

Great Lakes Economic and Environmental Review



Great Lakes history of economic and major environmental agreements.



- **International Joint Commission (IJC)**
- **Great Lakes – St. Lawrence Seaway**
- **The Grand Canal**
- **Great Lakes Water Quality Agreement (GLWQA)**
 - **Overview of Areas of Concern (AOCs)**
 - **Lake Superior North Shore overview.**
 - **Thunder Bay example.**

The Great Lakes Basin

A Shared Treasure Worth Protecting



- A shared resource between Canada and the U.S.
- 20% of the world's surface fresh water
- Drinking water - more than 40M people
- Rich biodiversity
- Vital role in supporting central Canada's economics



Political Stakeholders



History of Great Lakes Environmental Programs



- **1909** - Boundary Waters Treaty established the International Joint Commission (IJC)
- **1970** - National environmental agencies:
 - Environment Canada (EC)
 - U.S. Environmental Protection Agency (U.S. EPA)
- **1972** – Ontario Ministry of the Environment
- **1972** - The Great Lakes Water Quality Agreement (GLWQA)



History of Great Lakes



Past historical disputes and agreements of water flowing along or across the boundary, notably for navigation:

- Europe
- Mexico and United States
- Canada – US Disputes included:
 - St. Mary and Milk Rivers in the west
 - Rainy River
 - the Chicago Diversion of Lake Michigan (which lowered lake levels by 6 inches)
 - St. Mary's River at Sault Ste. Marie and the Niagara River



Great Lakes – St. Lawrence Seaway



St. Lawrence River, St. Lawrence Seaway and the Great Lakes, sometimes termed Hwy H2O, is a 3,700-kilometre (2,300 mile) marine highway that runs between Canada and the United States.

Some history

➤ 1895

The first joint Commission is formed to study the feasibility of a Seaway. This is followed by the International Joint Commission in 1909, but no further action on Seaway proposal.



Seaway history (cont)



➤ 1932

Fourth Welland Canal completed: 43.5 km (27 miles) long, 7.6 m (25 feet) minimum depth. Eight locks raise ships a total of 99 m (326 feet). This was the first step in the completion of the modern Seaway.

➤ 1954

Agreement reached between the U.S. and Canada concerning construction. The cost estimate was \$470 million; Canada paid \$336.5 million and the U.S. \$133 million.

Seaway history (the opening)



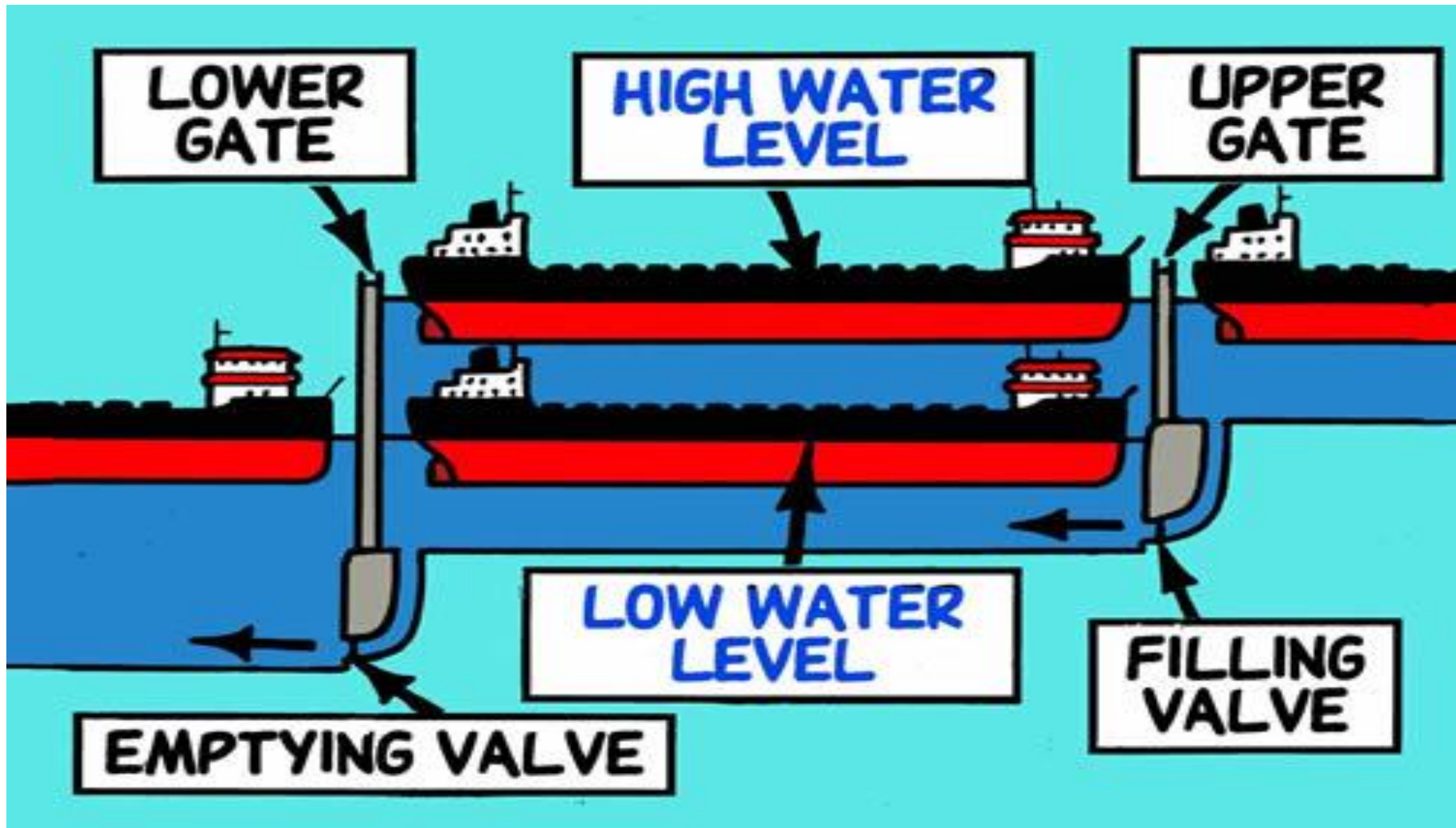
- **1954** Completion of the Seaway navigation project links the Great Lakes to global markets.

On April 25, the icebreaker "D'Iberville" begins the first through transit of the St. Lawrence Seaway. Gross shipping weight for this first navigation season amounts to 22 million tonnes.



- **1979**
The gross tonnage of ships passing through the Seaway reaches 80 million tonnes.
- **1996**
Total of two billion tonnes of cargo, valued at more than \$300 billion.

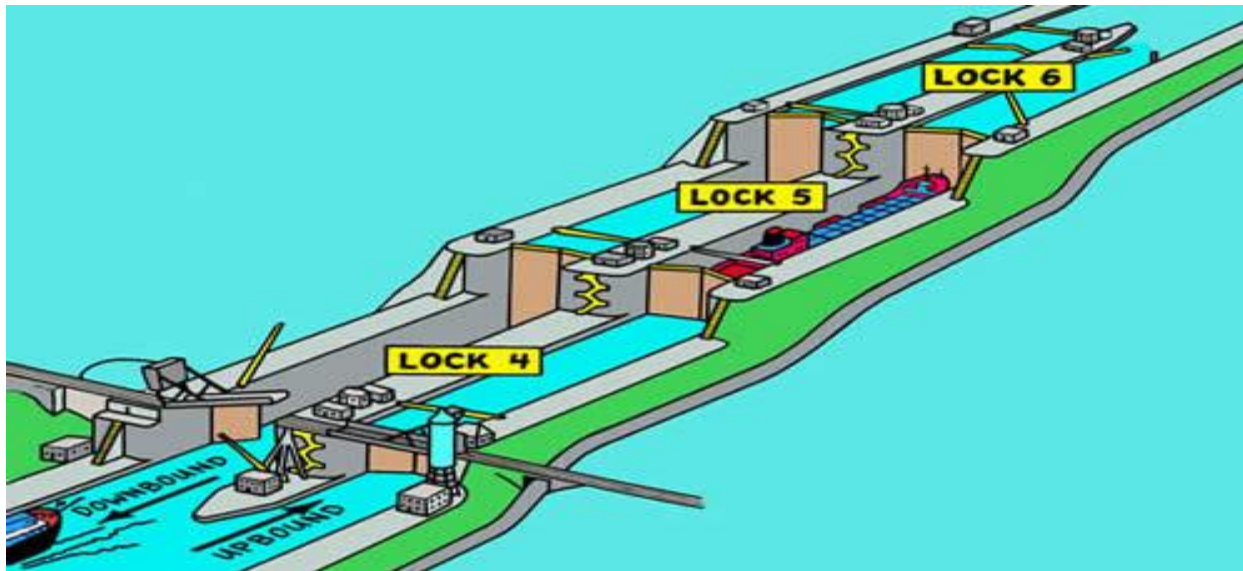
Example of a lock



Seaway Locks



This lift system and accommodate ships to 225.5 metres in length (740 feet) and 23.8 metres (78 feet) in the beam. Ships can be twice as long and half as wide as a football field and carry cargoes the equivalent of 25,000 metric tonnes. Passage through a lock takes about 45 minutes.



Discussion



➤ 1993

The Seaway's draft is increased from 7.87 m to 7.95, enabling ships to carry more cargo per voyage

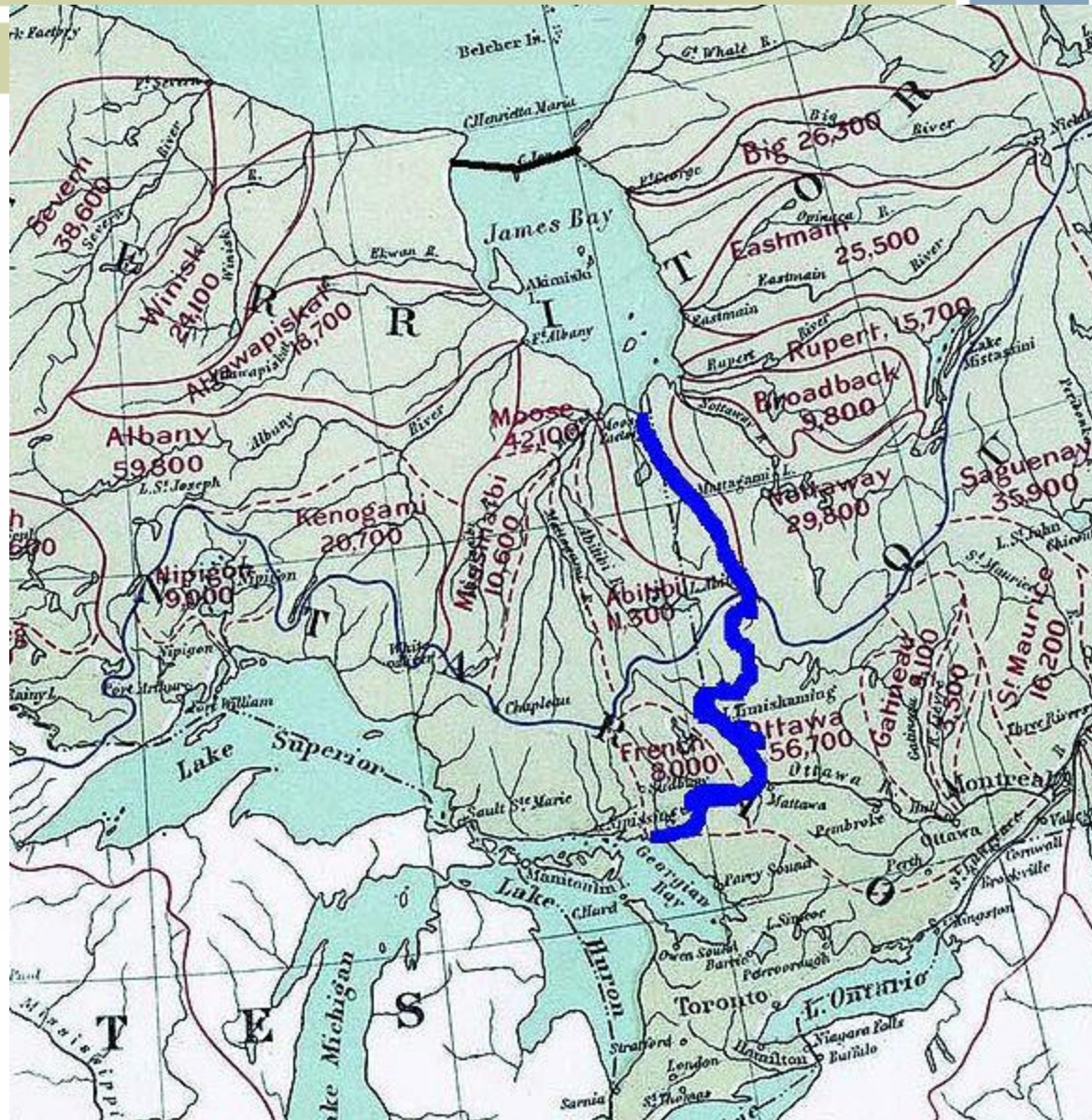
➤ 2004

- The Seaway's draft is increased 8.03m (26.5 feet) enabling ships to carry up to 300 tonnes of additional cargo per voyage.



In-class discussion/consideration

The Grand Canal



The Grand Canal



The Great Recycling and Northern Development (GRAND) Canal:

- First proposed in 1959, this enterprise continues to be on the drawing board
- Revived in 1985. The project briefly captured the imagination of Quebec premier Robert Bourassa and other public figures.
- Estimated in 1994 to cost \$100-billion and \$1-billion a year to operate — envisaged nuclear reactors and hydro dams to pump water uphill, and nine inter-basin transfer locations.



Discussion?



- **Merits of the proposal?**



- **Problems?**



1909/1910 - Boundary Waters Treaty established the International Joint Commission (IJC)

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Signing of the 1972 Canada-U.S. Great Lakes Water Quality Agreement



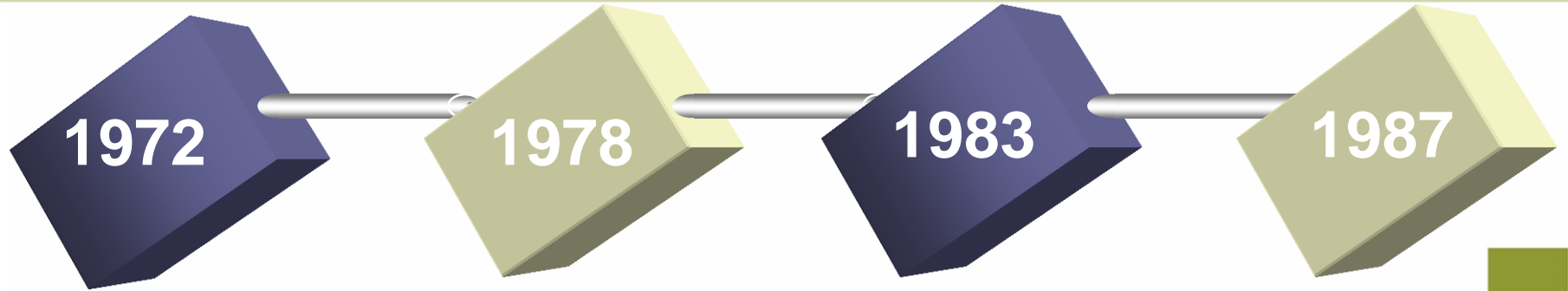
Goals of the Great Lakes Water Quality Agreement



- The Great Lakes Water Quality Agreement is an Executive Agreement between Canada and the United States. It is not a Treaty.
- The Agreement commits the two countries to *restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem*.
- The Agreement is a relatively successful model of Canada-United States binational cooperation.



Evolution of the Agreement



Reduce
Phosphorus
Loading

Reduction of
visible
pollution

Persistent
Toxic
Substances

Ecosystem
Approach to
management

**Phosphorus
Supplement**

Updated
Phosphorus
reduction
targets

Remedial
Action Plans
for Areas of
Concern

Lakewide
Management
Plans

Remedial Action Plan Process



- All Remedial Action Plans must proceed through three stages.
 - **Stage One**: determine the severity and underlying causes of environmental degradation that make the location an AOC
 - **Stage Two**: identify goals and recommend actions that will lead to the restoration and protection of ecosystem health.
 - **Stage Three**: implement recommended actions and measure progress of restoration and protection efforts in the AOC to ensure the local goals have been met.



Canada-Ontario Agreement

Respecting the Great Lakes Basin Ecosystem



Canada-Ontario Agreement
Respecting the Great Lakes Basin Ecosystem

2007



Agreement between the Government of Canada and Ontario

■ Six Federal Department Signatories

8 Federal Agencies/Departments:
Agriculture and Agri-Food;
Environment; Fisheries and Oceans;
Health; Parks Canada Agency; Natural
Resources; Public Works and
Government Services; and Transport
(and Infrastructure Canada)

■ Three Provincial Signatories

3 Provincial ministries: Environment;
Natural Resources and Agriculture,
Food and Rural Affairs

- There have been seven COA's since 1971.

Canada

Ontario

Canada-Ontario Agreement (COA)



- Coordinates the governments of Canada and Ontario's efforts to achieve the vision of a healthy, prosperous and sustainable Basin Ecosystem for present and future generations.
- Key mechanism to engage the broader Great Lakes community and collaborate with other implementers to protect the Great Lakes
- Contributes to meeting Canada's commitments under the Canada-U.S. Great Lakes Water Quality Agreement
- Present – 2014 agreement <http://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=46027E23-1>
 - GLWQA revisions
 - Align Federal/Provincial Great Lakes funding



COA FRAMEWORK



AREAS OF CONCERN (Annex 1)

Complete priority actions for delisting in 4 AOCs, and make significant progress in others

HARMFUL POLLUTANTS (Annex 2)

Toward virtually eliminating persistent toxics and reducing other harmful pollutants, with an enhanced focus on human health

LAKE AND BASIN SUSTAINABILITY (Annex 3)

Responding to significant challenges such as harmful pollutants, invasive species and biodiversity conservation and new priorities climate change and source water protection

COORDINATION OF MONITORING, RESEARCH AND INFORMATION (Annex 4)

Coordinated scientific monitoring and research, and information management for tracking and reporting on environmental change

Canadian Areas of Concern



Overview COA Annex 1



Goals

1. Complete priority actions for delisting in 4 AOCs: Nipigon Bay, Jackfish Bay, St. Lawrence River (Cornwall)
2. Make significant progress towards Remedial Action Plan (RAP) implementation, environmental recovery and restoration of beneficial uses in the remaining 11 AOCs.

Stormwater Control



Rural Non-point Pollution



Upgrading of Wastewater Infrastructure



Lake Superior

Areas of Concern



Lake Superior Watershed



Peninsula Harbour

■ Issues:

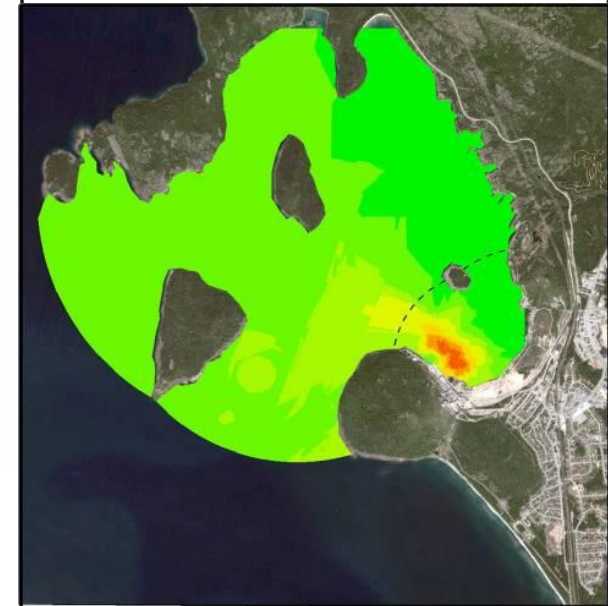
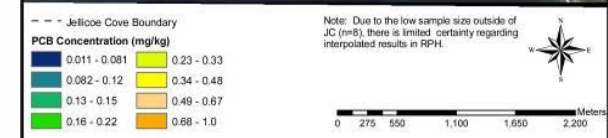
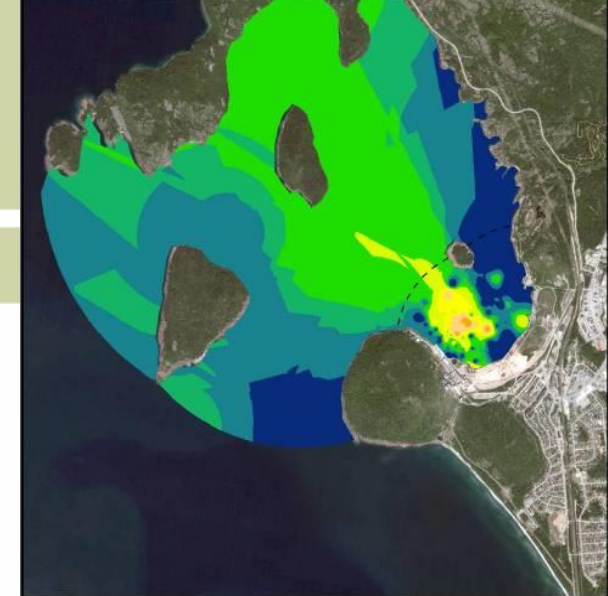
- Pulp mill and water pollution control plant
- Contaminated sediment

■ Accomplishments:

- Upgrades to pulp mill and water pollution control plant improved water quality and aesthetics (however, mill closed in March 2009)
- Identified preferred sediment management option – thin layer capping

■ Outlook:

- Re-established Public Advisory Committee
- Commence detailed design and EA this summer
- Sediment management project implementation anticipated in 2010
- Assess benthic community and fish habitat conditions outside sediment remediation area



Nipigon Bay



Status: Area of Concern

■ Reasons for AOC Designations

- Degradation of benthos
- Degradation of aesthetics
- Loss of fish habitat

■ Status of BUIs

- Success of fish habitat initiatives are being assessed
- Water management plan has been completed and implemented
- Degradation of benthos is related to municipal and industrial discharges (Domtar Red Rock Mill closed in 2006) assessment is ongoing



Thunder Bay



■ Issues:

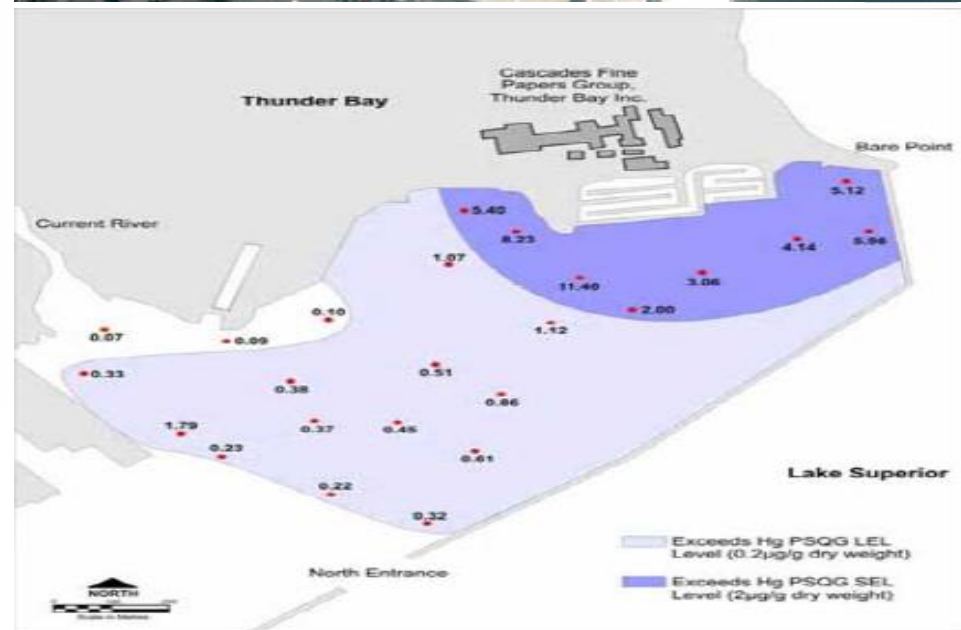
- Pulp & paper, wood preserving
- Contaminated sediments
- Loss of fish & wildlife habitat

■ Accomplishments:

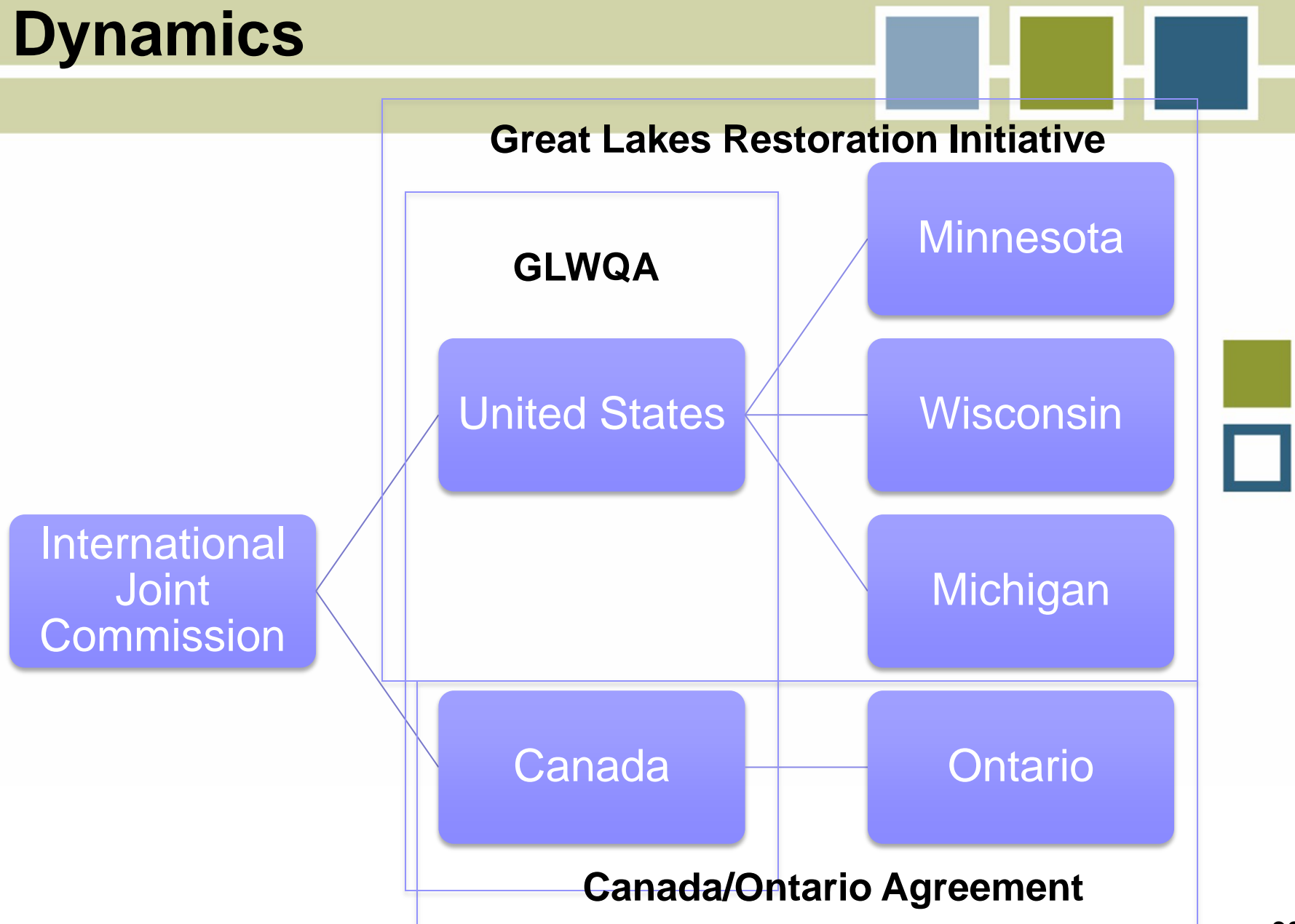
- Secondary treatment at mills & STP have improved water quality
- NOWPARC sediment project
- Habitat rehabilitation complete

■ Outlook:

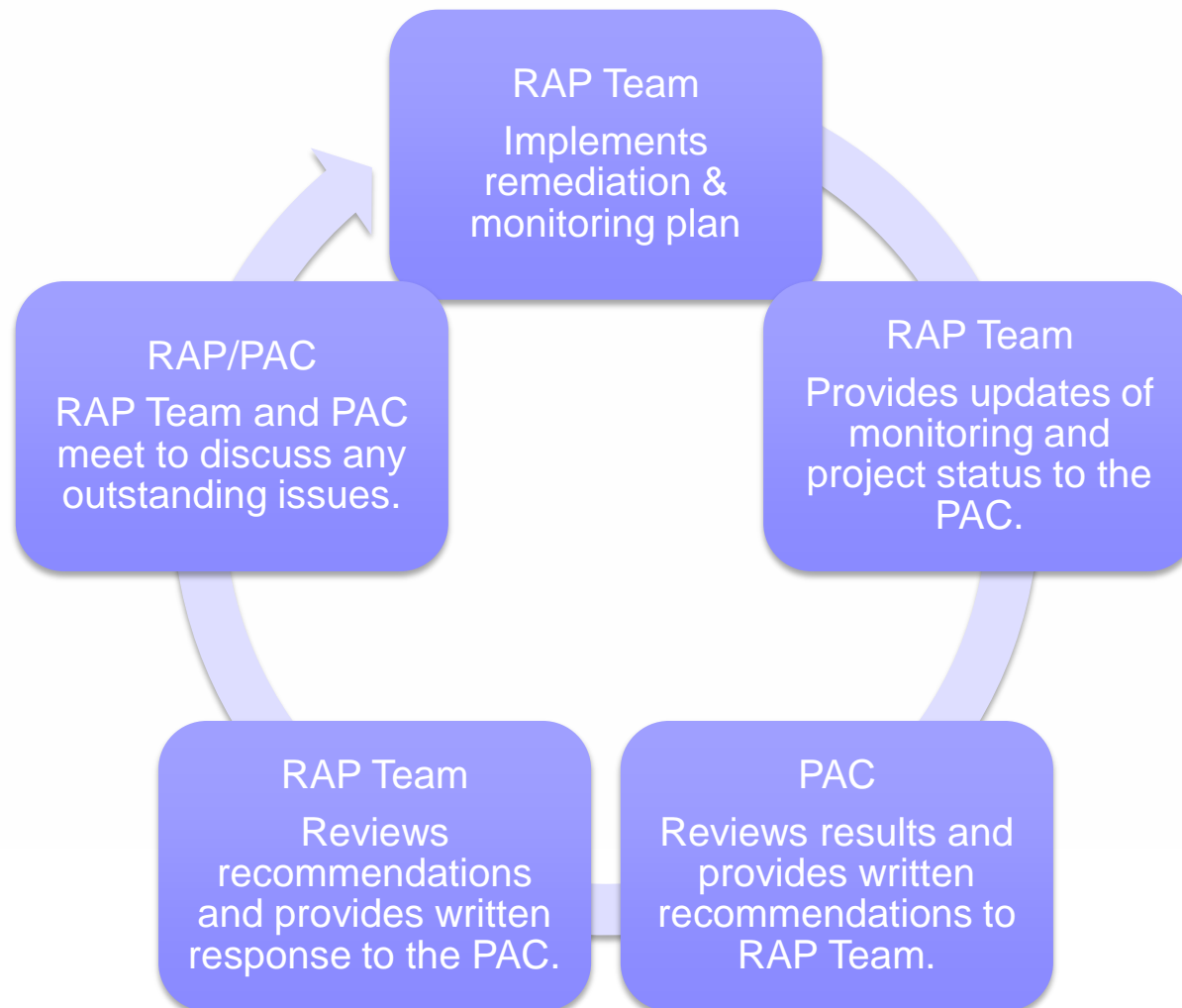
- Implement sediment management strategy once options have been studied (summer '09)
- Assess current state of remaining impaired BUIs and develop a monitoring plan
- Make monitoring results more accessible to local stakeholders



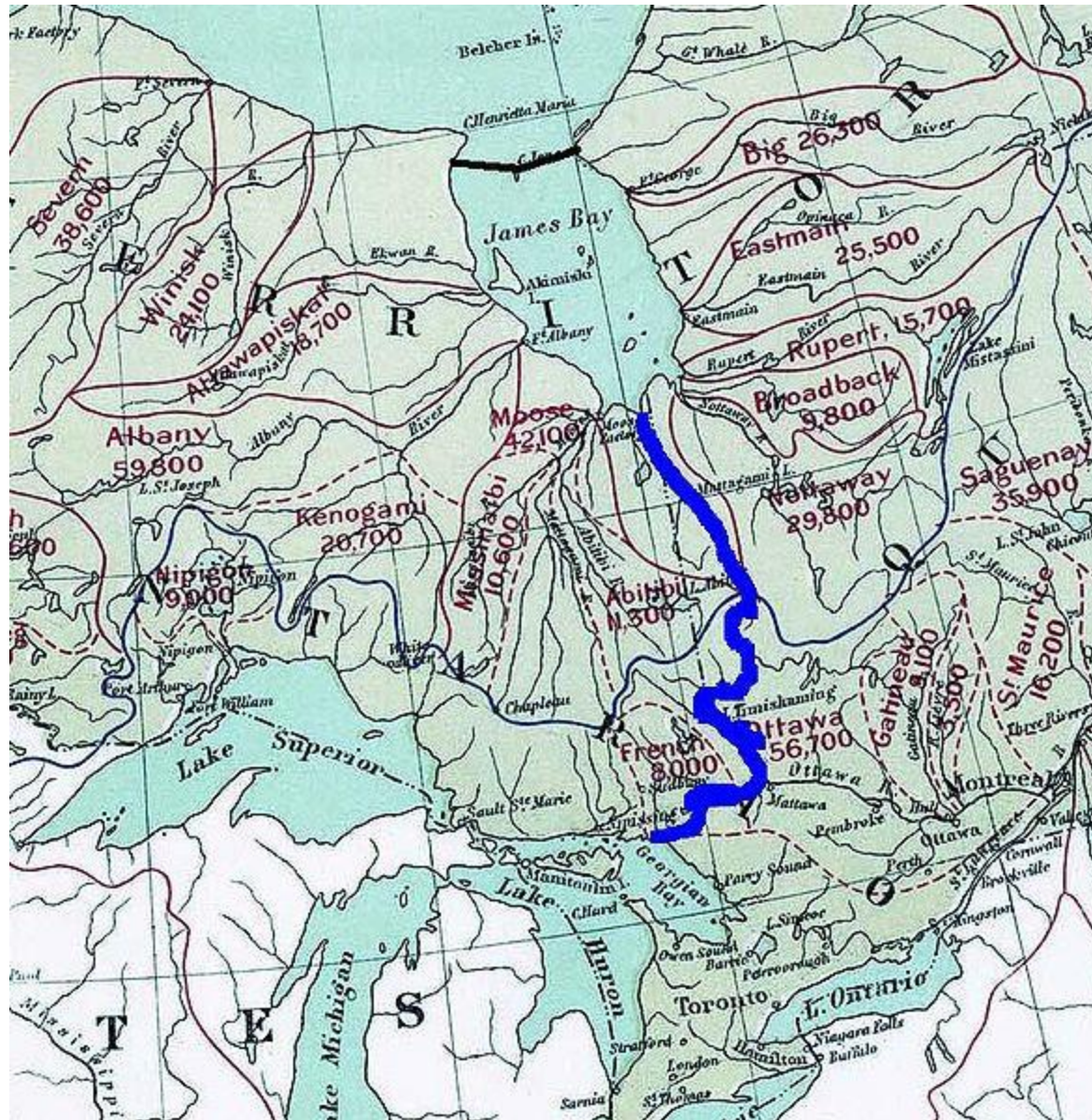
Lake Superior Management Dynamics



Local Management Dynamics



The Grand Canal



The Grand Canal



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Discussion?

