Welcome! The webinar will start soon.

International Joint Commission
Great Lakes Science Advisory Board & Great Lakes Water Quality Board

Progress Toward Nutrient Management in Lake Erie and Lake Ontario

Webinar Presentation

September 25, 2023

Progress Toward Nutrient Management in Lake Erie and Lake Ontario

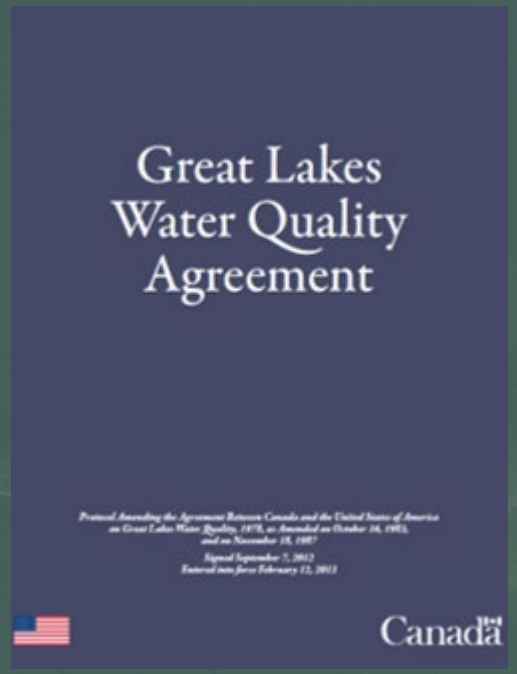
Webinar Agenda

- Presentation (35 minutes)
- Q&A (~25 minutes)

Opening Remarks

Heather Stirratt
Director,
IJC Great Lakes Regional Office

About the International Joint Commission Great Lakes Advisory Boards



- Canada-US Great Lakes Water Quality Agreement

About the International Joint Commission Great Lakes Advisory Boards

- **Water Quality Board (WQB):** Principal advisor to the IJC on Great Lakes issues and Agreement implementation

- **Science Advisory Board (SAB):** Advises IJC and WQB on research and science:
  - *Research Coordination Committee (RCC)*
  - *Science Priority Committee (SPC)*

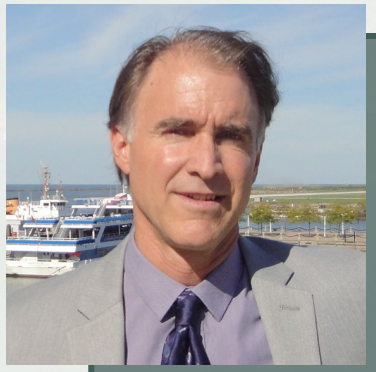
Webinar Panelists

Chris Winslow

SAB-RCC US Co-chair, Ohio Sea Grant

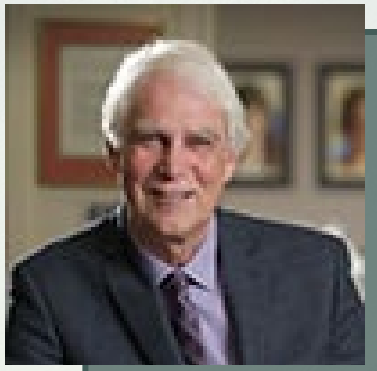
Deborah Lee

SAB-RCC US member, NOAA-GLERL



Michael Murray

SAB-SPC work group lead, U. of Michigan

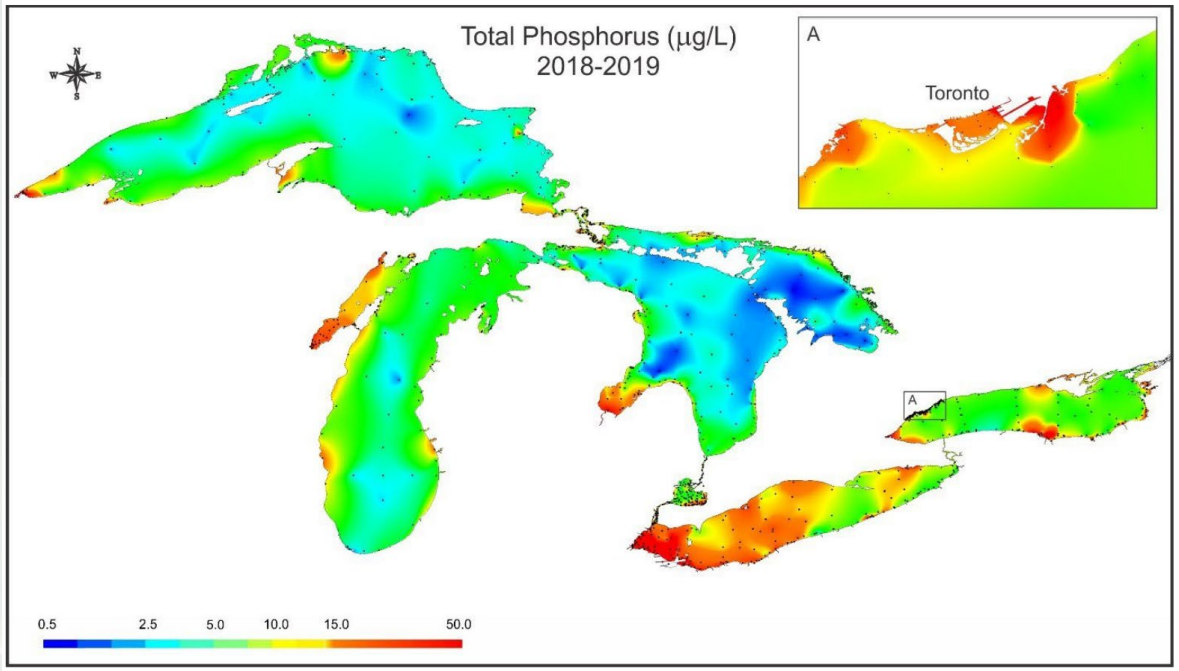


John Livernois

SAB-SPC work group lead, U. of Guelph

Nutrients and Algal Blooms in the Great Lakes

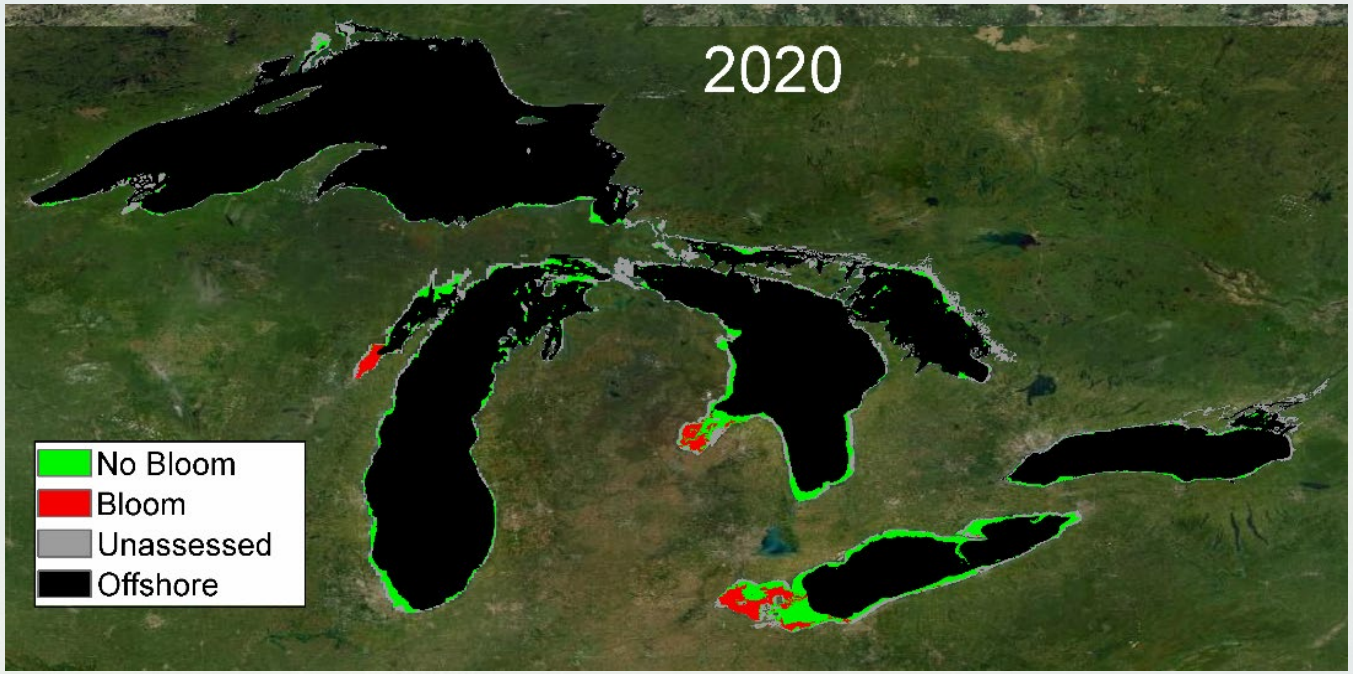
Nutrients



Spatial distribution of total phosphorus in the Great Lakes, 2018-2019.

(Source: Canada and the United States, State of the Great Lakes 2022 Technical Report)

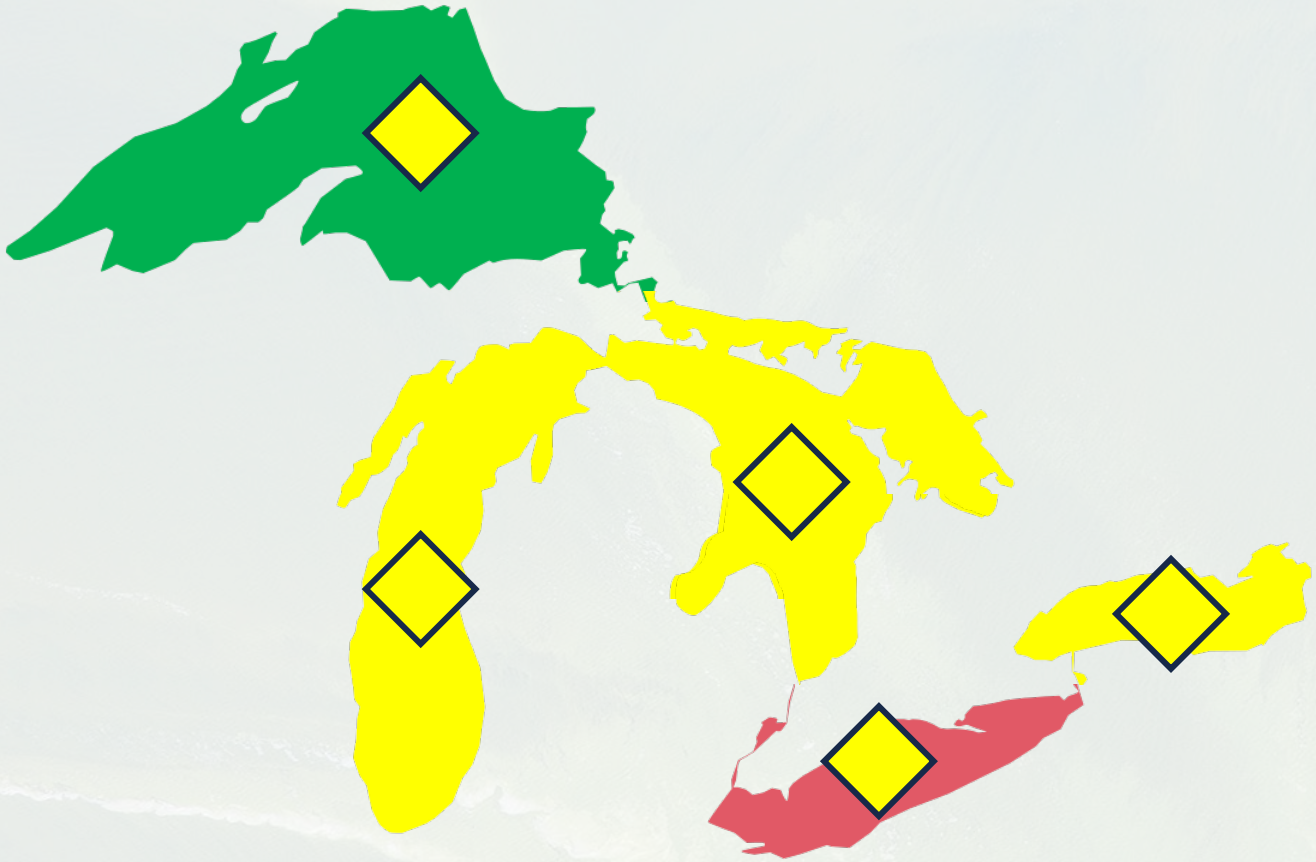
Algal Blooms



Extent of Great Lakes Harmful Algal Blooms, 2020. Bloom extents are variable year to year.

(Source: Canada and the United States, State of the Great Lakes 2022 Report)

Nutrients and Algal Blooms in the Great Lakes



Status	
	Good
	Fair
	Poor
	Undetermined
10-year Trend	
→	Improving
◇	Unchanging
←	Deteriorating

2022 assessment of nutrients and algae objectives for each Great Lake

(Source of data for graphic: Canada and the United States: State of the Great Lakes 2022 Technical Report; graphic by IJC)

Managing Algal Blooms and Nutrients in Lake Erie

Objectives and Targets Task Team

2016 Goal: 40% total phosphorus reduction

Annex 4 Subcommittee

2018-2022 Lake Erie Domestic Action Plans

Annex 4 Subcommittee

2019 Lake Erie Binational Phosphorus Reduction Framework

IJC Great Lakes SAB-RCC 2019 report proposed Great Lakes Nutrient Adaptive Management (GLNAM) Framework

Adaptive Management Task Team

2021 Draft Binational Lake Erie Nutrient Adaptive Management Framework (LE-AMF)

IJC Great Lakes SAB-RCC 2023 report evaluates and provides recommendations for how the LE-AMF can incorporate GLNAM elements

Annex 4 Subcommittee

2023-2027 Lake Erie Domestic Action Plans

IJC Great Lakes SAB and WQB 2023 report Evaluates 2018-2022 DAPs and provides recommendations for improving 2023-2027 DAPs

Managing Nutrients and Algal Blooms in Lake Erie

2012 Great Lakes Water Quality Agreement

Adaptive Management Approach

Authority	GLWQA
Oversight Body	Great Lakes Executive Committee
Regional Body	Nutrients Annex 4 Subcommittee
Working Committee	Great Lakes Nutrients Adaptive Management Task Team

Managing Nutrients and Algal Blooms in Lake Erie

2012 Great Lakes Water Quality Agreement

Adaptive Management Approach

Annex 4: Nutrients

Set Goal	Plan	Implement	Monitor	Synthesize	Evaluate	Adapt
40% P reduction target	Develop Domestic Action Plans	Implement Domestic Action Plans	Measure phosphorus and algal blooms	Are the plans achieving goals of P reduction	Communicate information and coordinate actions	Change actions and behaviors

Nutrients and Algal Blooms in the Great Lakes

Evaluation of Institutional Arrangements to Affect Nutrient Management Through Adaptive Management

A report submitted to the
International Joint Commission by the
Great Lakes Science Advisory Board-
Research Coordination Committee
Institutional Arrangements of Nutrient Adaptive
Management Work Group

July 2023

Nutrients in Lake Erie and Lake Ontario: Synthesis of International Joint Commission Recommendations and Assessment of Domestic Action Plans

A report submitted to the
International Joint Commission by the
Great Lakes Science Advisory Board
and the Great Lakes Water Quality Board
Joint Work Group on Nutrient Synthesis

June 2023

Managing Nutrients and Algal Blooms in Lake Erie

2023 Report:
Evaluation of Institutional Arrangements to Affect Nutrient Management Through Adaptive Management

IJC Science Advisory Board-Research Coordination Committee

Are the organizations, institutions and groups involved in implementing the draft Lake Erie Adaptive Management Framework making progress?

Evaluation of Institutional Arrangements to Affect Nutrient Management Through Adaptive Management

Findings	
Lake Erie Nutrient Adaptive Management framework is working, but its implementation has been informal.	Collaborative efforts tend to vary among jurisdictions.
Identification of adaptive management elements and necessary data and models are underway.	Lake Erie institutional arrangements are subject to the goals of individual jurisdictions.
An institutional structure has been established to coordinate the research, monitoring and modeling activities.	The communication, coordination and collaboration of activities are reliant upon funds from jurisdictions.

Evaluation of Institutional Arrangements to Affect Nutrient Management Through Adaptive Management

Recommendations	
Institutionalize the Lake Erie Nutrient Adaptive Management Framework through dedicated funding and staffing.	Provide additional guidance to both Canadian and US jurisdictions to improve phosphorus load reduction outcomes.
Identify and charge an existing group (or establish a new group) under Annex 4 to focus specifically on integrating and increasing linkages and collaboration among existing activities in the Lake Erie basin.	Explore lessons learned and best practices from other examples of adaptive management.
Address key research and data gaps.	Improve communication to link domestic and binational adaptive management processes.

Managing Nutrients and Algal Blooms in Lake Erie

2012 Great Lakes Water Quality Agreement

Adaptive Management Approach

Annex 4: Nutrients

2023 Report:
Nutrients in Lake Erie and Lake Ontario: Synthesis of International Joint Commission Recommendations and Assessment of Domestic Action Plans

IJC Science Advisory Board-Science Priority Committee and Water Quality Board

What is working well in developing and implementing Domestic Action Plans to achieve nutrient reduction targets? What are the gaps?

To what extent do Domestic Action Plans reflect past IJC recommendations?

Managing Nutrients and Algal Blooms in Lake Erie

2012 Great Lakes Water Quality Agreement

Adaptive Management Approach

Annex 4: Nutrients

	Plan	Implement	Monitor	Synthesize	Evaluate	Adapt
Goal	Reduce phosphorus by 40%	Implement Domestic Action Plans	Measure phosphorus and algal blooms	Are we reducing phosphorus enough?	Communicate information and coordinate actions	Change actions and behaviors
How	Domestic Action Plans	Regulations, standards, best management practices	Collaborative monitoring and research	Indicators in State of the Great Lakes Report	Draft Lake Erie Nutrient Adaptive Management Framework	Update Domestic Action Plans, revise nutrient targets

Nutrients in Lake Erie and Lake Ontario: Synthesis of International Joint Commission Recommendations and Assessment of Domestic Action Plans

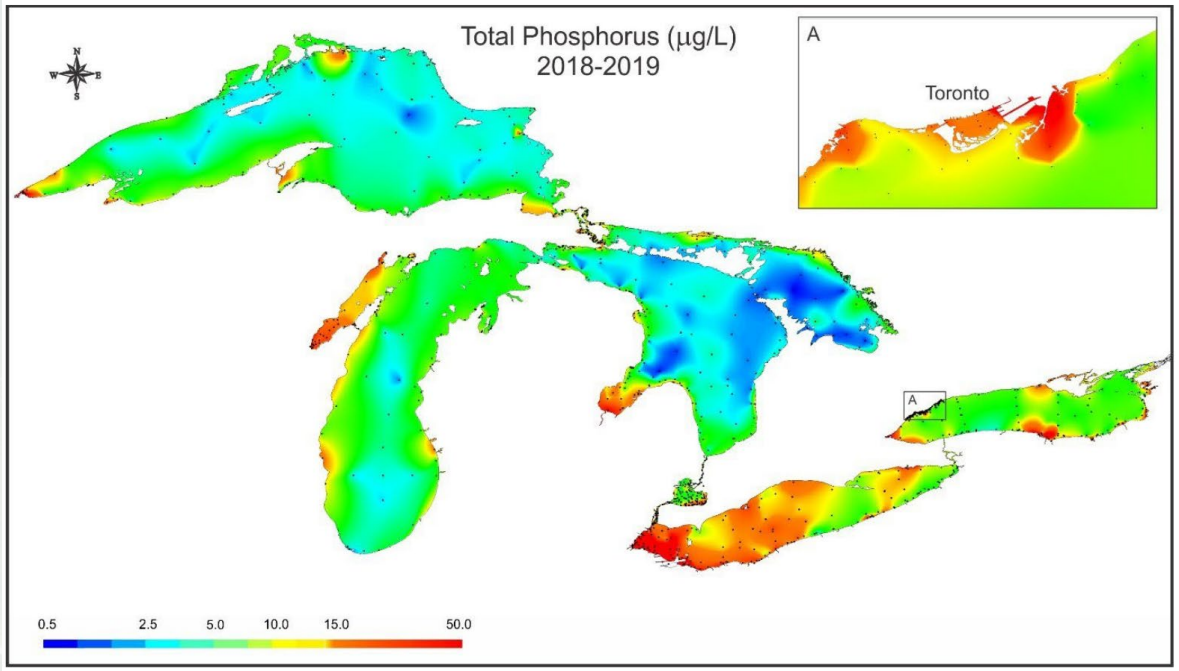
Lake Erie Recommendations
Incorporate an accountability framework into work under Annex 4 by 2024 that includes reporting on and evaluating progress on Lake Erie nutrients
Ensure DAPs include a framework for developing adoption targets for best management practices, and ensure resources are available to increase implementation efforts
Implement a common framework to assemble, analyze and communicate information on the generation and application of manure and commercial fertilizer, associated phosphorus and other nutrients

Nutrients in Lake Erie and Lake Ontario: Synthesis of International Joint Commission Recommendations and Assessment of Domestic Action Plans

Lake Erie Recommendations
Assess the on-farm costs, benefits and communication barriers to the adoption of best management practices
Examine the feasibility of a group-level economic instrument for reducing nonpoint source nutrient loadings in the Western Lake Erie Basin
Undertake and/or support new research to advance understanding of the effectiveness of specific best management practices and combinations of best management practices
Develop and/or revisit indicators needed for tracking progress in reducing nutrient loads and improving Lake Erie conditions

Nutrients and Algal Blooms in the Great Lakes

Nutrients



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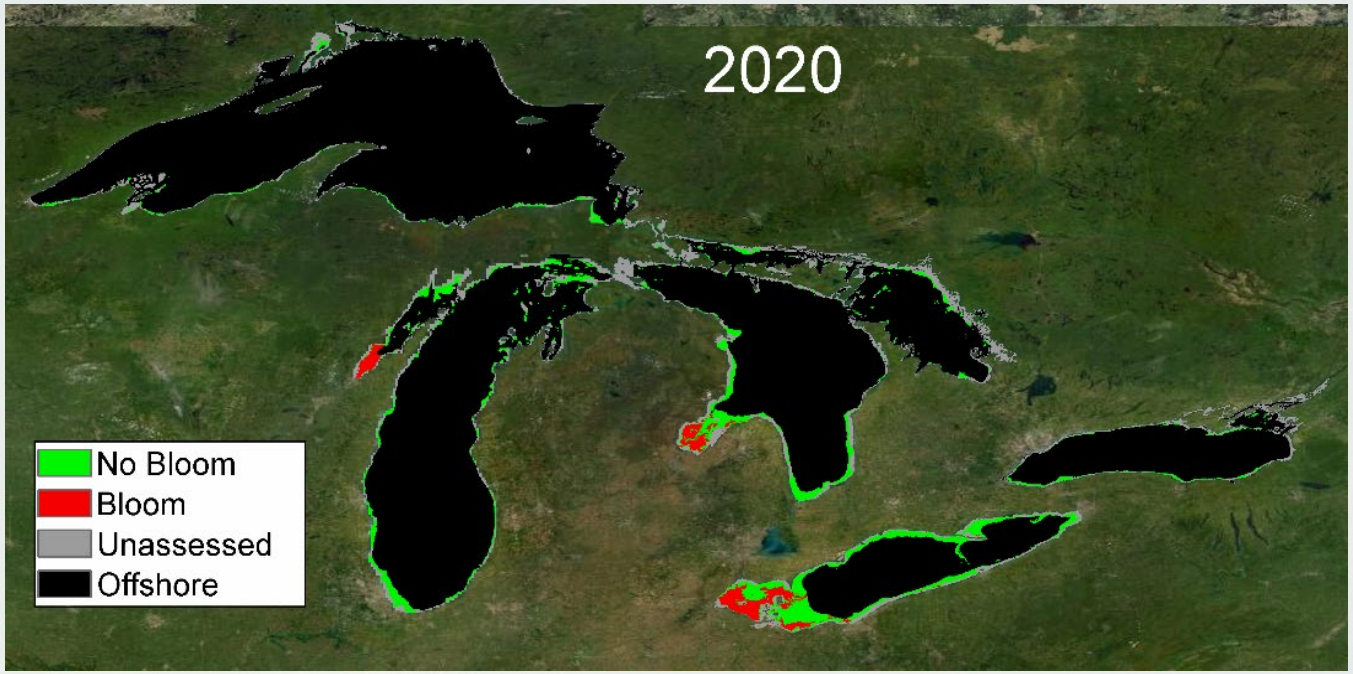

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Nutrients in Lake Erie and Lake Ontario: Synthesis of International Joint Commission Recommendations and Assessment of Domestic Action Plans

Lake Ontario Recommendations
Develop and make publicly available a process and timeline for reviewing nutrient objectives and targets for Lake Ontario, revise as appropriate based on a comprehensive review of the science, and identify potential no regrets nutrient reduction actions for nearshore areas;
Identify the best approach to improving science and management of nutrients and related issues in Lake Ontario.

Managing Nutrients and Algal Blooms in the Great Lakes

Next Steps

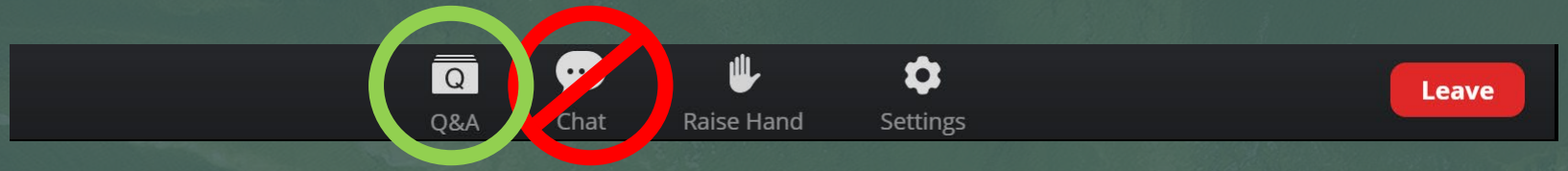
Ongoing work by the International Joint Commission:

- 2023 Triennial Assessment of Progress
- WQB Manure Management Framework
- WQB nutrient collaborative collective
- Great Lakes Science Plan

For more information about the Parties engagements under Annex 4, visit binational.net

AUDIENCE Q&A

- Please use the Q&A, not the chat



Thank you!

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SAB-RCC: Lizhu.Wang@ijc.org
WQB: Rajendra.Poudel@ijc.org

IJC.ORG/SAB

IJC.ORG/WQB

This webinar is finished.

You may now leave the Zoom webinar.