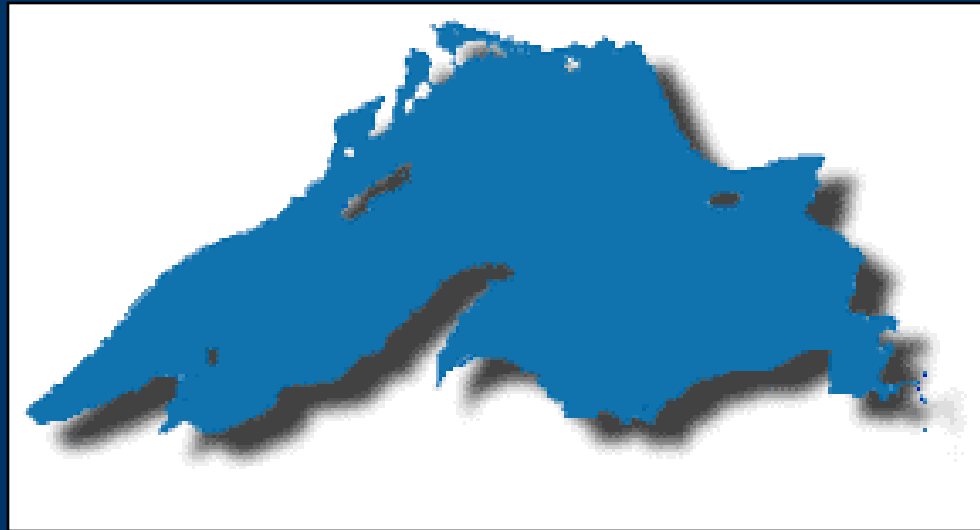


# Lake Superior Areas of Concern



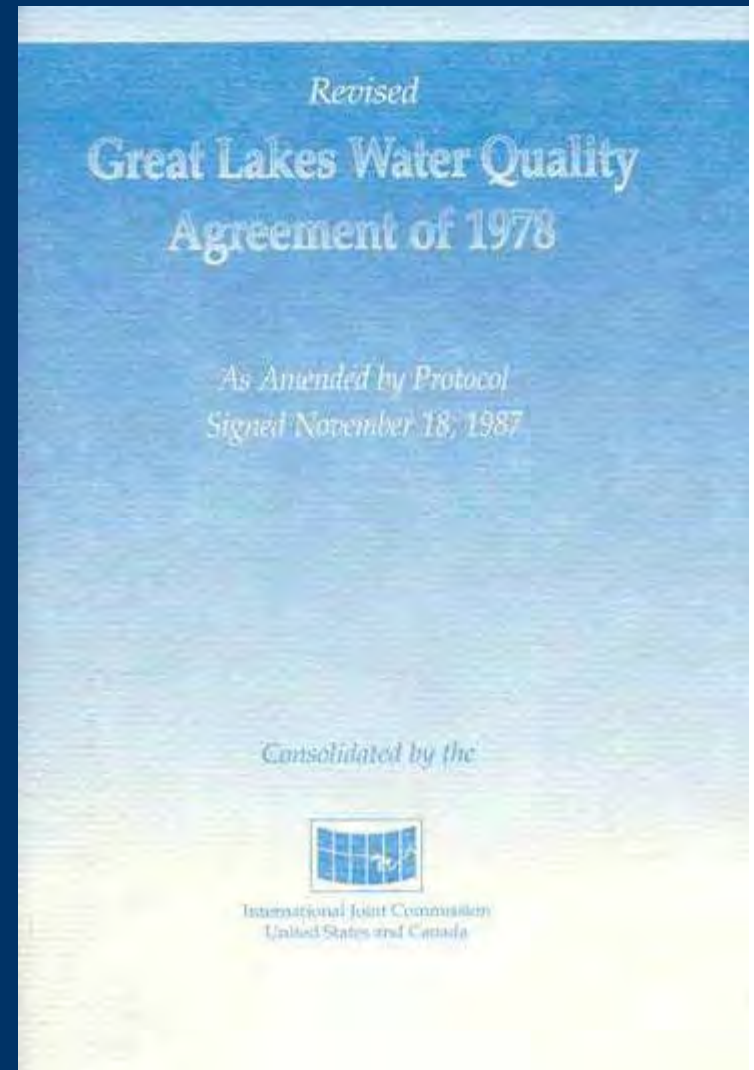
*John Marsden, Environment Canada*

*Mark Elster, U.S. Environmental Protection Agency*



# RAP Program Origins...

- 1909: Canada – U.S. Boundary Waters Treaty - address issues, resolve disputes for shared inland waters; International Joint Commission (IJC) set up with 3 members each appointed by Canada and the U. S.
- 1972: first Great Lakes Water Quality Agreement (GLWQA) signed (revised in 1978)
- 1985: IJC identifies 42 Great Lakes Areas of Concern



# RAP Program Origins...

- 1987: GLWQA amended - Annex 2 for Remedial Action Plans (RAPs)
- RAPs for Areas Of Concern (AOCs) to restore beneficial uses, delist
- Beneficial Uses “*Fishable, Swimmable, Drinkable*”

## ANNEX 2

### REMEDIAL ACTION PLANS AND LAKEWIDE MANAGEMENT PLANS

#### 1. Definitions

As used in this Annex:

- (a) “Areas of Concern” means a geographic area that fails to meet the General or Specific Objectives of the Agreement where such failure has caused or is likely to cause impairment of beneficial use or of the area’s ability to support aquatic life.
- (b) “Critical Pollutants” means substances that persist at levels that, singly or in synergistic or additive combination, are causing, or are likely to cause, impairment of beneficial uses despite past application of regulatory controls due to their:
  - (i) presence in open lake waters;
  - (ii) ability to cause or contribute to a failure to meet Agreement objectives through their recognized threat to human health and aquatic life; or
  - (iii) ability to bioaccumulate.
- (c) “Impairment of beneficial use(s)” means a change in the chemical, physical or biological integrity of the Great Lakes System sufficient to cause any of the following:
  - (i) restrictions on fish and wildlife consumption;
  - (ii) tainting of fish and wildlife flavour;
  - (iii) degradation of fish wildlife populations;
  - (iv) fish tumors or other deformities;
  - (v) bird or animal deformities or reproduction problems;
  - (vi) degradation of benthos;
  - (vii) restrictions on dredging activities;
  - (viii) eutrophication or undesirable algae;
  - (ix) restrictions on drinking water consumption, or taste and odour problems
  - (x) beach closings;
  - (xi) degradation of aesthetics;
  - (xii) added costs to agriculture or industry;
  - (xiii) degradation of phytoplankton and zooplankton populations; and
  - (xiv) loss of fish and wildlife habitat.

# GLWQA RAP Process

- Problem definition (Stage 1)
- Action plan development (Stage 2)
- Delisting criteria development
- Implementation
- Adaptive management
- Delisting (Stage 3)



# Lake Superior Areas of Concern



# Lake Superior AOCs ...

## Progress to Date

AOC	Stage 1	Stage 2
Thunder Bay	1991 report	2004 Stage 2a report
Nipigon Bay	1991 report	1995 report
Jackfish Bay	1991 report	1997 report
Peninsula Harbour	1991 report	2000 (draft report)
St. Marys River	1992 report	2003 Stage 2a report
Deer Lake	1987 report	Not applicable
Torch Lake	1987 report	Not applicable
St. Louis River	1992	1995



# 2007 Canada-Ontario Agreement – Annex 1 (AOCs)

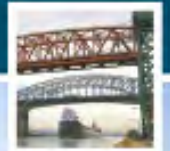
- Long term goal of delisting 15 AOCs articulated
- Goal 1: 4 AOCs to complete priority actions for delisting
- Goal 2: Remaining 11 AOCs to make significant progress
- “priority actions for delisting”

Canadian Areas of Concern



Canada-Ontario Agreement  
Respecting the Great Lakes Basin Ecosystem

2007



Canada

Ontario



# 2005 Great Lakes Regional Collaboration Strategy Report

- Goal 1: Set all BUI Delisting Targets by 12/31/08
- Goal 2: Delist 10 AOCs by end of 2010
- Goal 3: Remediate all known contaminated sediment sites by end of 2020.



## Great Lakes Regional Collaboration Strategy



To Restore and Protect the Great Lakes

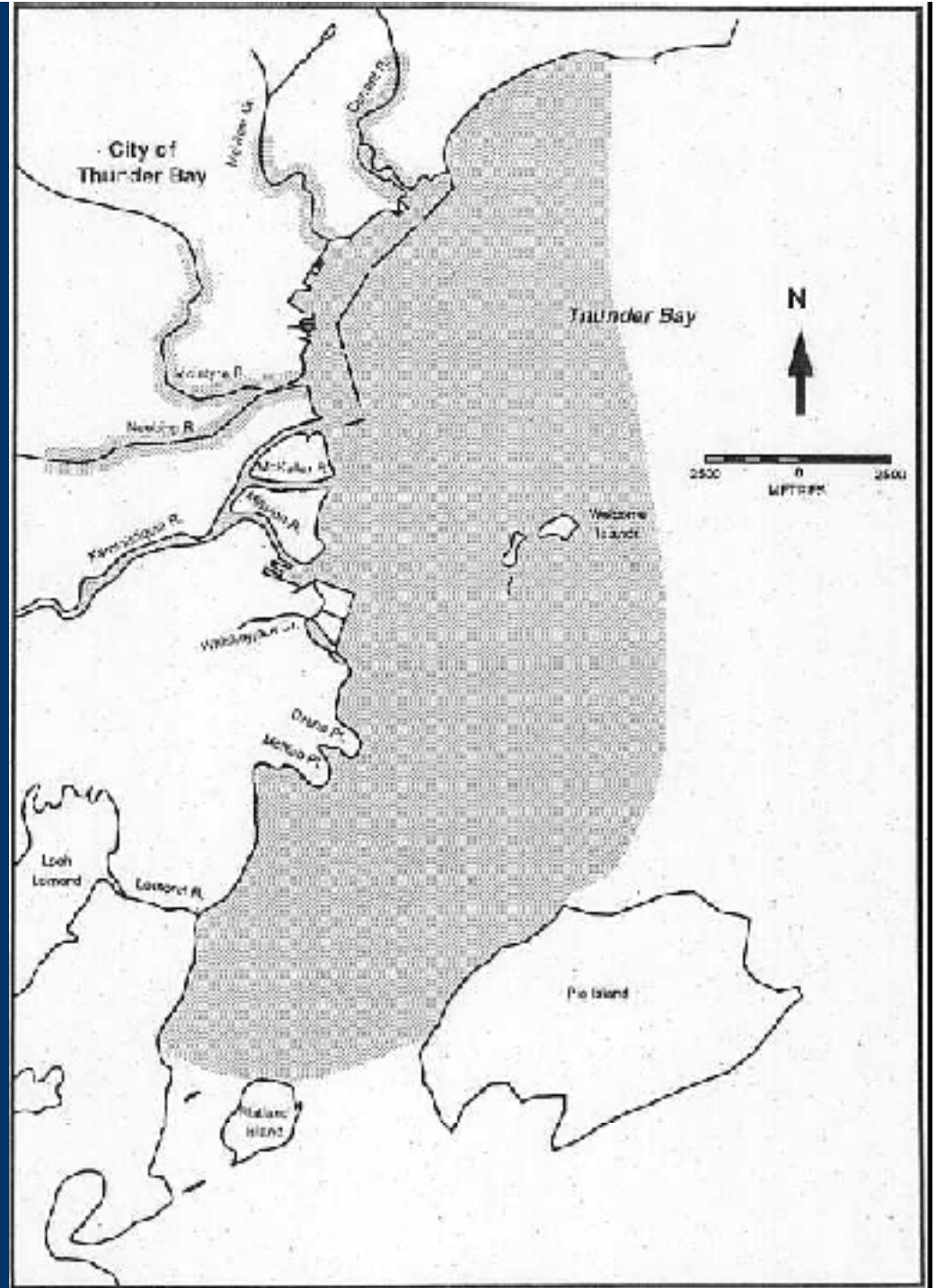


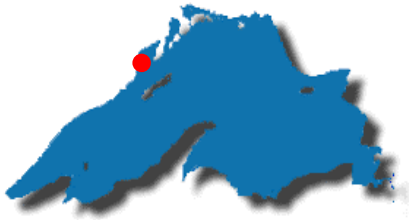
NOVEMBER 2008

GLRRC

# THUNDER BAY

- Listed because of habitat loss, contaminated sediment, beach closures
- 9 BUIs are impaired (one not due to local sources)
- 5 BUIs unimpaired





# THUNDER BAY

- Most actions (30+ projects) complete or underway e.g.
  - Abitibi/Cascades assessment underway (18,000 m<sup>3</sup> sediment over 6 ppm mercury)
  - NWP Sediment Remediation completed
  - Sewage Treatment Plant and industry upgraded to secondary treatment
  - Habitat projects completed
- Revised delisting criteria, monitoring plans needed



# NIPIGON BAY

- Listed because of habitat degradation, water level and flow fluctuations and municipal and industrial effluent
- 5 BUIs impaired, 3 BUIs restored

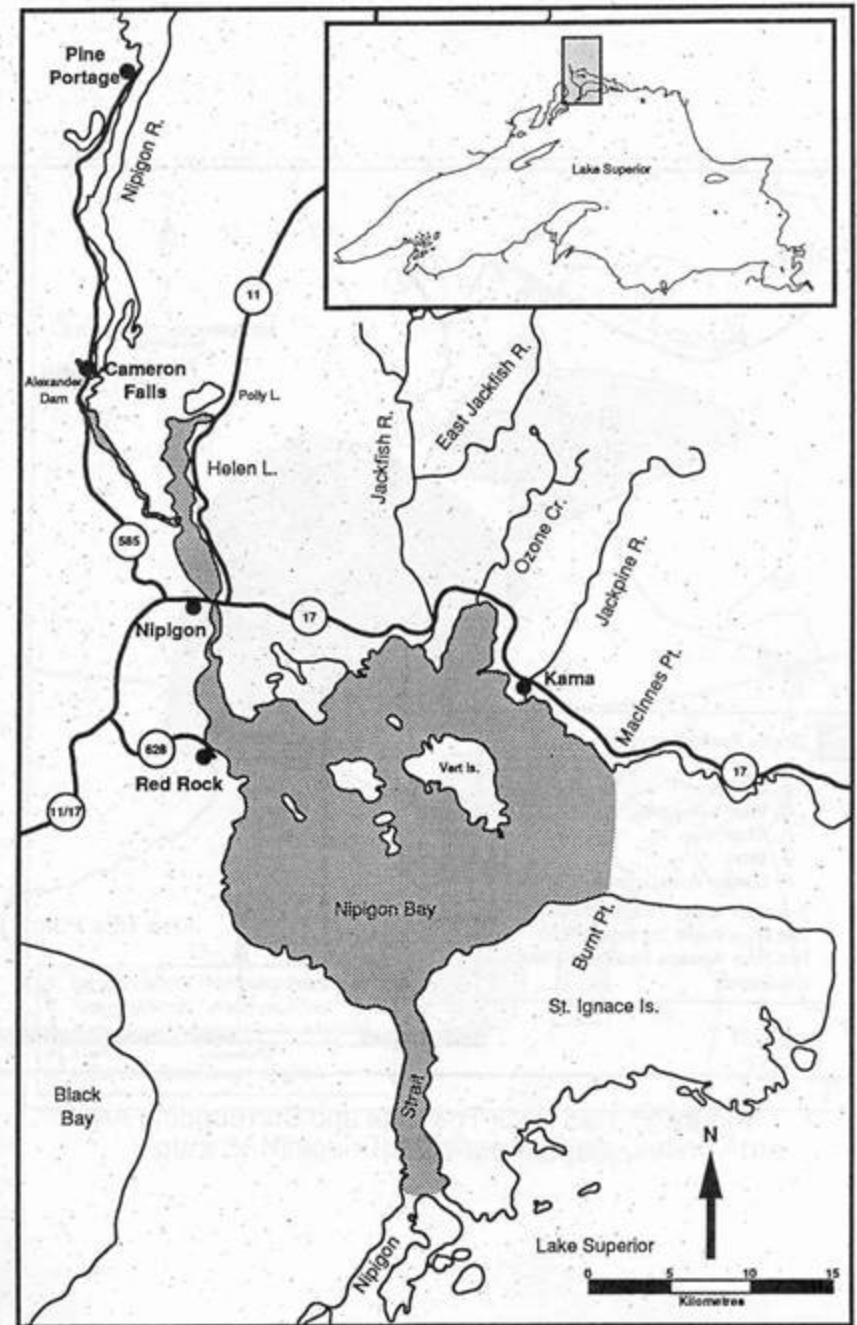


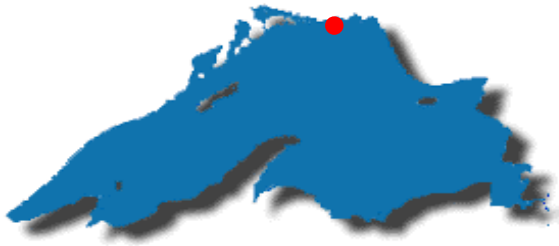
Figure 1: Nipigon Bay Area of Concern



# NIPIGON BAY

- Completed:
  - Clearwater and Kama Creek habitat restoration completed
  - Nipigon River Water Management Plan
  - Secondary treatment at mill (now closed)
- Next Steps:
  - Upgrading Nipigon STP to secondary treatment
  - Consult with the community and seek consensus on delisting targets, remaining priority actions for delisting, monitoring needs and the status of environmental recovery
  - Finalize and implement monitoring plans to confirm status of beneficial use impairments
  - Complete Stage 3 report





# Jackfish (Terrace) Bay

- Listed because of industrial discharge, sediment contamination, fish tumours
- 6 BUIs impaired

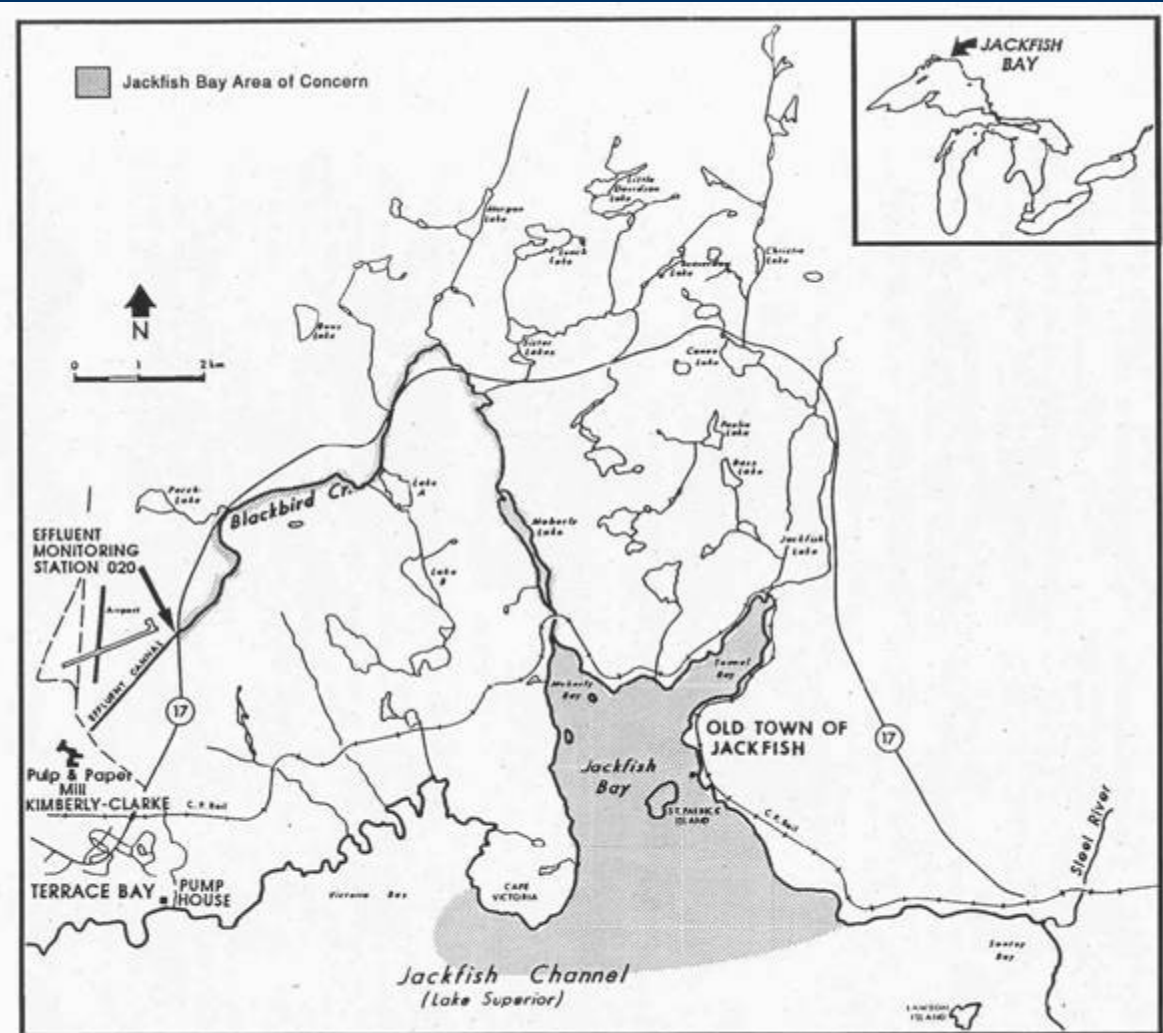
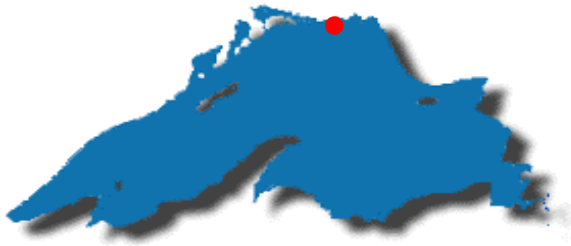


Figure 1  
Location map of the Jackfish Bay Area of Concern



# Jackfish (Terrace) Bay

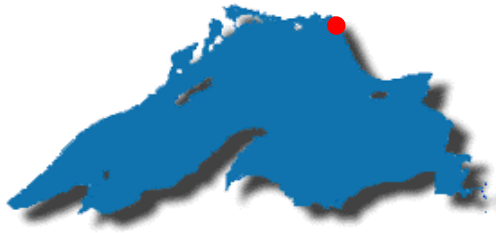
- Secondary treatment at mill completed, some recovery evident
- Next Steps:
  - Consult with the community and seek consensus on delisting targets, remaining priority actions for delisting, monitoring needs and the status of environmental recovery
  - Develop and implement Area in Recovery monitoring plan
  - Complete Area in Recovery Status Report



# PENINSULA HARBOUR (Marathon)

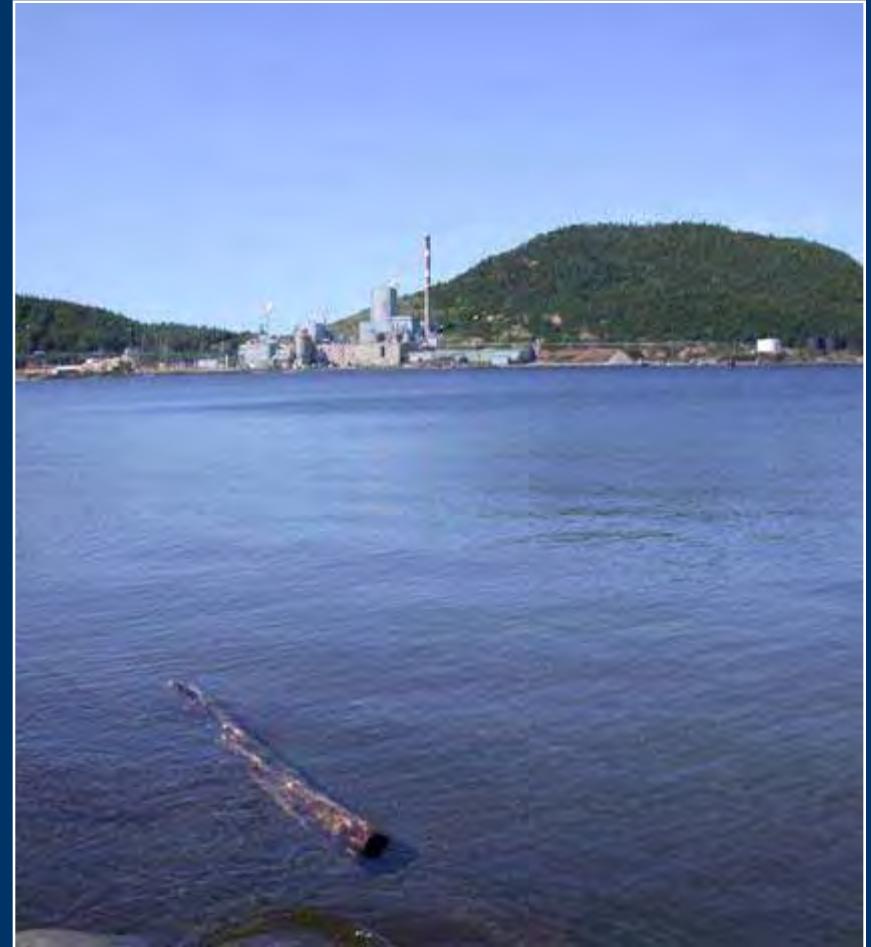
- Listed because of degraded fish communities, contaminated sediment, historic industrial discharges
- 5 BUIs impaired





# PENINSULA HARBOUR (Marathon)

- Secondary treatment at mill completed, chlor-alkali plant decommissioned
- contaminated sediment assessment completed, remediation appears to be required
- PCB trackdown is underway
- Next Steps:
  - Complete contaminated sediment management strategy
  - provide information and opportunities for community engagement
  - Review and revise delisting criteria as appropriate
  - Develop and implement monitoring plans





# ST. MARYS RIVER

- 10 BUIs listed as Impaired or Requires Further Assessment
- Delisting criteria being developed
- Key Stressors /Issues:
  - contaminated sediments
  - habitat loss
  - CSOs/SSOs





# ST. MARYS RIVER

- Industry and WPCPs upgraded to secondary, other infrastructure upgrades completed
- Next Steps:
  - identify and promote implementation of the priority actions for stormwater
  - Complete the contaminated sediment management strategy
  - Make progress on habitat protection and rehabilitation priority actions
  - Support enhanced local coordination
  - Review and revise delisting criteria as appropriate
  - Develop and implement monitoring plans
  - Monitor and report on fish and wildlife health effects





# ST. MARYS RIVER

## Tannery Bay Clean-Up:

- 40,000 cubic yards of sediment removed
  - ~30 lb of Mercury
  - ~500,000 lb of Chromium
- Shoreline Restoration and re-seeding

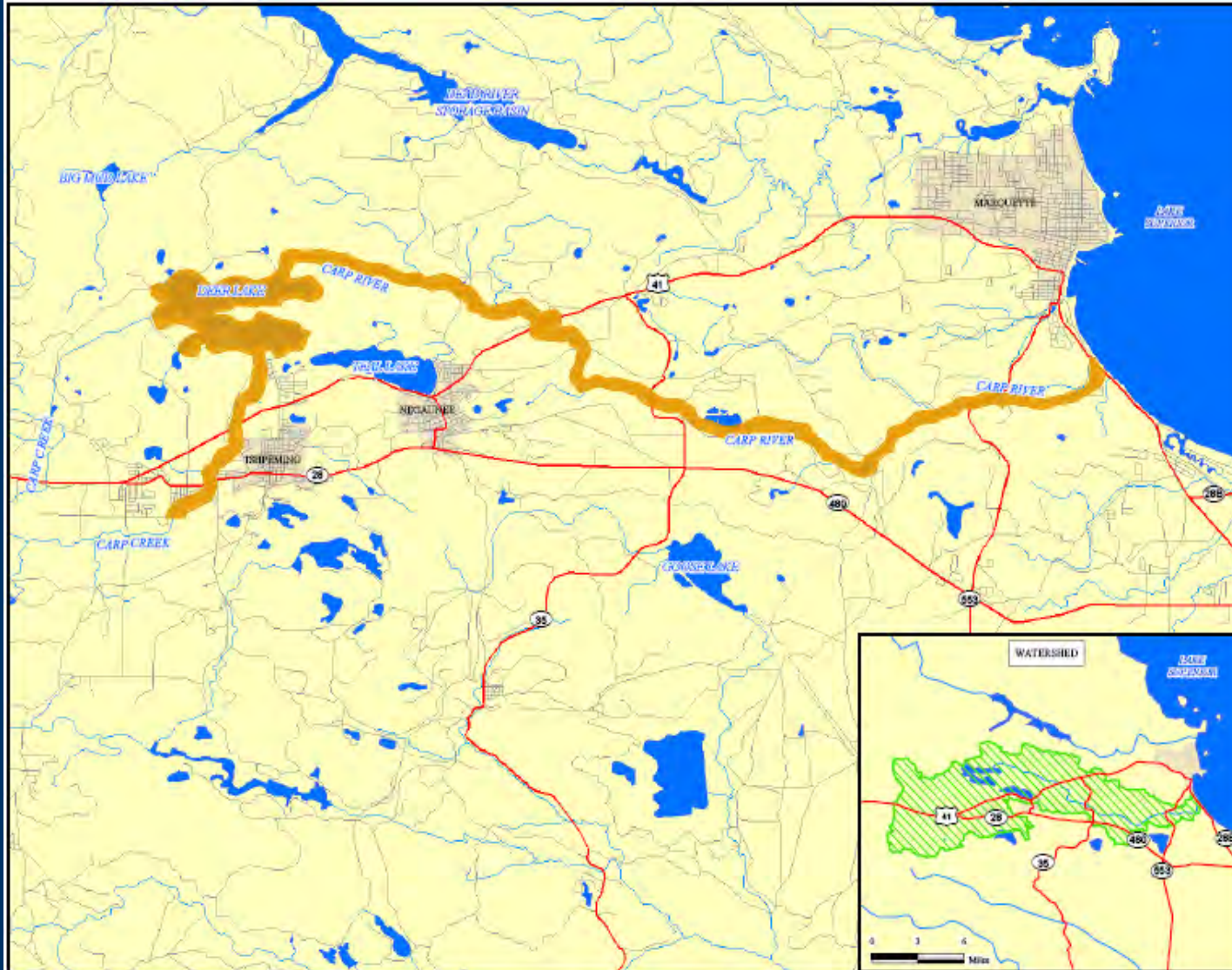
## Participation in binational Sugar Island Monitoring Work Group

- Tracking of beach water quality (bacteria) and floating material events in river.
- Analyzing 2007 Data, report this Winter.





# DEER LAKE



- LEGEND**
- MAJOR ROADS
  - SURFACE WATER
  - URBAN AREAS
  - AREA OF CONCERN
  - WATERSHED

SOURCE: ADAPTED FROM THE MICHIGAN DEPARTMENT OF NATURAL RESOURCES, 1997; THE U.S. EPA, 2001; THE MICHIGAN CENTER FOR GEOGRAPHIC INFORMATION, DEPARTMENT OF INFORMATION TECHNOLOGY, 2004, AND 2005.



DEER LAKE, MICHIGAN  
AREA OF CONCERN



Great Lakes National Program Office





# DEER LAKE

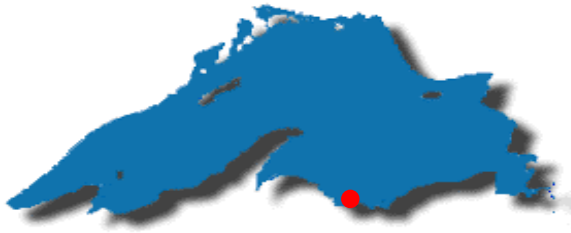
Listed as an AOC because:

- high levels of mercury in fish tissue resulted in fish consumption advisories;
- DDT contamination resulted in bald eagle reproductive failures;
- and historically untreated municipal discharges resulted in eutrophication.

3 BUIs impaired

- Initiated the BUI removal process for 2 BUIs





# DEER LAKE

- City of Ishpeming enhanced wastewater treatment system in 1986;
- US FWS monitored bald eagle breeding pairs from 1963 to present;
- And the RAP selected natural capping by clean sediments in 1987.
- Next Steps:
  - Control known source(s) of mercury.
  - Maintain water level to minimize mercury methylation.
  - Continue to monitor water column, sediment and fish tissue concentrations.







# TORCH LAKE

- Superfund completed remedial action in '05; completed sediment removal action in '07
- Next Steps:
  - Currently determining if PCB source exists within the AOC.
  - If source is found, then remedial options will be evaluated.
  - If no source is found, then BUI delisting options will be evaluated.



Mason Sands before



Mason Sands after



# ST. LOUIS RIVER

- Restrictions on fish and wildlife consumption
- Excessive Loading of Sediment and Nutrients
- Degradation of fish and wildlife populations
- Beach closings
- Fish tumors or other deformities
- Degradation of aesthetics
- Degradation of benthos
- Restriction on dredging activities
- Loss of fish and wildlife habitat





# ST. LOUIS RIVER

A Great Lakes Legacy Act Project Agreement was signed by the U.S. EPA and the Wisconsin DNR in June 2005 to remediate contaminated sediments in Hog Island/Newton Creek.

This project was completed in November 2005 and resulted in the removal of approximately 46,000 cubic yards of contaminated sediment.

Currently evaluating sediment quality data collected in May 2007 from over 200 locations in the St. Louis River AOC.



# Thank You!

