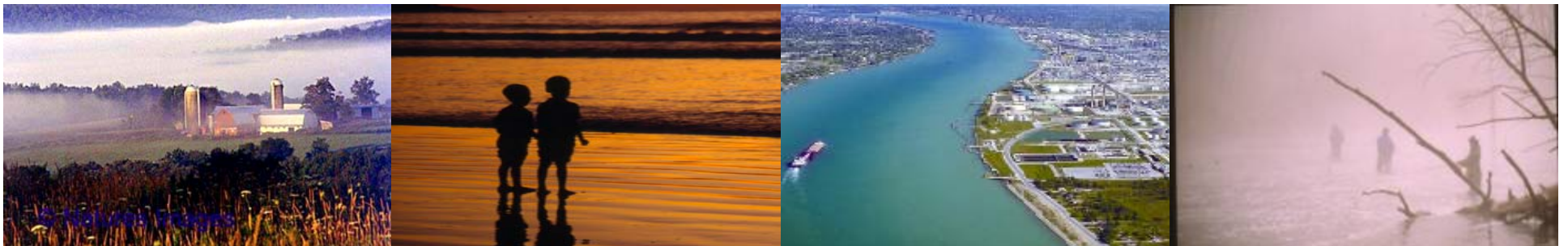




Lake Erie LaMP Binational Nutrient Strategy

Canadian Water Resources Association Workshop
February 5, 2010



How does the binational LaMP community implement actions to achieve our vision for Lake Erie?



Lake Erie LaMP

Purpose:

Restore and maintain the Physical,
Chemical and Biological Integrity
of Lake Erie (GLWQA)

Goal:

Long-term sustainable management
of the Lake Erie ecosystem

LaMP Geographic Boundaries

- Focus of Assessment: Lake Erie proper including Huron-Erie Corridor, nearshore areas, embayments and river mouths
- Environmental Influence: May occur anywhere within the watershed or from outside
- Focus of Implementation: Lake Erie proper including Huron-Erie Corridor, nearshore areas, embayments and watersheds

Who Is Involved in the Lake Erie LaMP?

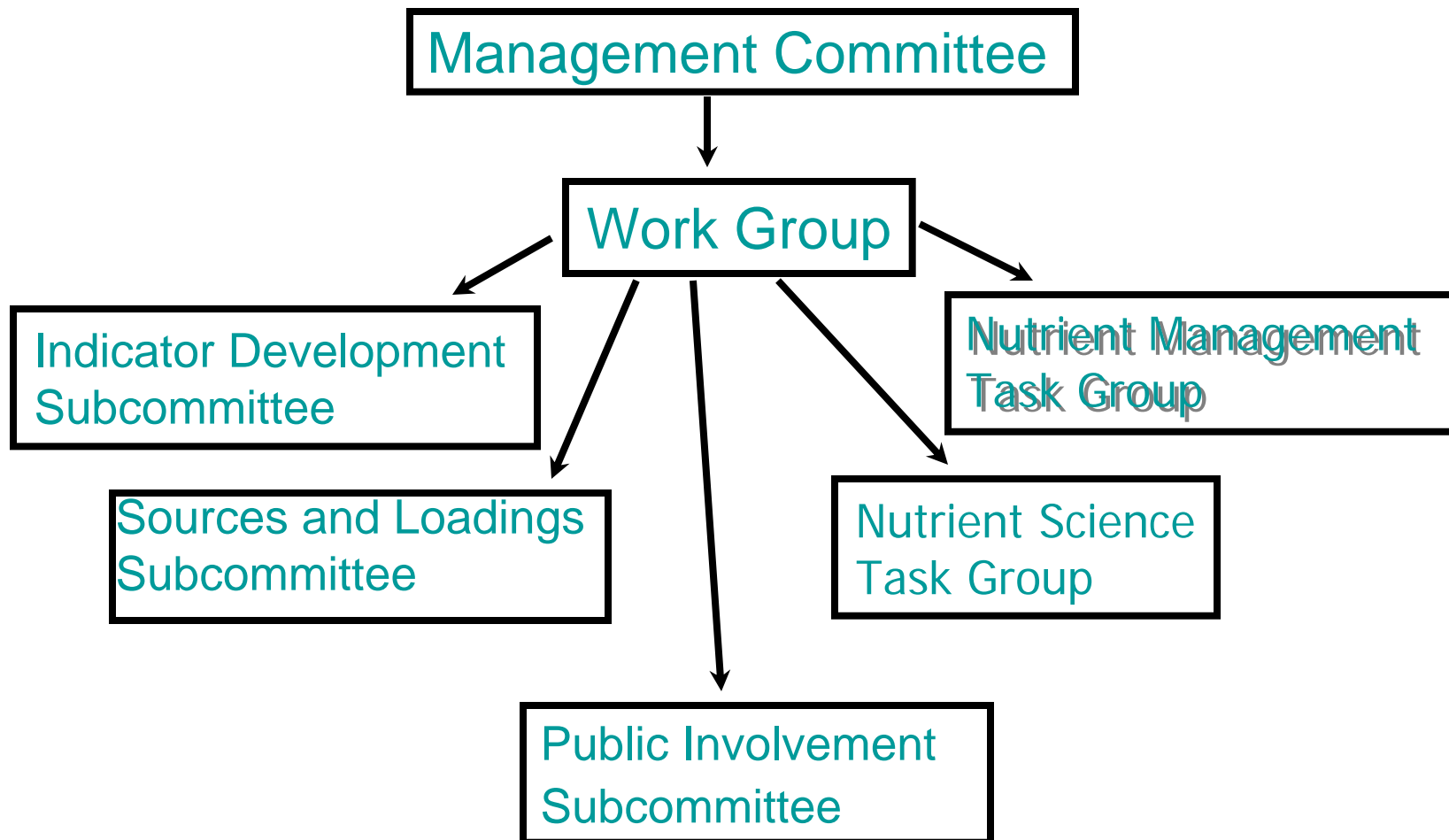
Representatives from:

- Fed/Prov/State Agencies
- CAs
- NGOs
- Academic community
- Unaffiliated Public



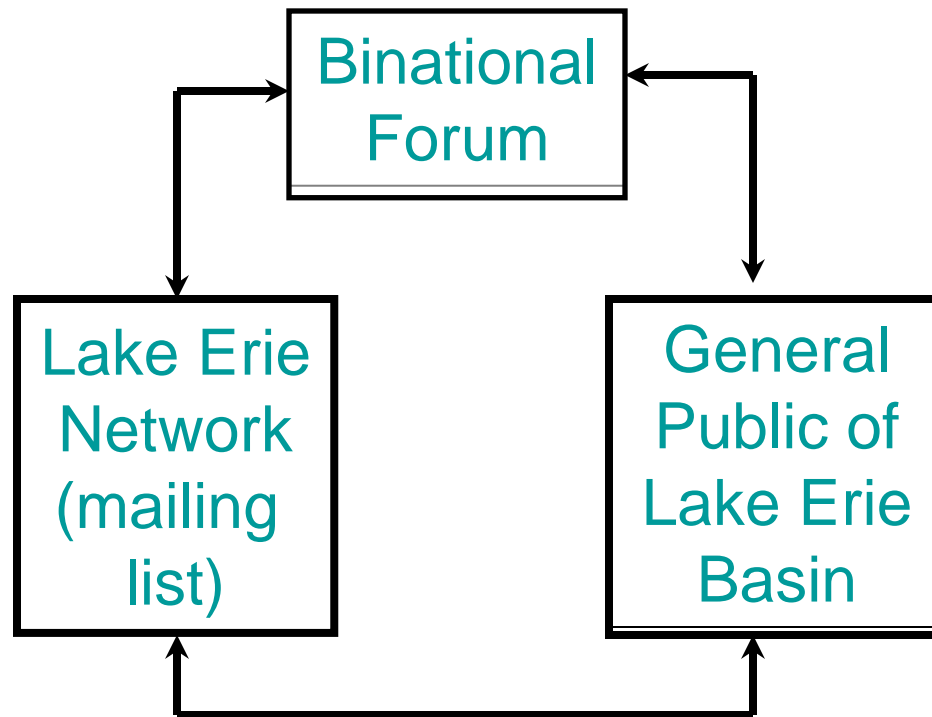
Organization Structure of the Lake Erie LaMP

Agency Framework



Organization Structure of the Lake Erie LaMP

Public Framework



The LaMP Program is:

- A binational forum for ongoing discussion, understanding and resolution
- A long term, ecosystem based framework for binational lake management
- An adaptive management tool for integrating programs and activities towards common objectives (The Plan)



Vision

Where all people recognizing the fundamental links among the health of the ecosystem and their individual action and economic well-being, work to minimize the human footprint in the Lake Erie Basin and beyond

Where native biodiversity and the health and function of natural communities are protected and restored to the greatest extent feasible

Where natural resources are managed to ensure that the integrity of existing communities are maintained and/or improved

Where natural resources are protected from known, preventable threats

Where human-modified landscapes provide functions that approximate natural ecosystem processes

Where land and water are managed such that the amount of material transported and the timing and volume of flows mimic natural cycles

Where environmental health continually improves due to the virtual elimination of toxic contaminants and remedial actions at formerly degraded sites.



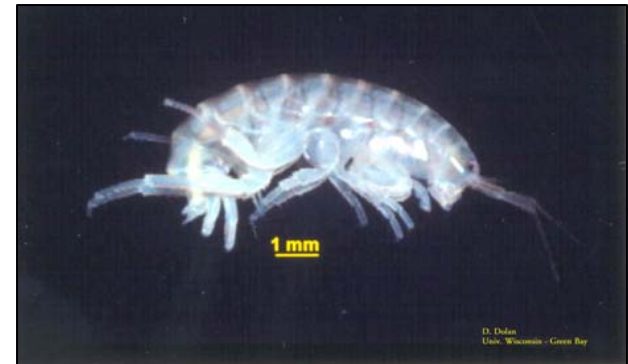
Lake Erie's Challenge

- Unstable fish communities
- Changing nutrient status
- Disruptions in foodweb and energy flow
- Degraded habitats especially nearshore ,wetlands and tributaries
- Nearshore transparency
- Cladophora increases
- Botulism Outbreaks
- Blue-Green Algae Outbreaks
- New species – Dressenids mussels
Bythotrephes, Cercophagis, Gobies
- Native species - Diporiea, sculpins, mussels declines/extirpations
- Benthification –dressenids/gobies



Are Because Of.

- Exotics
- Contaminants (Mercury and PCBs)
- Nutrients and Sediment
- Habitat Loss / Alterations
- Resource Use
- Species Losses



Ecosystem Management Objectives

- Land Use
- Nutrients
- Natural Resource Use and Disturbance
- Chemical and Biological Contaminants
- Non-native Invasive Species



Indicators

Indicator Category	Terrestrial	Streams	Coastal Wetlands	Nearshore	Offshore
PRESSURE INDICATORS					
Ecosystem Management Objectives :					
Natural Lands					
Nutrients					
Chemical Contamination					
Biological Contamination					
Resource Use and Disturbance					
Processes :					
Flow Disruption					
Energy Disruption					
Economic Disruption					
STATE INDICATORS					
Plant Cover					
Food Web Base					
Lower Food Web (benthic inverts)					
Lower Food Web (pelagic)					
Middle Food Web (fish)					
Upper Food Web (fish)					
Upper Food Web (herps/birds)					

Measuring progress toward the five Lake Erie ecosystem management objectives

Measuring impacts on important ecosystem & economic processes

Measuring the current state of the various components of the Lake Erie ecosystem

Actions needed to Achieve the Lake Erie Vision

- Restoration of functional landscapes and hydrological processes
- Reduce Non-point source inputs substantially
- Reduce Point Source – **nutrients** and PBTS
- Improve Habitat amount, complexity, linkages
- Fish and Wildlife populations rehabilitation
- Emerging issues science

In 2008 the LE Management
Committee asked the LaMP
Working Group to address
Nutrients as the LaMP's top
management priority

Déjà vu?

- Eutrophication in 60s and 70s
- GLWQA in 1978
- P Mgmt programs achieved success

The image shows the front cover of a report. The title is in bold, uppercase letters. Below the title is the subtitle, also in bold, uppercase letters. Underneath that is the recipient information, and at the bottom is the date and location. A vertical grey bar is on the left side of the cover.

**PHOSPHORUS MANAGEMENT
FOR THE GREAT LAKES**

**FINAL REPORT OF THE
PHOSPHORUS MANAGEMENT STRATEGIES
TASK FORCE**

TO THE INTERNATIONAL JOINT COMMISSION'S
GREAT LAKES WATER QUALITY BOARD AND
GREAT LAKES SCIENCE ADVISORY BOARD

JULY, 1980
WINDSOR, ONTARIO

Lake Erie Nutrient Related Issues:

- Unstable fish communities
- Changing nutrient status
- Disruptions in foodweb and energy flow
- Degraded habitats especially nearshore ,wetlands and tributaries
- Nearshore transparency
- Cladophora increases
- Botulism Outbreaks
- New species – Dressenids mussels
Bythotrephes, Cercophagis, Gobies
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declines/extirpations
- Drinking water safety - HABs
- Fish and wildlife kills
- Beach contamination & closures



What has changed since the 70s?

- Ecosystem/food web alterations
- Climate change
- Nearshore vs open water issues
- Low hanging fruit has been picked
- Mgmt requires trib by trib analysis
- Role of lake and trib sediment
- “Peak P”

What hasn't changed?



Autumn 2009 Near Middle Island





Management Strategy Objectives

- Conserve and Protect waters that meet nutrient targets
- Restore waters that don't meet nutrient targets
- Monitor and Report on status of nutrients against targets and progress of actions

Why Focus on Phosphorus (for now)?

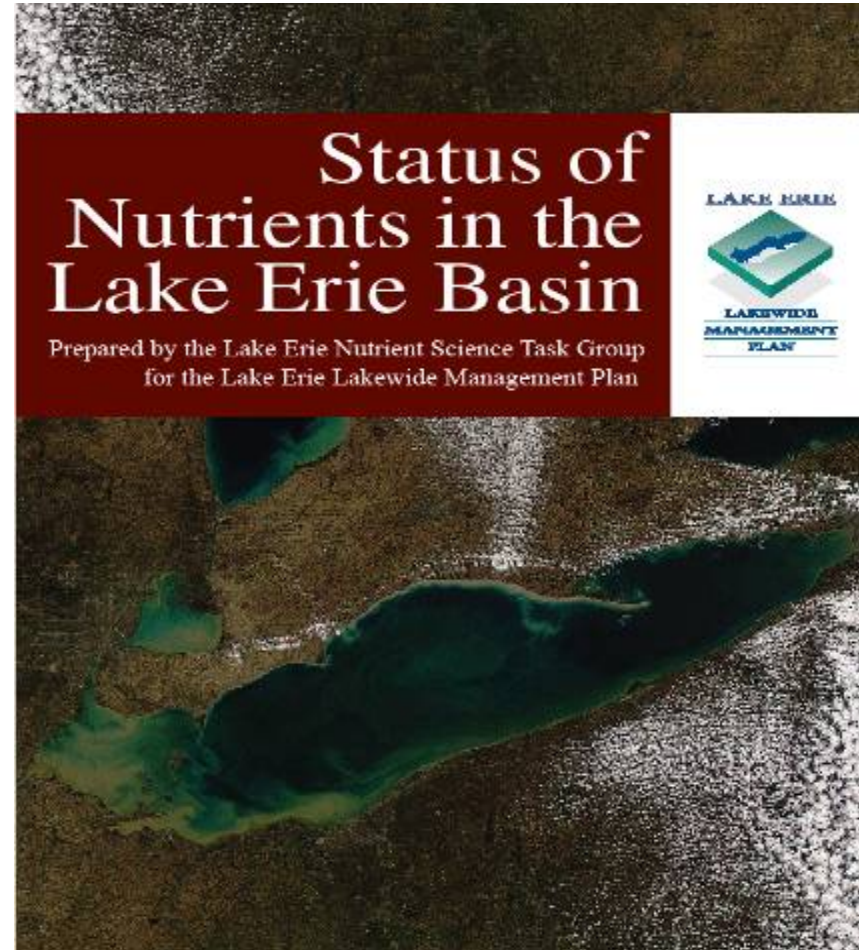
- Usually phosphorus is the nutrient that stimulates algal growth
- Widely collected, in all habitat types
- Total phosphorus is easier to measure than its component fractions
- Need to develop reliable methods for collecting soluble reactive phosphorus information
- Nitrogen and other nutrients will be watched

The Nutrient Management Strategy identifies binational:

- Goals
- Objectives
- Indicators & Targets
- Principles
- Status of Nutrients & Management Actions
- Mitigation Priorities including watersheds
- Monitoring Priorities
- Research Priorities
- Reporting requirements

Progress to Date

- State of Nutrients Science Report release pending
- Compendium of existing management programs in LE basin
- TP targets proposed for various habitat types
- Nutrient Strategy Report being finalized



Total Phosphorus Indicator Targets

(proposed)

Habitat Types	TP Target (mean average conc ug/L)
Tributaries	25-30
Coastal Wetland	20-30
Nearshore	15-20
West Basin	15-18
Central & East Basins	10-13.5

How will the Strategy work?

- Implementers to identify actions within their purview and resource
- Link to existing watershed mgmt programs
- Link to nearshore to open lake with Coastal Management Plans

Working in the Binational Setting

- Common goals, diverse management approaches
- Fluctuating political and resource support
- Large cast of characters
- Some agencies independent of the LaMP

