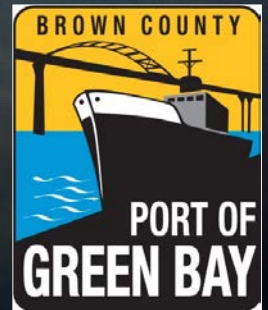


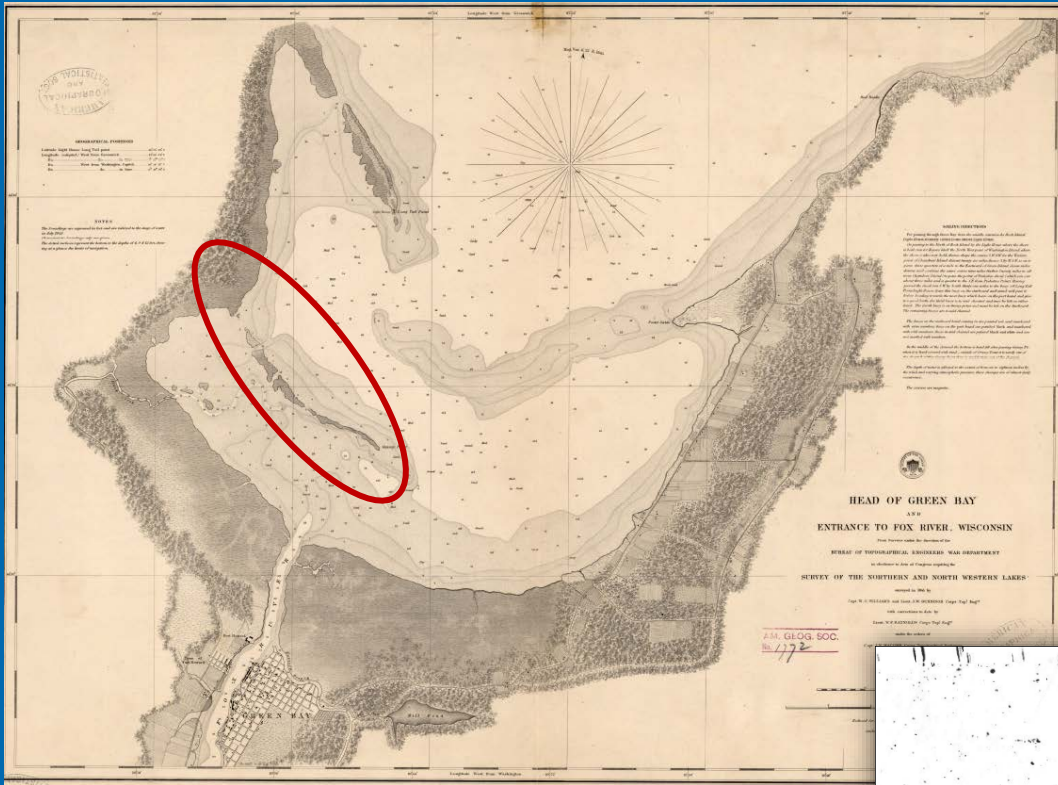
# Cat Island Chain Restoration

Brown County Port & Resource  
Recovery Department

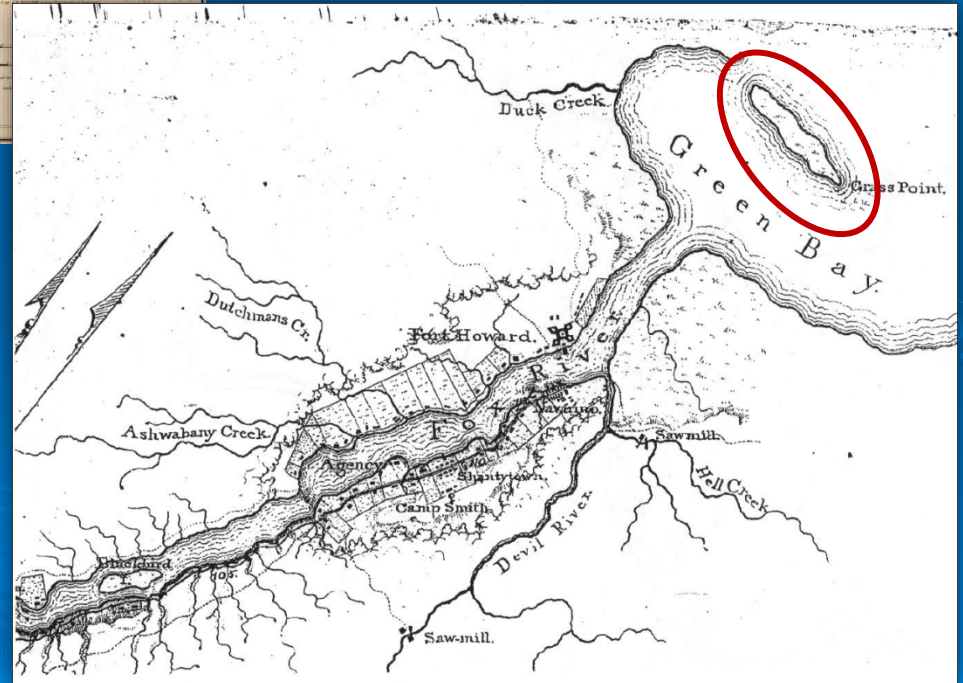


March 7, 2018

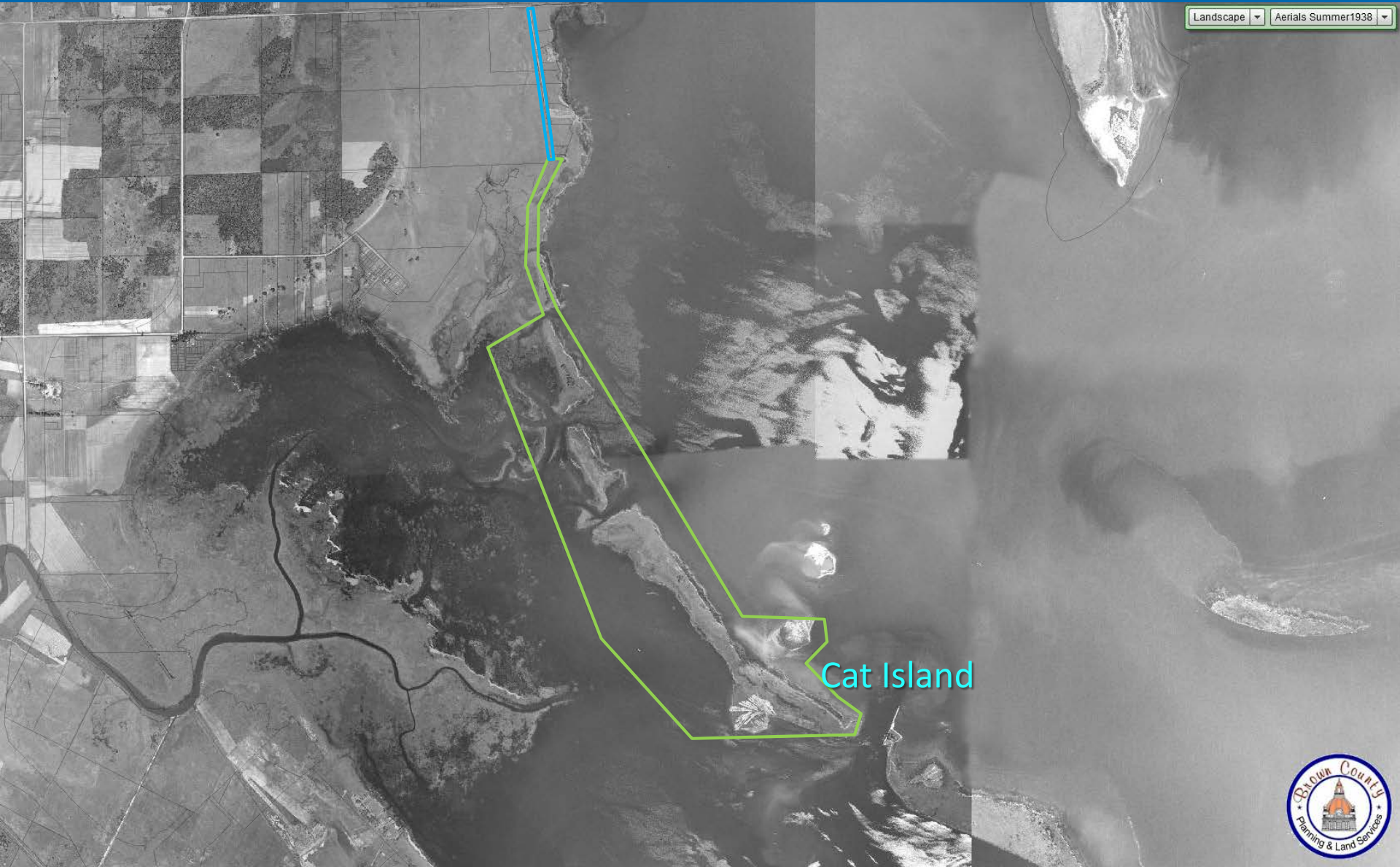
# 1845 Chart of Green Bay & Fox River



# 1820s Fox River Military Road Map to Fort Howard



# Cat Island Chain - 1938



A historical black and white photograph showing a wide, shallow body of water, likely a bay or estuary, with numerous small islands and mud flats. The water is calm, and the surrounding land is flat with some buildings visible in the distance. The overall scene is a vast, open landscape.

## Historic Western view of lower Green Bay

- Expansive emergent marshes (e.g. Duck Creek delta, Peats Lake)
- Numerous small islands
- Beaches and mud flats
- Submerged aquatic plant beds



Bass Islands

Willow Island

Cat Island

Lone Tree Island

Navigation Channel

Grassy Island

1966 during low water levels  
Islands extend 2.5 miles into Green Bay

*Photo Courtesy of Tom Erdman, 1966*

Little Tail Point

Long Tail Point

Peter's Marsh

Cat Island Chain

Peter's Lake

Duck Creek Delta

Rock dikes hardened the shoreline

Municipal incinerator and landfill

Long Tail Point

Cat Island

Bass Islands

Duck Creek Delta Marsh

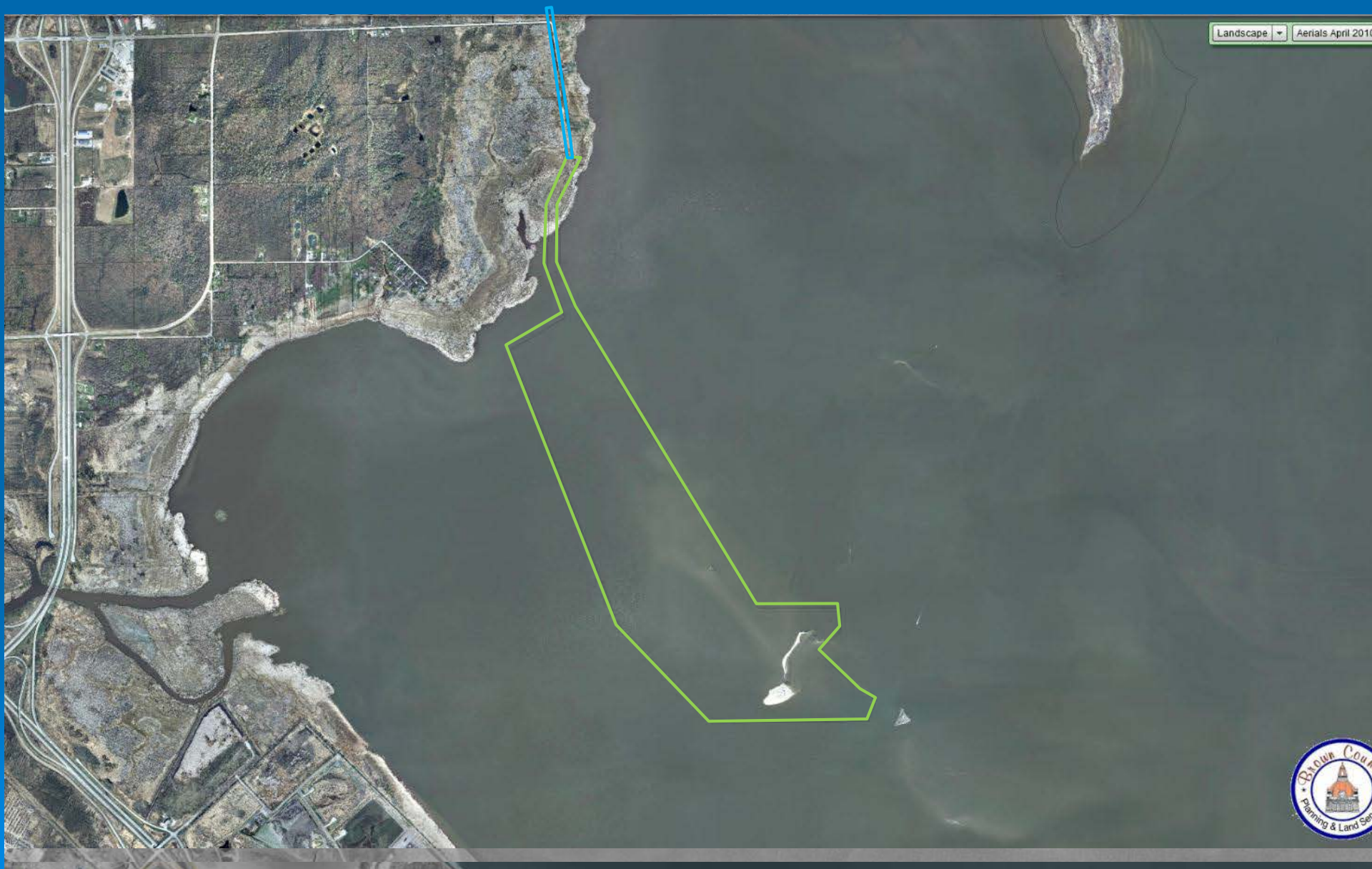
Landfill

I-43 Construction

90% of Coastal Wetlands  
Lost from Southern  
Green Bay

Agriculture

# Cat Island Chain – 1960-2010





# Project Beginning

- The Cat Island Chain project developed out of the 1988 Lower Green Bay Remedial Action Plan (RAP) and was the top priority project for habitat restoration.



Members of the Citizens Advisory Committee and DNR staff worked together to develop the Lower Green Bay Remedial Action Plan. *(Photo by Dave Crehore)*



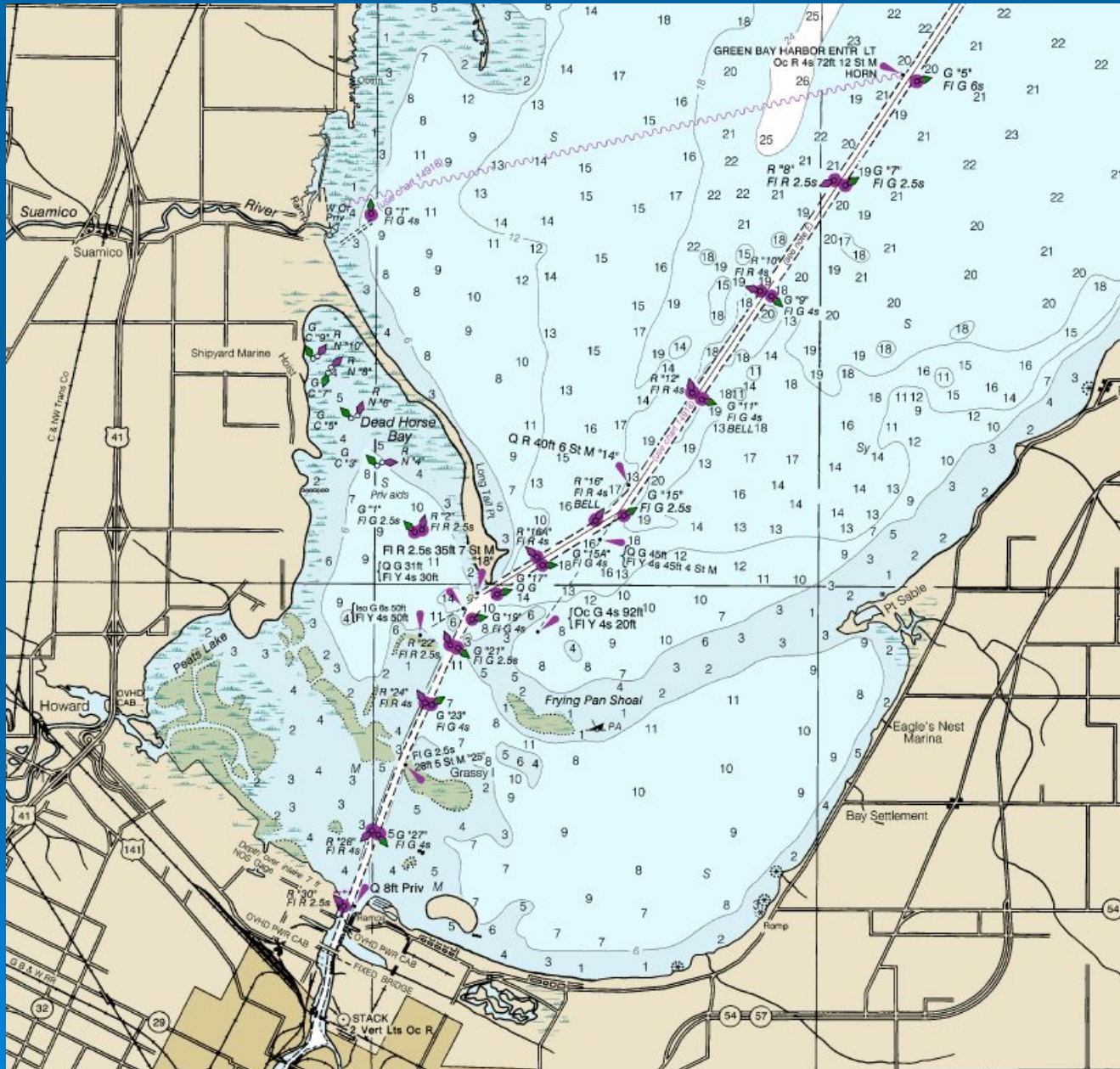
Runoff  
April 15, 2011

Cat Island

Duck Creek River

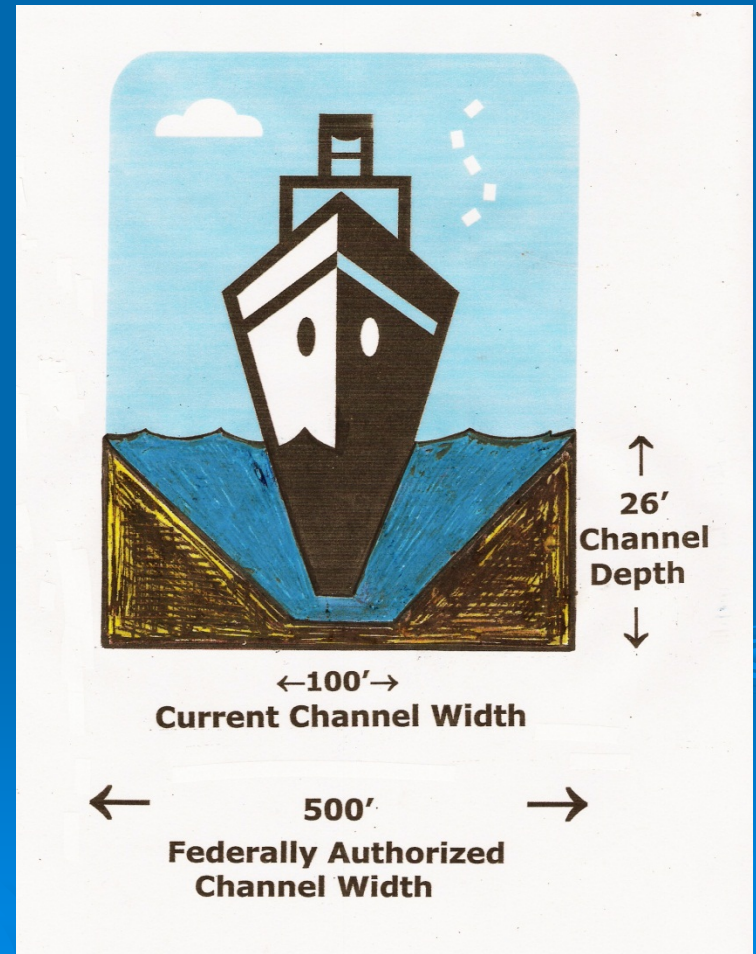


# Green Bay Shipping Channel



# Annual Dredging

- Annual maintenance dredging is necessary to keep the Port of Green Bay active
- Annual dredging of 100,000 to 250,000 CY of sediment that has settled into the 14 mile long navigational channel



# Project Goals

- Restore diversity of island and aquatic habitats
- Recreate 1960s island “footprint”
- Enhance spawning and nursery grounds for various fish species (e.g. yellow perch, musky, pike, walleye, sunfish)
- Create disposal capacity
- Beneficially use dredged material from the maintenance of the Port of Green Bay



*Photo by WDNR 1969*

# Project Partners

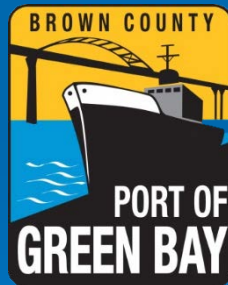
## ➤ Partnership between:

- Brown County, WDNR, WDOT, US Fish & Wildlife Service
- US Army Corps of Engineers, USEPA, UW-Sea Grant, UW-Green Bay
- Port Operators and the Fox River Group of paper mills

## Cat Island Advisory Committee (CIAC)



US Army Corps  
of Engineers®



Citizen  
Member





# Construction Phase I - June 2012



Cat Island



# Construction Phase II - October 2012



December 17, 2012





May 16, 2013



	Tons	(\$)
Gravel	41,788	\$ 158,379
Core Stone	504,411	\$ 1,743,609
Armor Stone	161,666	\$ 1,611,829
<b>Total</b>	<b>707,865</b>	<b>\$ 3,513,817</b>

**Approx. 34,000 truckloads**

November 12, 2013  
**95% Complete**

# Project Costs

	Original	Actual
Project Cost	\$ 34,190,889	\$ 19,281,931
Less Brown County GLRI Grant	<u>\$ 1,500,000</u>	<u>\$ 1,450,053</u>
Total Project Costs	\$ 32,690,889	\$ 17,831,878
65% Federal Share	\$ 21,249,078	\$ 11,182,838
35% Non-Federal Share	<u>\$ 11,441,811</u>	<u>\$ 6,649,040</u>
Total Project Costs	\$ 32,690,889	\$ 17,831,878
Non-Federal Funding Sources		
WDOT Harbor Assistance Grant	\$ 7,141,835	\$ 5,319,232
NRDA Funds	\$ 800,000	\$ 800,000
Terminal Operator Harbor Fees	\$ 499,000	\$ 529,808
Brown County	\$ 336,459	\$ -
Brown County In-Kind	<u>\$ 150,000</u>	<u>\$ -</u>
Total Non-Federal Funds	\$ 8,927,294	\$ 6,649,040
25% Non-Federal In-Kind Contribution	\$ 8,172,722	\$ 4,457,970
10% Non-Federal Cash Contribution	\$ 3,269,089	\$ 1,783,188



# Sediment Disposal

Island	Area (acres)	Storage Capacity (yards <sup>3</sup> )	Years Remaining (assume 2 yr cycles and sequential filling)
West Island	74	900,000	8
Central Island	92	1,140,000	22
East Island	106	1,680,000	40

Only outer harbor “clean sediments” will be placed onto the islands

September 9, 2014



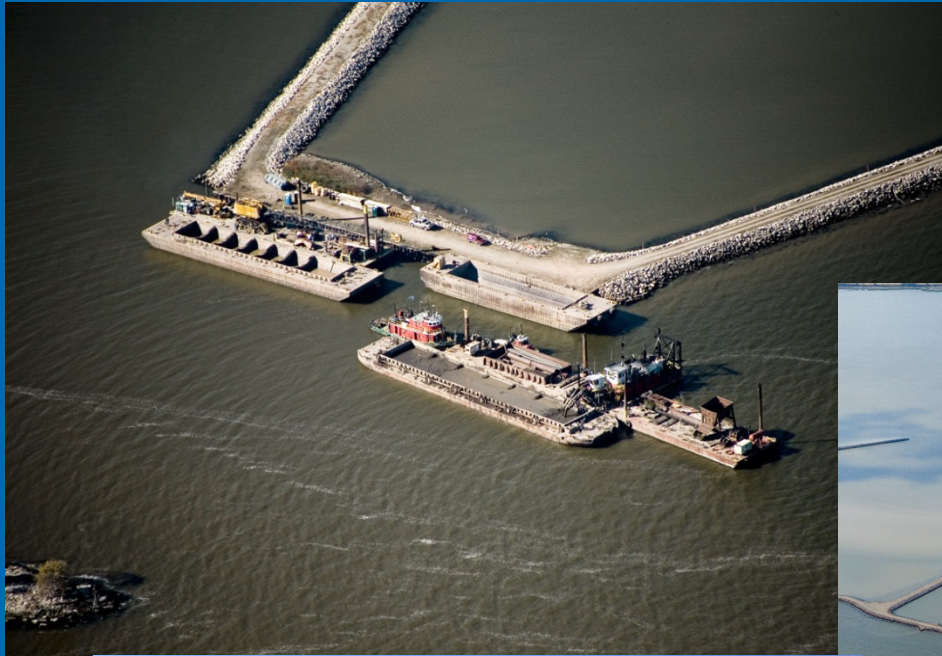
May 7, 2015



July 2, 2015



October 24, 2016





October 26, 2016



April 21, 2017



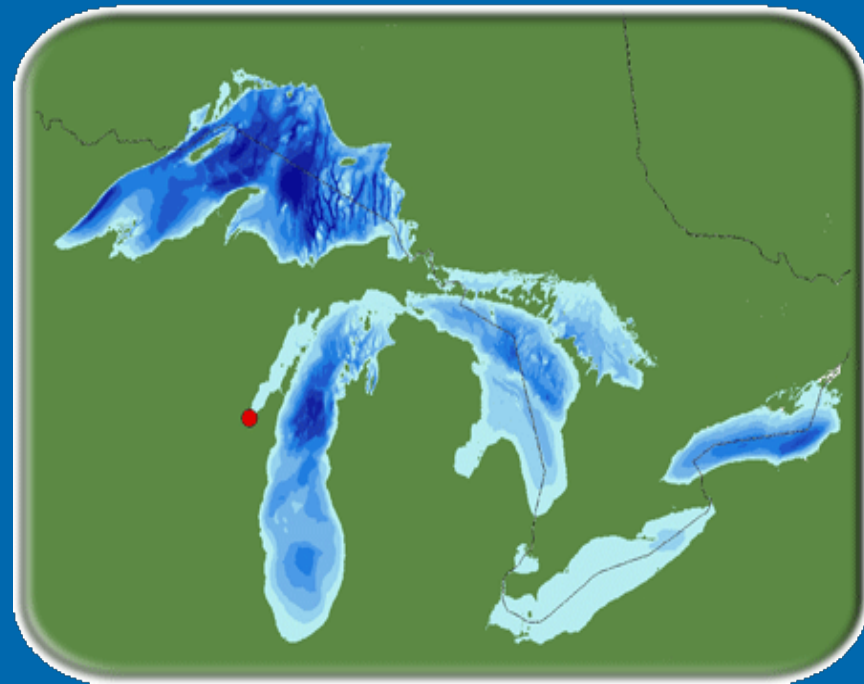
# Habitat Impacts



- Colonial Nesting Water Birds
- Shorebirds
- Waterfowl
- Fish Spawning
- Fish Nurseries
- Turtles
- Amphibians
- Invertebrates

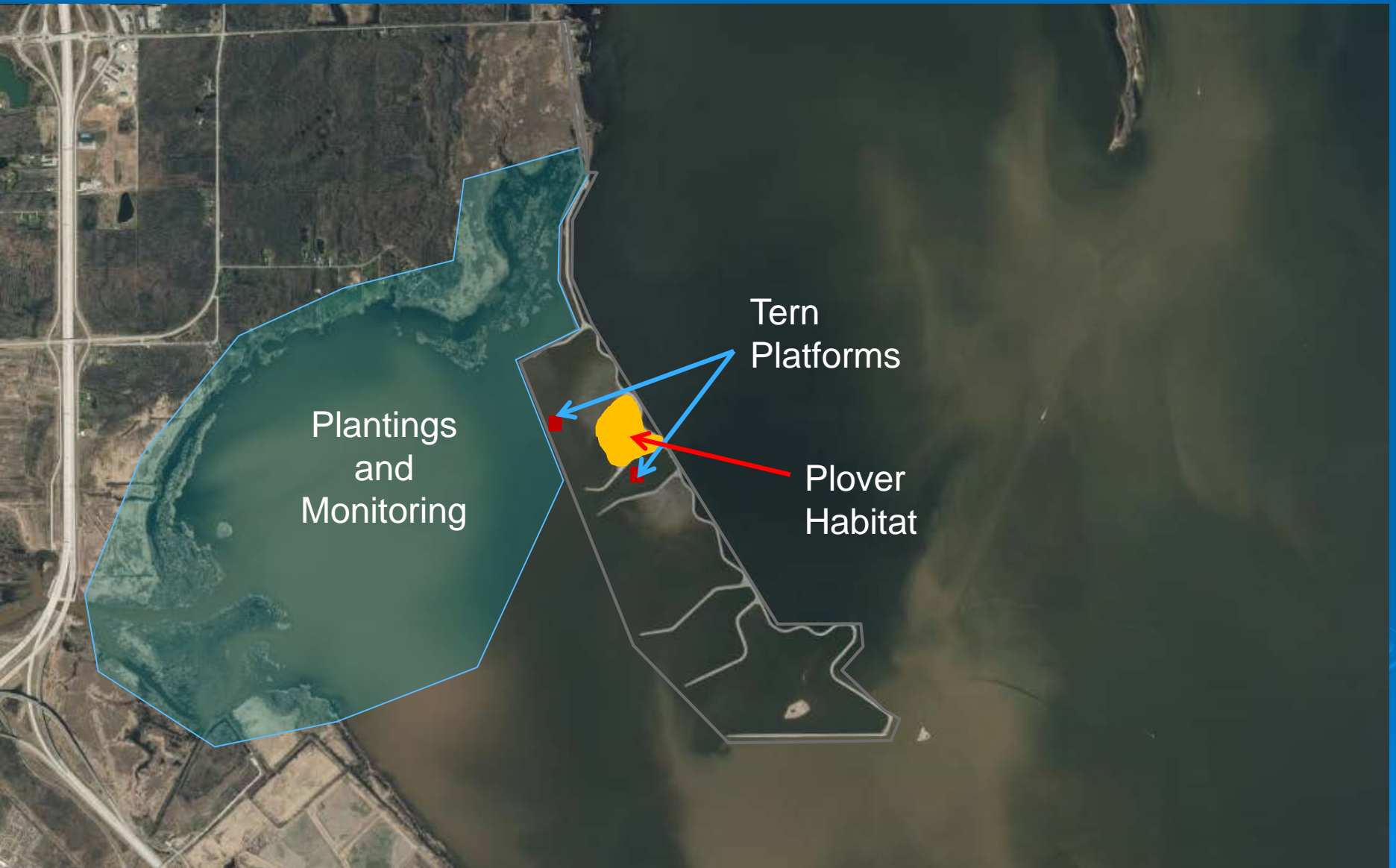
# Importance of the area

- Interior sites gaining recognition for importance
- Lower Green Bay identified as important shorebird staging area
- 35 species reported via eBird in Wisconsin portion of Green Bay



American Avocets

# Cat Island Habitat Projects



# Piping Plover

- Piping Plover successfully bred on westernmost island in 2016 & 2017
  - First local breeding in 75+ years



# Tern Platforms



# Wild Rice Planting





# FY17 Dredging Activities



# On-Going Issues

## ➤ Management

- Cat Island Advisory Committee (CIAC)

## ➤ Public Access

- Public Safety
- Sensitive Wildlife Habitat Area

## ➤ Filling

- Sequence and Timing
- Removal of Causeway



# Public Access



November 8, 2017



## 2017 CENTER CELL BARRIER INSTALLATION



Approximately 2300 LF of geotextile lined gabion-style barrier placed across the back of the center island

# Barrier Construction



Barrier



Image © 2018 TerraMetrics

Google Earth

# Cat Island Chain - 2017

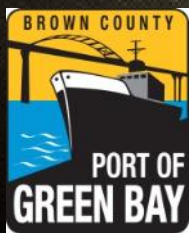


# Project Outcomes

- 30-50 years worth of disposal capacity
- Beneficial reuse of dredged material
- 2.5 mile wave barrier and re-establishment of 272 acres of islands
- Wave barrier protecting 1,225 acres and providing critical habitat for birds, fish and mammals
- Improved water clarity increasing weed growth for fish spawning and serving as a nursery and improved migratory bird sanctuary/lay over



# Questions?



**Mark Walter**  
*Brown County Port & Resource  
Recovery Department*