



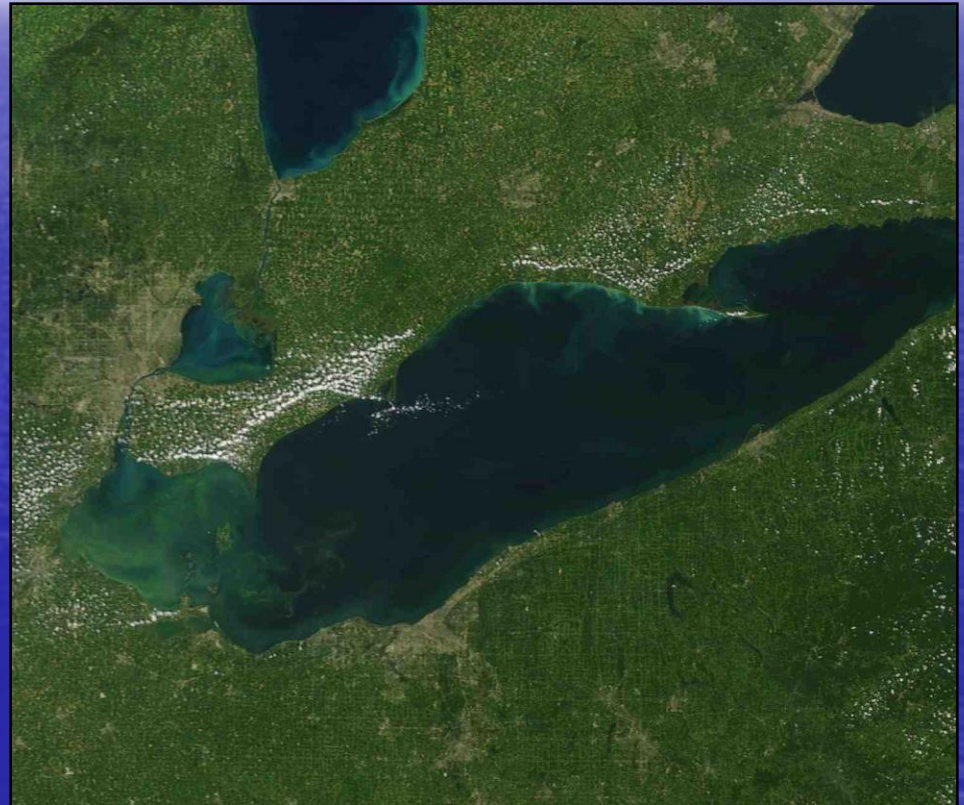
Lake Erie LaMP
Nutrient Management Strategy
Lake Erie Millennium Network
April 27, 2010
Windsor, ON

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On behalf of the Lake Erie Lakewide Management Plan (LaMP)



Outline

- Status of Lake Erie Nutrients
- Nutrient Strategy: Framework and Targets
- Next Steps



Lake Erie Western Basin September 2009



Status of Offshore Waters

- Not consistently meeting 11,000 tonnes/yr loading target
- Non-point sources continue to be the largest portion of the loadings to Lake Erie.
- 48% of loadings to offshore waters comes from western basin watersheds.
- Western basin rarely meets GLWQA TP target concentration in spring or summer.
- Central and Eastern basin mostly meets targets in summer; occasionally in spring.

External Phosphorus Sources 1998-2005 Water Years	Average Phosphorus Load metric tons/year	% of Total
Non-point sources	5,604	60.8%
Point sources	1,908	20.7%
Atmospheric deposition	628	6.8%
Upper Lakes	1,080	11.7%
Total	9,220	100%

Source: Dave Dolan, U. Wisconsin, Green Bay

Status of Nearshore Waters



- Cladophora in eastern basin reminiscent of 1970s
- Benthic mat-forming blue-green algae and *Microcystis* reported in the west basin
- Increased costs to water treatment plants to remove potentially harmful algal toxins
- Periodic fish and wildlife kills due to elevated algal toxin levels in water
- Unstable fish communities
- Disruptions in food web and energy flow
- Degraded habitats especially nearshore, wetlands and tributaries
- Beach closures and contamination
- Property values declining

Status of Tributaries

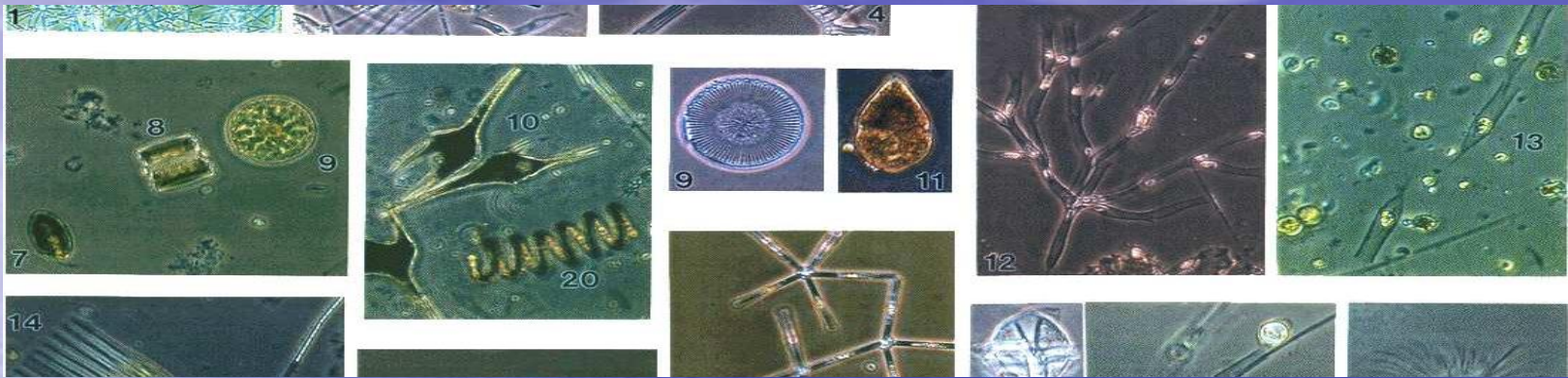
- Large rivers contributing majority of TP
- Smaller rivers may be impacting localized nearshore areas, especially after significant storm events
- SRP appears to be increasing disproportionately to TP in tributaries
- Agriculturally dominated watersheds appear to be highest contributors
- Trenton Channel- high TP



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

Why Focus on Phosphorus?



- Phosphorus is the nutrient that limits 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 continue to be monitored.

Strategy Goals

Lake Erie LaMP

Nutrient inputs from both point and non-point sources are managed to ensure that ambient concentrations are within bounds of sustainable watershed management and consistent with the Lake Erie Vision.

GLWQA

A substantial reduction in the present levels of algal biomass to levels below a nuisance condition including bays and other areas where nuisance algal blooms may occur (GLWQA Annex 3-1).

Strategy Objectives

- Stop further degradation.
- 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 domestic actions



WB Sept 2009

Strategy Principles

- Adaptive management
- Precautionary principle
- Government Responsibility
- Shared Responsibility
- Accountability
- Pollution Prevention
- Integration and Cooperation

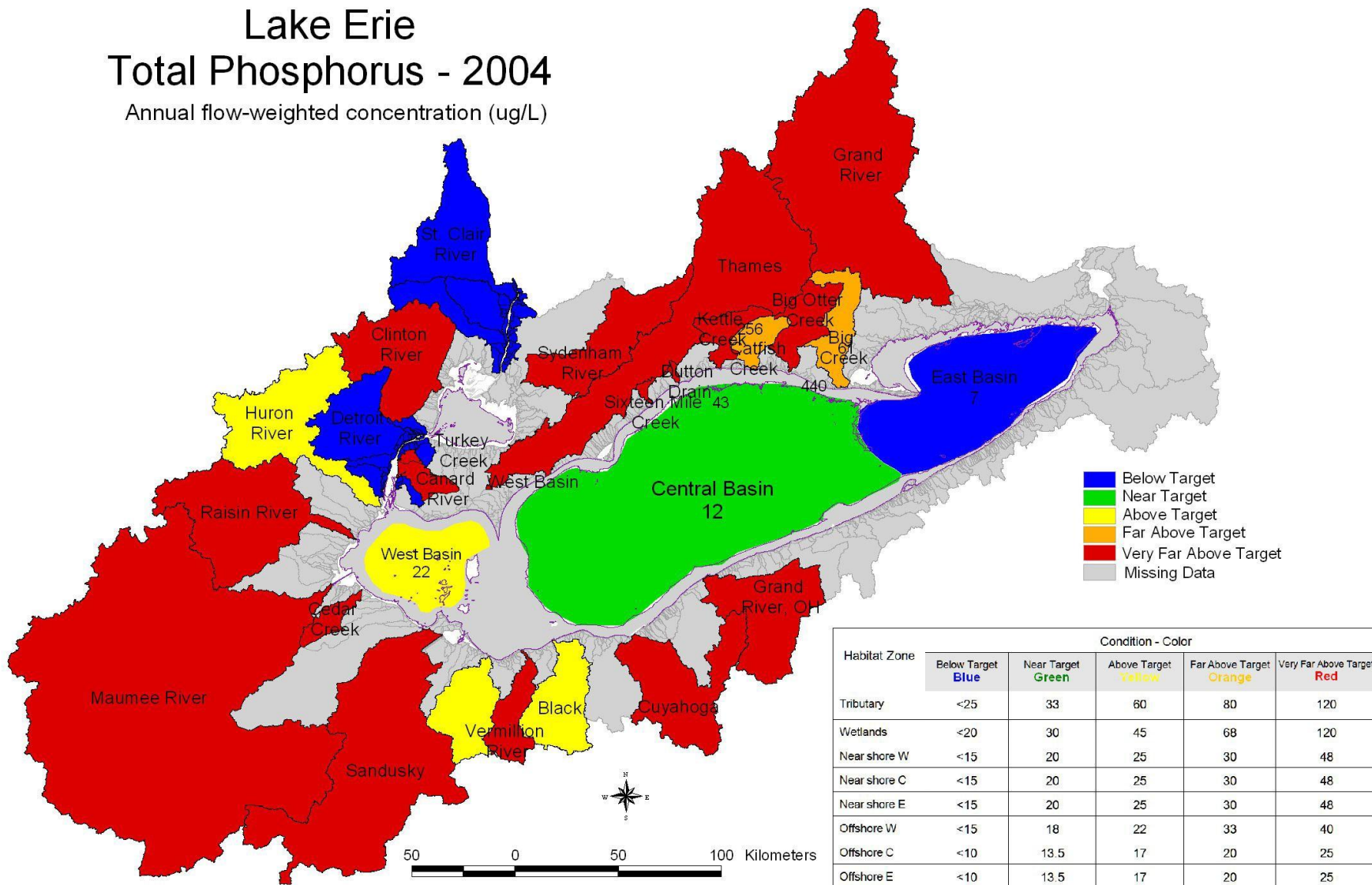
Total Phosphorus Indicator Targets

Habitat Type	TP Target ($\mu\text{g/L}$)
Offshore	15
•West Basin	10
•Central Basin	10
•East Basin	
Nearshore	20
Tributaries	32
Coastal Wetlands	one recording of $<30 \mu\text{g/L}$ / year

Lake Erie

Total Phosphorus - 2004

Annual flow-weighted concentration (ug/L)



Status of Management Actions

Current nutrient management actions and programs are not achieving the nutrient levels required to achieve the Lake Erie LaMP Vision.

- We need to optimize existing Programs
- If optimization of existing programs cannot achieve LaMP nutrient targets, then new programs should be considered
- Improved action is needed urgently!



Nutrient Mitigation Priorities

- Reduce Non-point source inputs substantially
- Selective reductions in point sources (municipal & industrial)
- Restore functional landscapes and hydrological processes
- Improve habitat amount, complexity, linkages
- Understand emerging issues (science)
- Evaluate effectiveness of actions (monitor)

Research Priorities

- Ecosystem processes
- Relative importance of various forms of P
- Impact of human activities
- Prediction of outcomes
- Effectiveness of existing beneficial management practices and technologies
- Role of climate change
- Communicate science



Monitoring Priorities

- Determine and report on progress
- Identify relationships between human uses and ecosystem response
- Minimize potential harm to the ecosystem
- Assist in setting research and monitoring priorities
- Evaluate the success of implementation activities



Ecosystem Status & Response Reporting

- Reporting will be integrated into the 5-year reporting cycle required by the LaMP.
- Will use the monitoring and research data acquired over the five-year cycle and compare results against agreed to targets and indicators.
- Reports will be short, map-based, and visual using GIS technology.
- In the absence of an indicator, results will be compared against previously collected data and identify where trends exist.

Next Steps.....

- Develop marketing and communications products and conduct outreach and education
- LaMP Binational Work Plans
- Domestic Work Plans
- Continue Science and Monitoring

In conclusion

It's complicated
Science essential
Stay focused and prioritize
External vigilance required