

Collaborative Study  
to Protect Lake Ontario  
Drinking Water  
Contaminants in Drinking Water -  
Canadian Studies

**Lake Ontario Contaminant Monitoring & Research  
Workshop:** Laurence F. (Larry) Moore PhD  
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This project has received funding support from the Ontario Ministry of the Environment. Such support does not indicate endorsement by the Ministry of the contents of this material.

# The Challenge

- Lake Ontario provides drinking water to 6 million people in Ontario
- High quality source but threats include:
  - Rivers and streams with agricultural and storm water contamination
  - Sewage treatment – bypassing & combined sewage overflows
  - Direct storm water discharges
  - Changes to lake ecosystem
  - Industrial discharges including nuclear power plants
- Complex physics in lake – upwelling/downwelling, thermal bar, winter/summer, rivers

## Our Knowledge

- Past research, including the research sponsored by the Ontario Water Works Research Consortium has given us improved understanding of:
  - Physics of the lake
  - Chemistry of the lake (not including toxins)
  - Algae including cyanobacteria
  - Cause of T&O events
- Little direct observation/measurement of toxins and pathogens – incomplete understanding of threats

# Objective of the Lake Ontario Collaborative

- Ensure the long-term, proactive and strategic protection of Lake Ontario based drinking water supplies



**ONTARIO WATER  
WORKS RESEARCH  
CONSORTIUM**  
**OWWRC**  
**SUPPORTED BY: GREEN MUNICIPAL  
ENABLING FUND & ONTARIO**



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# Lake Ontario Collaborative – Steering Committee

- Municipalities – (7 members) Prince Edward County, Cobourg, Port Hope, Durham Region, Toronto, Peel Region (Chair), Halton Region, Hamilton, Niagara Region.
- Conservation Authorities – (2 members) Source Water Protection Regions: Quinte; Trent Conservation Coalition; CTC; Halton/Hamilton; Niagara
- Environment Canada
- Ontario Ministry of the Environment
- Coordinator

## Funding

- Source Protection Research Program – OWWRC member funding
- In kind contributions esp. from Environment Canada
- Ontario Ministry of the Environment - Source Protection Technical Studies Program in support of the Ontario Clean Water Act, 2006
  - Phase 1 2006 – 2007 - \$595,000
  - Phase 2 2007 – 2008 - \$2,195,000

# Key Products from Phase 1

- Work plan/budget/communications plan
- Details on all drinking water intakes
- Delineation of Intake Protection Zones (IPZ)
- Information collection/Gap analysis
- Identify and map threats
- Lake Ontario source protection workshop/conference
- Planning for Phase 2 including model selection

## Phase 2 – Key Tasks

- Communications Plan
  - Public consultations
- Data Management Plan
  - Possible web based approach (area for joint work?)
- Pathogen Monitoring Plan
  - Implementation funding not yet in place (area for joint work?)
- Watershed Pollutant Loading Studies

## Phase 2 – Key Tasks continued

### ➤ Refine the Delineation of IPZs

- Map IPZs
- Data collection and analysis
- Assign vulnerability scores to IPZs that reflect the presence of preferential pathways
- Assign level of uncertainty to vulnerability scores and IPZ delineations

## Phase 2 – Key Tasks continued

- Issues evaluation and threats inventory
  - Drinking water issues
  - Drinking water threats
  - Evaluation of drinking water issues
  - Assign hazard ratings
  - Conduct uncertainty analysis
  - Inventory preferential pathways
  - Document data and knowledge gaps for issues and threats
  - Reporting and mapping

## Phase 2 – Key Tasks continued

### ➤ Water Quality Risk Assessment

- Lists/maps of threats on the landscape categorized
  - ✓ Significant
  - ✓ Moderate
  - ✓ Low
  - ✓ Negligible

# Summary

- Drinking water as a focus for Great Lakes research
- 2008
  - Potential joint work on effective data management
  - Joint effort to implement the pathogen monitoring plan
  - Sharing
    - ✓ Data collection
    - ✓ Communications products
    - ✓ Lake Ontario data/reports
    - ✓ Ideas

# Contact Information

## ➤ Project Manager

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## ➤ Ongoing updates on project at: [www.OWWRC.com](http://www.OWWRC.com)

## ➤ Coordinator

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