

**St. Clair River Canadian  
Implementation Committee  
(CRIC)**

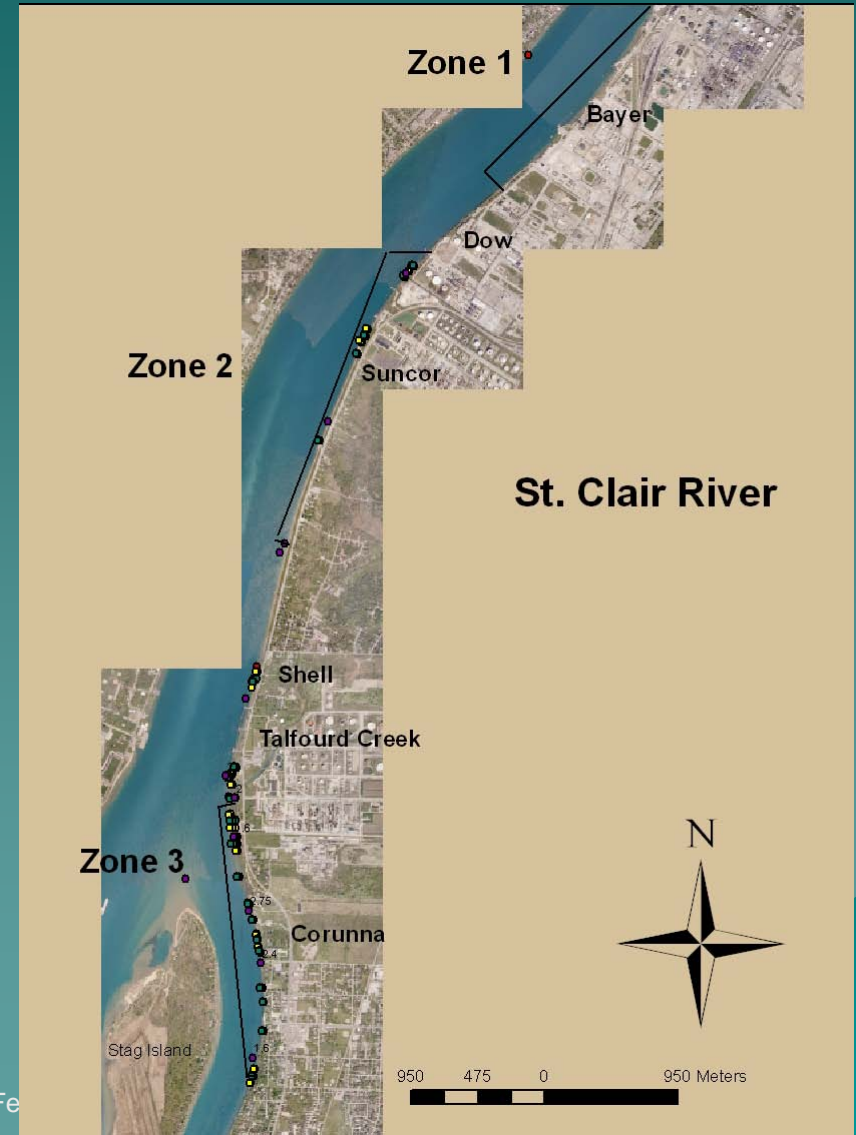
# Technical Team Terms of Reference

## Objectives:

- 1) Estimate the level of ecological risk posed by the sediment COCs using the Canada Ontario Agreement's technical guidance document, *Assessment of Contaminated Sediment Framework*" (COA Framework);
- 2) Based on objective 1, assess the need for remedial action and if remediation is required, recommend a preferred remedial option.

# St. Clair River Study Area

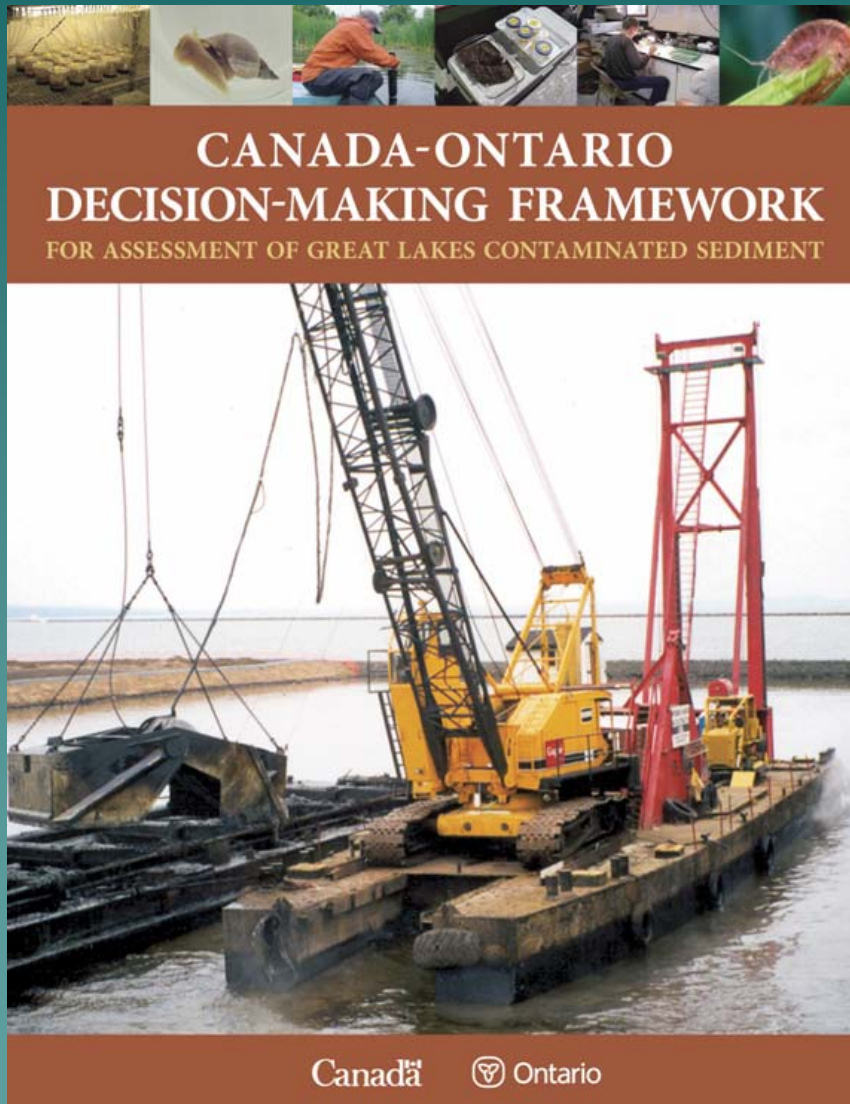
- ◆ **Zone 1**
  - D/S of Bayer intake forebay to a point U/S of Dow's 2nd St sewer. ~1000 m in length
- ◆ **Zone 2**
  - D/S Dow 4th St. sewer, between Dow's and Suncor Energy's ship loading dock, extending to a point upstream of the tower with 3 vertical lights – D/S of Suncor. ~about 1500 m in length
- ◆ **Zone 3**
  - U/S of NOVA'S (formerly Dupont) St. Clair facility outfall extending to a point D/S of Corunna STP. ~about 1300 m in length



# Technical Team Membership

- ◆ Co-chairs  
Ted Briggs (MOE)  
Roger Santiago (DOE)
- ◆ Ministry of the Environment  
Lisa Richman  
Scott Abernethy
- ◆ RAP Specialist  
Stewart Thornley
- ◆ Environment Canada  
Anne Borgmann  
Danielle Milani  
Hans Biberhofer
- ◆ St. Clair Region Conservation Authority (SCRCA)  
Patty Hayman
- ◆ Sarnia-Lambton Environmental Association  
Dean Edwardson
- ◆ Walpole Island First Nation  
Naomi Williams
- ◆ Aamjiwnaang (Chippewas of Sarnia) First Nation  
Sharilyn Johnston

# COA Sediment Assessment Decision Making Framework



## OVERVIEW

- ◆ Need for consensus on conducting of scientific assessments of contaminated sediments
- ◆ Need for a framework that is consistent, transparent, scientifically rigorous, technically defensible, understandable by laypersons
- ◆ Acknowledges and fits with existing guidance/criteria and clearly articulates decision rules and outcomes based on science.
- ◆ Extensive review within EC nation wide, internationally (US, Spain & Australia) and scientific journal peer review (i.e. SETAC)

# Principles

*Apply within context of common sense, i.e., not inflexibly*

- ◆ Sediment chemistry data should not be used alone
- ◆ Remediation decisions primarily based on biology
- ◆ Remediation not implemented if it will cause more harm than good

**Designed to be:**

- ◆ Rigid, without being inflexible
- ◆ Capable of addressing site-specific considerations
- ◆ Capable of determining both localized and regional risks

# Framework Summary

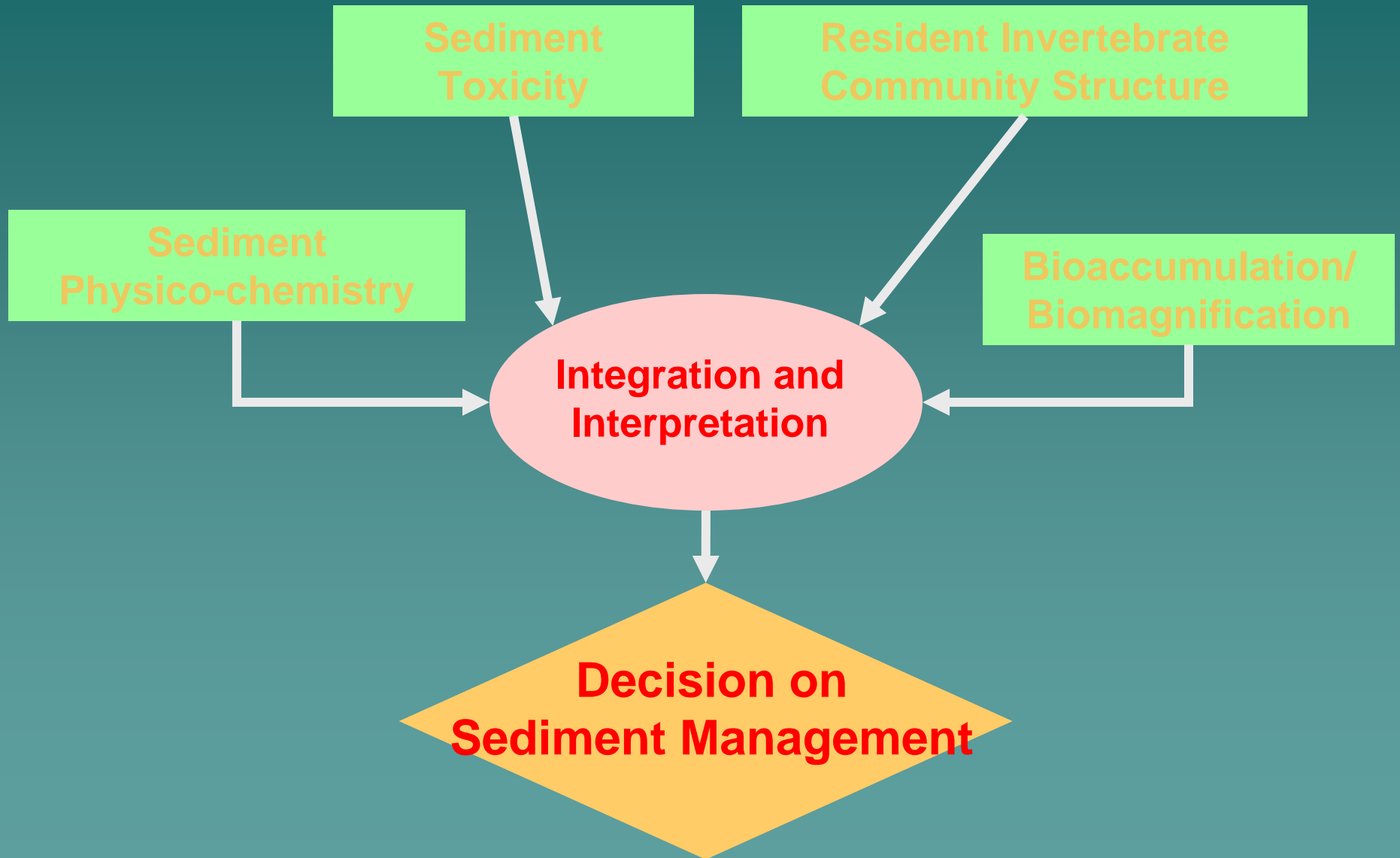
## Four lines of evidence:

- ◆ Sediment chemistry
- ◆ Toxicity
- ◆ Benthic community structure
- ◆ Potential for contaminant biomagnification

## Incorporates:

- ◆ exposure
  - ◆ effect
  - ◆ weight of evidence
  - ◆ risk
- 
- ◆ Identifies the need for sediment management actions on a site by site basis
  - ◆ Does not include risk management decision making – limited to science

# Sediment Assessment Components





# Decision Matrix

	■	■	■
Chemistry	Adverse effects likely	Adverse effects may or may not occur	Adverse effects unlikely
Toxicity endpoints	Major	Minor	Negligible
Overall toxicity	Significant	Potential	Negligible
Benthos alteration	"different" or "very different"	"possibly different"	"equivalent"
Biomagnification potential	Significant	Possible	Negligible
<b>Overall WOE assessment</b>	Significant adverse effects	Potential adverse effects	No significant adverse effects

# COA Framework - Decision Matrix Examples

Scenario	Bulk Sediment Chemistry	Toxicity	Benthos Alteration	Biomagnification Potential	Assessment
1	■	■	■	■	No further actions needed
2	■	■	■	■	No further actions needed
6	■	■	■	■	Determine reason(s) for sediment toxicity
8	■	■	■	■	Determine reason(s) for benthos alteration
12	■	■	■	■	Determine reason(s) for sediment toxicity & fully assess risk of biomagnification
14	■	■	■	■	Determine reason(s) for sediment toxicity & benthos alteration & fully assess biomagnification
16	■	■	■	■	Management actions required.

■ Adverse effects unlikely

■ Adverse effects likely

# Assess Sediment Management Options

## •Potential Remedial Options:

- No action;
- Institutional Controls;
- Monitored Natural Recovery (enhanced);
- Sediment Capping;
- Sediment Removal;
- Removal Process Options (dewatering, transportation, sediment disposal/reuse);
- *In-situ* treatment;
- *Ex-situ* treatment.

## •Pre-screening based on :

- Effectiveness
- Implementability
- Cost

# Sediment Management Process

- ◆ Biological and Chemical Assessment - 2007
- ◆ COA Decision Making Framework - 2008
- ◆ Sediment Management Options - 2008/09
- ◆ Engineering design, EA - 2009/10
- ◆ Implementation - 2010/11
- ◆ Long term monitoring - 2012...