



## St. Marys River Little Rapids Ecosystem Restoration



July 31, 2013

**5<sup>th</sup> Annual Conference on Ecosystem Restoration**  
**July 29 – August 2, 2013**

# The Spirit of Cooperation



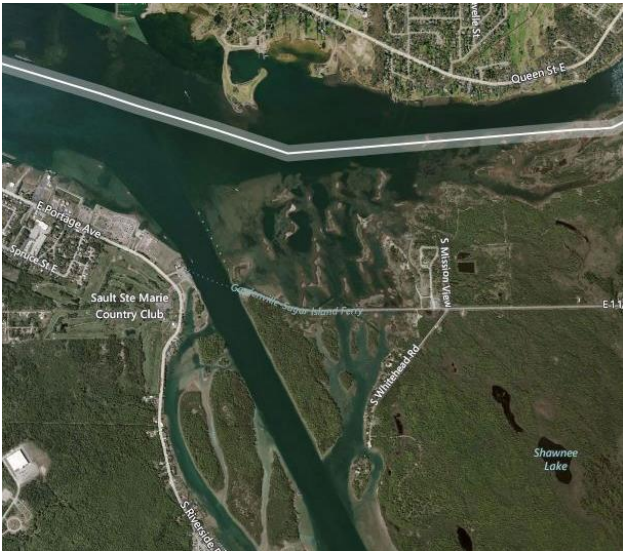
LAKE SUPERIOR  
STATE UNIVERSITY



**Bi-National Public Advisory Council  
For the St. Marys River Area of Concern**



# Project Location



# Background

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- In 2008 the BPAC concluded that restoration activities at the Little Rapids Site “will increase populations of desired fish species in the St. Marys River AOC and will lead to the removal of the BUIs for fish and wildlife populations.”
- In 2009 MDEQ and a coalition of stakeholders advanced restoration plans for culverts at the causeway to restore lost habitat.
- A 2009 pre application meeting identified the need for hydraulic modeling and preparation of an EA.
- In 2012 The Eastern Upper Peninsula Planning Commission received a grant from NOAA to develop a hydraulic model, prepare an EA and complete Engineering and Design Plans.
- In 2013 model is complete, EA is under review and plans are being finalized.
- Construction is planned for as early as 2014



Alternate A



**The causeway currently restricts flow at the site. The only area where water may pass is through two culverts underneath the causeway.**

# Little Rapids Habitat Restoration Project Site

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*circa 2013*

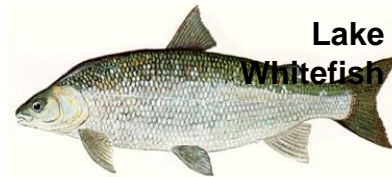
# Little Rapids Habitat Restoration Project Site



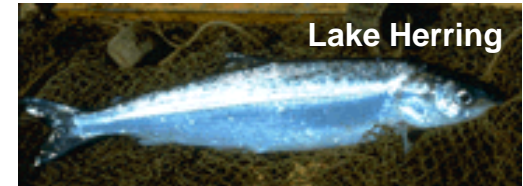
*circa 1900*

# Goals and Objectives: Why Restore the Rapids?

- Rapids are productive habitat for a number of important species.
- Much of the historic rapids in the St. Marys River have been destroyed.
- Habitat is limiting fishery populations in the St. Marys River.
- An improved fishery will have economic benefits.



Lake Whitefish



Lake Herring



Lake Sturgeon



Walleye



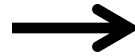
- ① Main Rapids
- ② Little Rapids
- ③ Rapids btwn Sugar Island and Neebish Island
- ④ West of Neebish Island



# Primary project goal – restore water flow



**Lentic (still)  
water**

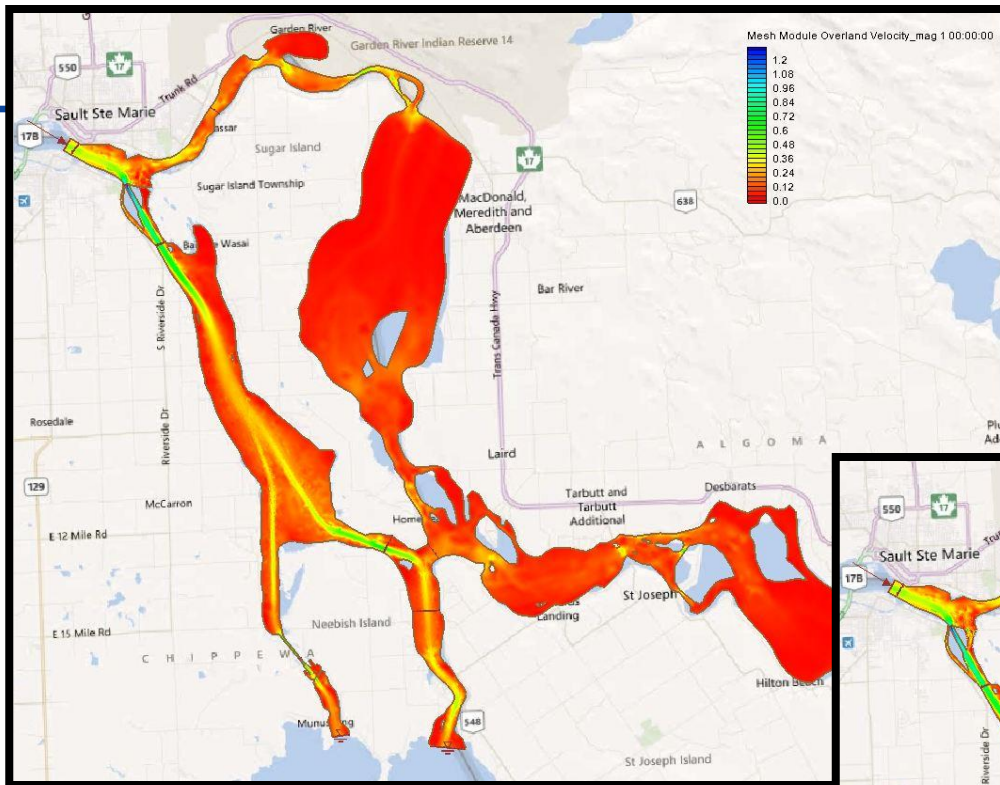


**Lotic (moving)  
water**

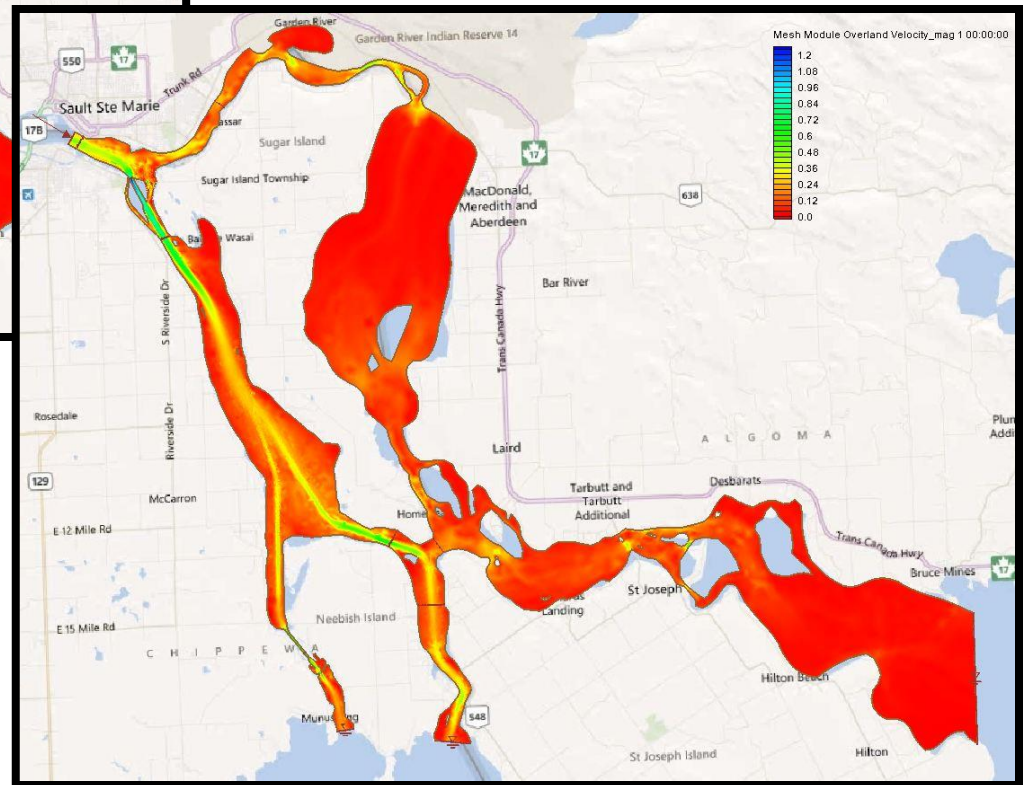
# Approach / Methodology

- Restoration of the Little Rapids identified as a good idea by resource agencies in late 90's
- Previous studies and permit “pre-application” meetings laid the ground work for current project
- Previous studies identified the need for...
  - Sediment sampling
  - Flow modeling / monitoring investigation
  - Environmental Assessment
  - Engineering and design for modified causeway
- Critical to understand impacts to...
  - Commercial shipping
  - Island ferry (ice, flows)
  - Habitat
  - Recreation





**Velocities, water depths and flow are identical for all alternatives considered for most of the study area. Only near the Little Rapids area are differences predicted (See Table Inset for differences).**



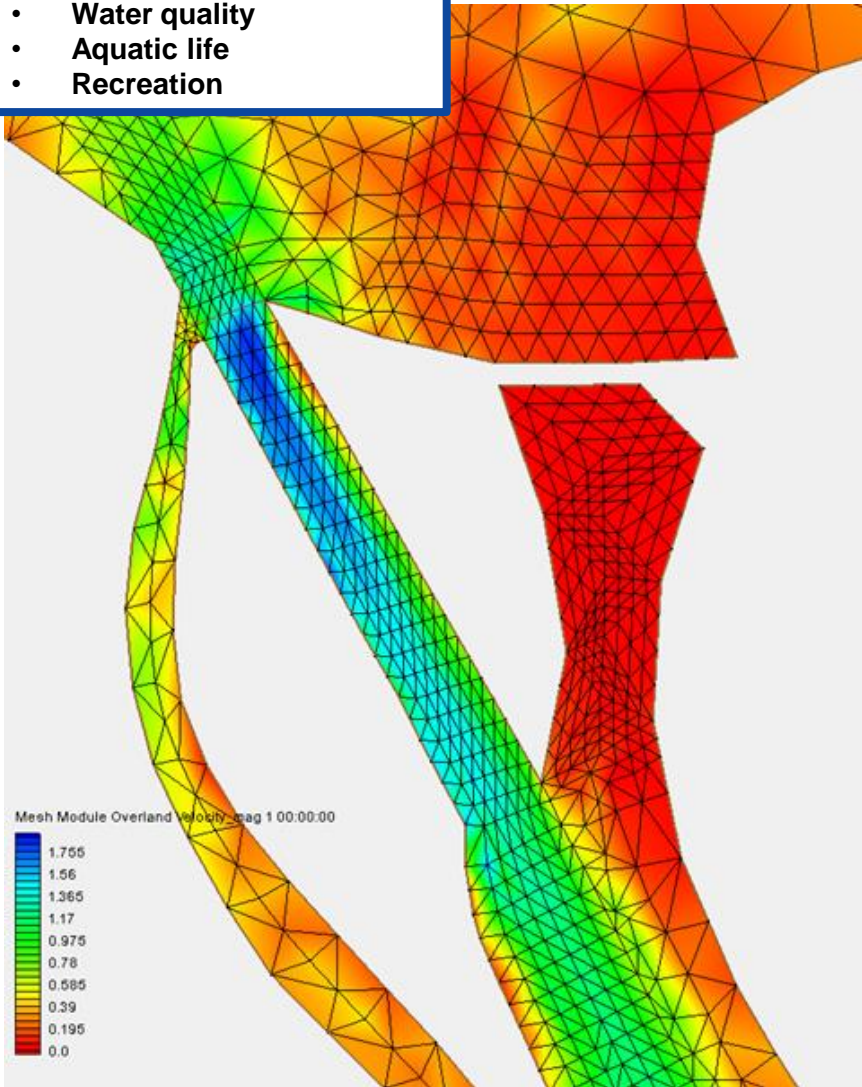
Diff. between Existing Conditions and No Causeway at 82,000 CFS

Location	Discharge (CFS)	Max Velocity (feet/sec)	Water Surface Elevation (feet IGLD)
Shipping Channel	-3,742	-0.2	<0.05
North Channel	-176	0.0	<0.05
Lower Little Rapids	3,918	3.0	-0.1
St. Marys River below Cloverland Power Canal	0	0	0

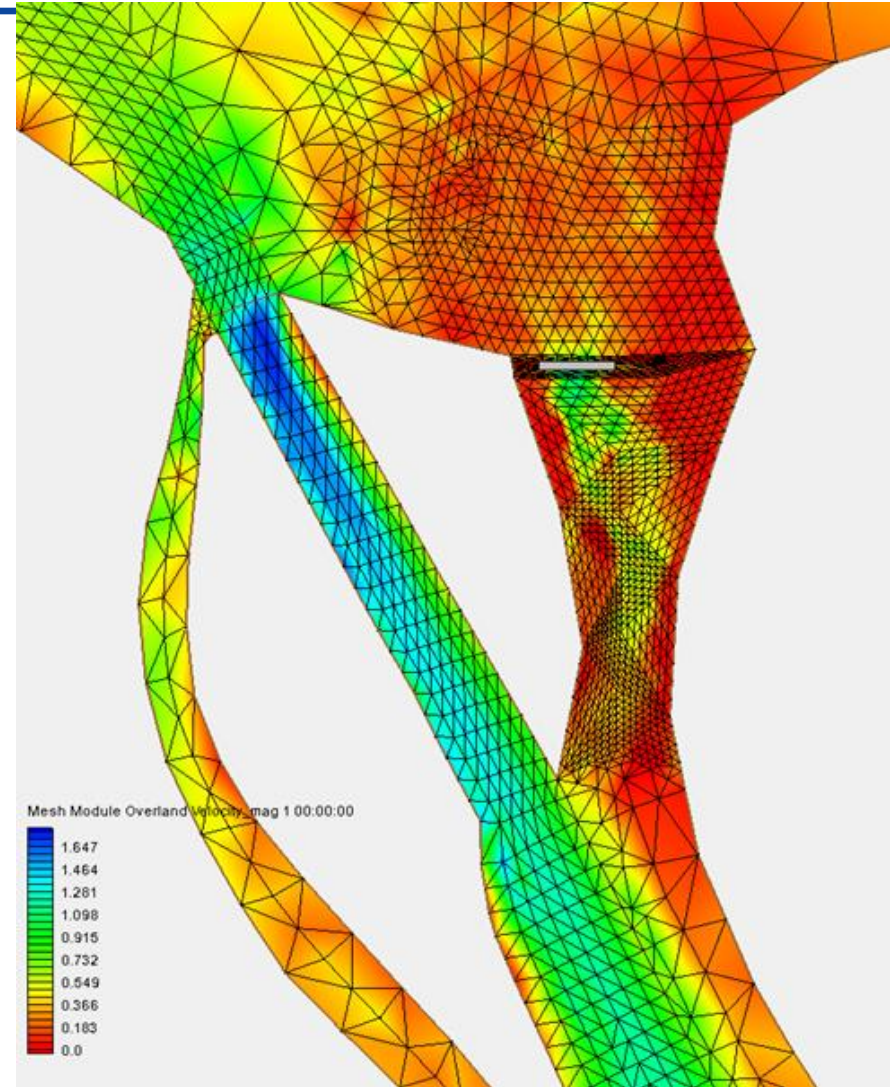
**Impacts Related to Velocity:**

- Ice formation
- Water quality
- Aquatic life
- Recreation

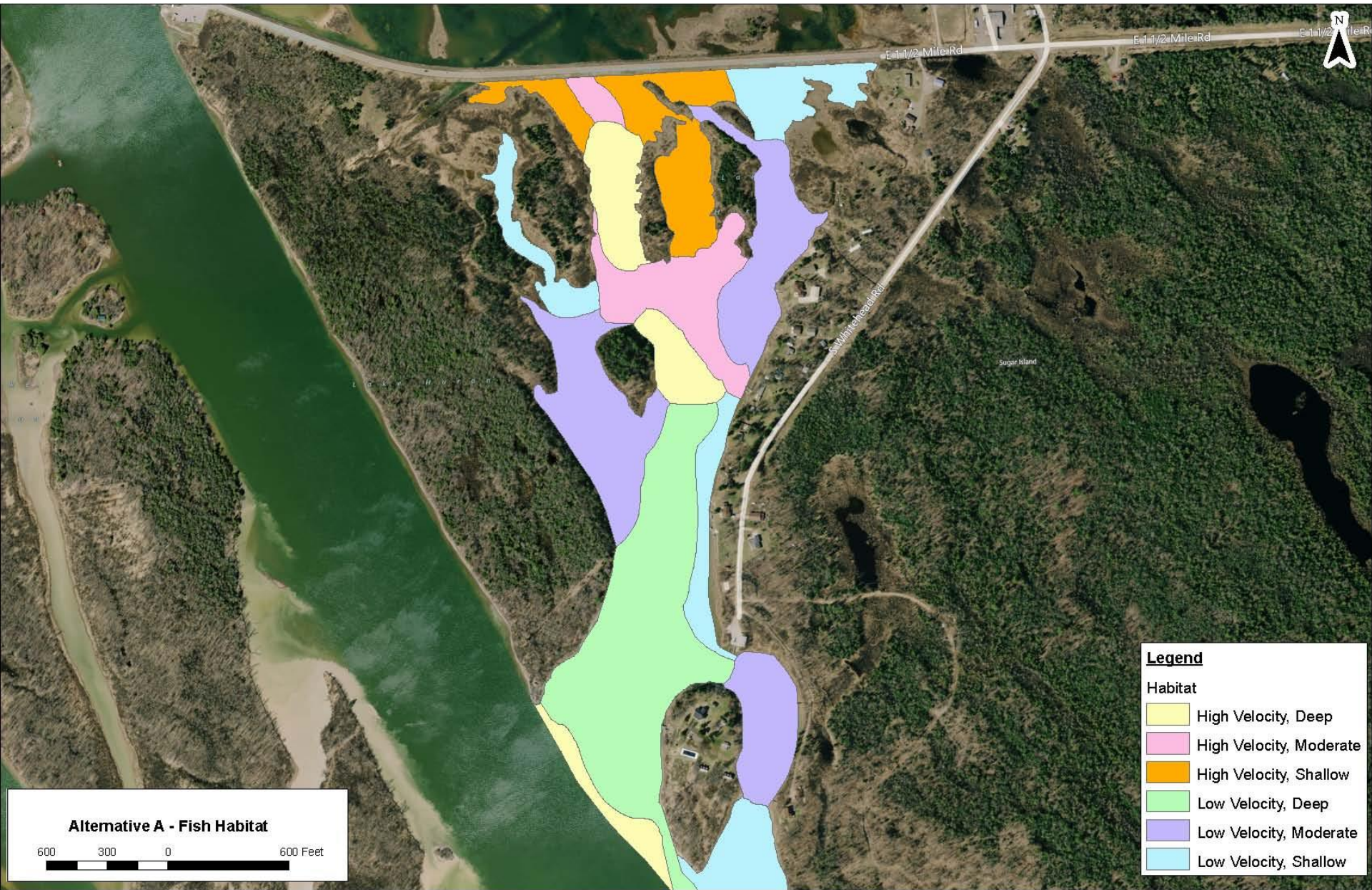
**Velocities comparison for 600' bridge under high flow conditions of 3,596 m<sup>3</sup>/s (127,000 f<sup>3</sup>/s)**



**Velocities above and below the causeway under existing conditions are less than 0.33 ft/s**



**Velocities above and below the causeway with a 600' bridge under high flow conditions max at 3.8 ft/s**







# Project Challenges

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- Technical Challenges

- Very poor soils
- Remote location
- Access by ferry only, limited docking locations
- Shallow water

- Social Challenges

- Many residents that live adjacent to the rapids don't want to see it change
- Opposed to government spending
- Lack of trust
- Islanders want to have meaningful input into process
- Divide between summer residents and year round residents



# Lessons Learned

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- Continuity is important
- Start permitting process early – employ a “all hands meeting”
- Public involvement is critically important and the time it takes should not be under estimated
- Grant funded projects with fixed funding need creative contracting approaches
  - Design Build Construction using Fixed Fee, Variable Scope contract
- Long Term Costs and Ease of Maintenance were driving factors in selecting a locally preferred option

# Summary

- Re-establish flow/stream velocity
- Bottom substrate changes
- Benthic organism composition shift
- Increase game fish habitat
- Increased long-term fishing opportunities
- Project will benefit the St. Marys River and the entire Great Lakes basin



# Questions?



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