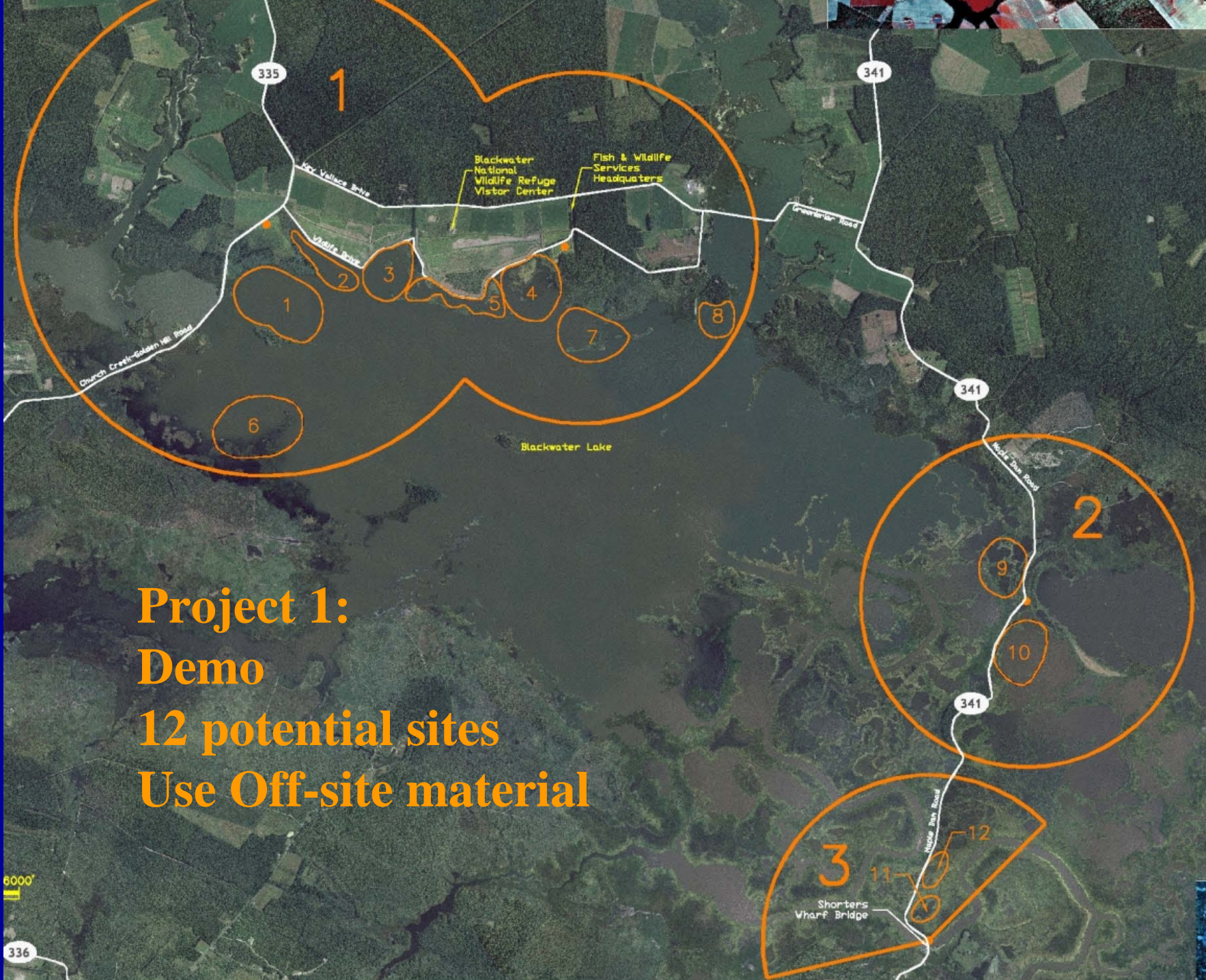
Barbados Emergency  
Using On-site material

## 3. XXX-Large

Chesapeake Marshlands)  
Using Off-site material







**Project 1:**  
**Demo**  
**12 potential sites**  
**Use Off-site material**

6000'

336



# Transportation Routes for Demonstration Project





**MD Port Admin. requires Dor. Co. Citizen's Advisory Group to recommend 1 site for Demonstration Project and method of transportation of material**

**Interim Committee: George Adams, Betsy Evans, Ann Rasmussen**





Barbados Island  
Blackwater National Wildlife Refuge  
Marsh Protection Project

Dike A:  
1800 ft. High Marsh Berm

Potential Dike  
Borrow Areas

Barbados  
Island

BLACKWATER RIVER

Potential Source of  
Organic Material

Marsh Cell 1  
30 Acres

Marsh Cell 2  
18 Acres

Marsh Cell 3  
10 Acres

Marsh Cell 4  
32 Acres

Marsh Cell 5  
18 Acres

BARBADOS POND

**Project 2: Barbados Island  
Restore 100 acres  
On-site material**

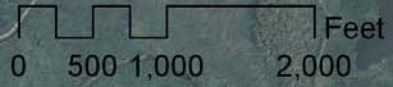
Potential Mineral Clay  
Borrow Area

Dike B:  
1200 ft. High Marsh Berm

Equipment Access  
Route/Staging Area

Dike C:  
700 ft. High Marsh Berm

- Project Features**
- Features**
- High Marsh Berm
  - Marsh Cell
  - Potential Borrow Area





# CHESAPEAKE MARSHLANDS INTERIM PROJECTS

**Project 1**

10 Acre Dredged Material  
Wetland Development Project

Emergency Marsh Erosion  
Protection Project

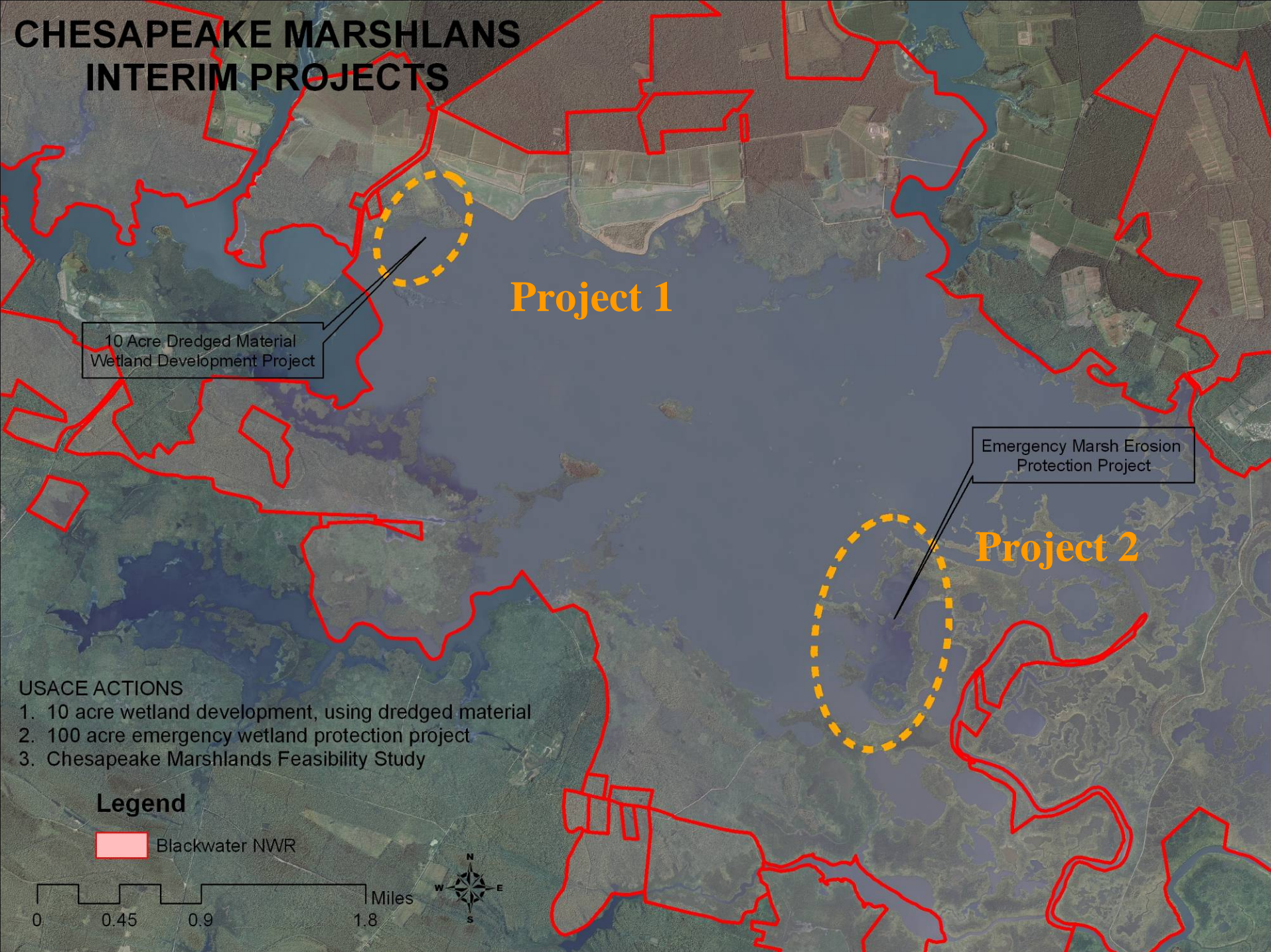
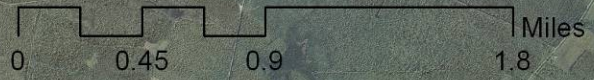
**Project 2**

### USACE ACTIONS

- 1. 10 acre wetland development, using dredged material
- 2. 100 acre emergency wetland protection project
- 3. Chesapeake Marshlands Feasibility Study

### Legend

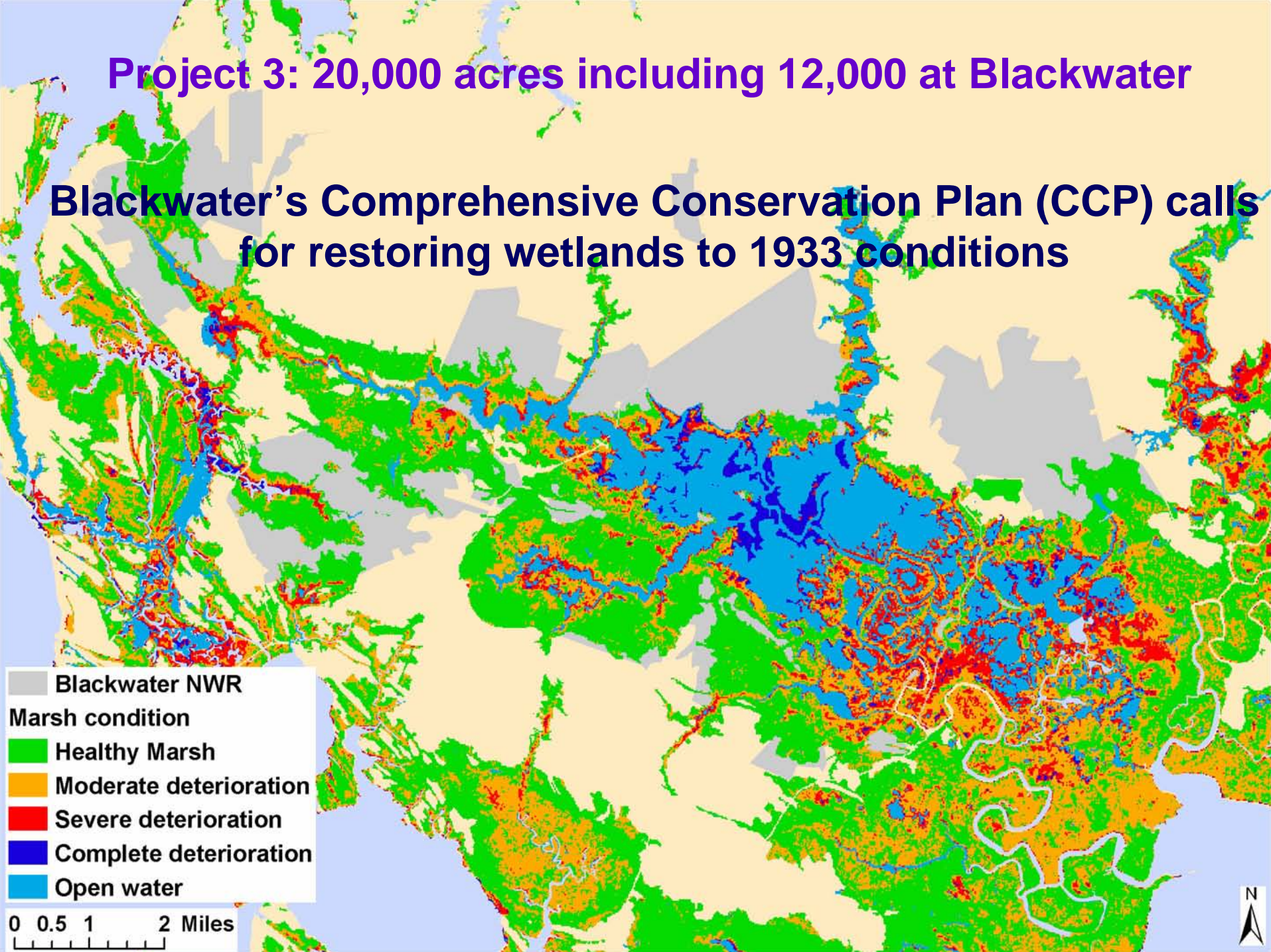
 Blackwater NWR





## Project 3: 20,000 acres including 12,000 at Blackwater

**Blackwater's Comprehensive Conservation Plan (CCP) calls for restoring wetlands to 1933 conditions**





# POTENTIAL COSTS

1. **Demonstration (unknown until site is selected)**
2. **Barbados Island Marsh Erosion Project**
  - Estimate: \$3,600,000 for 100 acres
3. **Chesapeake Marshlands Feasibility Study**
  - Estimate: \$10.5 Million for 4 year study
  - Implementation Program: General Investigation (Maryland Eastern Shore Authority)

***CURRENTLY NO FUNDS HAVE BEEN ALLOCATED***





## *Would You Like to Help Restore Wetlands?*

1. Consider volunteering for Public Speaking
2. Tell Your Friends and Neighbors
3. Contact Dixie Birch at 410-228-2692, ext. 118

