

St. Clair River Area of Concern 2012-2017 Work Plan



Prepared by:
St. Clair River Canadian Remedial Action Plan Implementation Committee (CRIC)
May 2013



Aerial view of the St. Clair River. *John Staines, Kilworth, Ontario.*

Cover Photo: Freighters and pleasure boats travelling along the St. Clair River. *St. Clair Region Conservation Authority.*

PREFACE

In 2005, the Canadian Remedial Action Plan Implementation Committee (CRIC) was formed and given the mandate to organize the restoration of Beneficial Use Impairments (BUIs) identified in the 1991 Stage 1 Remedial Action Plan (RAP) for the St. Clair River Area of Concern (AOC). Since the CRIC's formation, a number of notable and significant activities have been completed and legislative initiatives enforced that have improved the environmental health of the St. Clair River.

The CRIC developed a work plan in 2007 that expanded on the St. Clair River Stage 2 RAP document published in 1995 and a synthesis report published in 2005 that provided an update on implementation activities conducted throughout the AOC. Both reports summarized remaining or additional actions required to restore "Impaired" BUIs or assess those with inconclusive or insufficient scientific data. Each recommended activity was established to facilitate either the re-designation of an "Impaired" BUI to "Not Impaired" or the collection of additional information to assign a designation to a BUI with insufficient data. Five subcommittees were organized to develop the 2007-2010 work plan. It documented remedial actions for the St. Clair River that related to: 1) Point Sources, 2) Sediments, 3) Habitat and Non-Point Sources, 4) Monitoring and Research, and 5) Public Outreach and Education.

An update report published in the summer of 2012 summarized the activities completed between 2007 and 2010 along with what was accomplished in 2011. In total, 114 actions were identified in 2007 and by the end of 2011, 85% were either completed or had been initiated in the St. Clair River AOC.

The 2012-2017 work plan identifies the final remedial actions necessary to restore, and ultimately delist, the St. Clair River AOC. Each subcommittee has been delegated specific BUIs for which they are responsible for identifying priority actions that will meet delisting criteria. The timelines developed for each activity are based on the fiscal year (April to March) rather than the calendar year (January to December). For the 2012-2017 Work Plan the Habitat and Non-Point Source subcommittee has been renamed the Fish and Wildlife subcommittee.

The following individuals are or have been members of the St. Clair River AOC CRIC and have been instrumental in the creation of this document:

Ted Briggs – Ontario Ministry of the Environment

Terry Burrell – City of Sarnia

Paul Buttery – County of Lambton Community Health Services Department

Dean Edwardson – Sarnia-Lambton Environmental Association

Sharilyn Johnston – Aamjiwnaang First Nation

Sandra Kok – Environment Canada

Claude Lafrance – St. Clair River Remedial Action Plan Coordinator

Jake Lozon – Rural Lambton Stewardship Network

Brian McDougall – St. Clair Region Conservation Authority

Mike Nelson – Ontario Ministry of Natural Resources

Wilson Plain Jr. – Aamjiwnaang First Nation

Darrell Randell – St. Clair Township

Jennifer Richards – Ontario Ministry of Natural Resources

Trevor Robak – Ontario Ministry of Agriculture, Food and Rural Affairs

Christine Rogers – Aamjiwnaang First Nation

Donna Strang – St. Clair Region Conservation Authority

Annette Verhagen – Ontario Ministry of the Environment

Phil Vallance – Binational Public Advisory Council

April White – Environment Canada

Naomi Williams – Walpole Island First Nation



Children watching freighters along the St. Clair River shoreline. *Nedra Melton.*

TABLE OF CONTENTS

PREFACE.....	i
INTRODUCTION.....	1
BENEFICIAL USE IMPAIRMENTS	2
Restrictions on Fish and Wildlife Consumption	3
Degraded Fish and Wildlife Populations.....	6
Fish Tumours or Other Deformities	7
Bird or Animal Deformities or Reproductive Problems	8
Degradation of Benthos	8
Restrictions on Dredging Activities	9
Restrictions on Drinking Water Consumption or Taste and Odour Problems	9
Beach Closings	10
Degradation of Aesthetics	11
Loss of Fish and Wildlife Habitat	12
PUBLIC OUTREACH AND EDUCATION WORK PLAN	15
CONCLUSION	19
LIST OF ACRONYMS.....	20
GLOSSARY OF TERMS.....	21
LIST OF TABLES	
Table 1: The 14 Beneficial Use Impairments (BUIs) identified by the International Joint Commission (IJC) and their current (2013) status in the St. Clair River Area of Concern (AOC)	2
LIST OF FIGURES	
Figure 1: Map of the St. Clair River Area of Concern (AOC), including Area 1A and 1B Boundaries (SCRCA, 2012)	iv

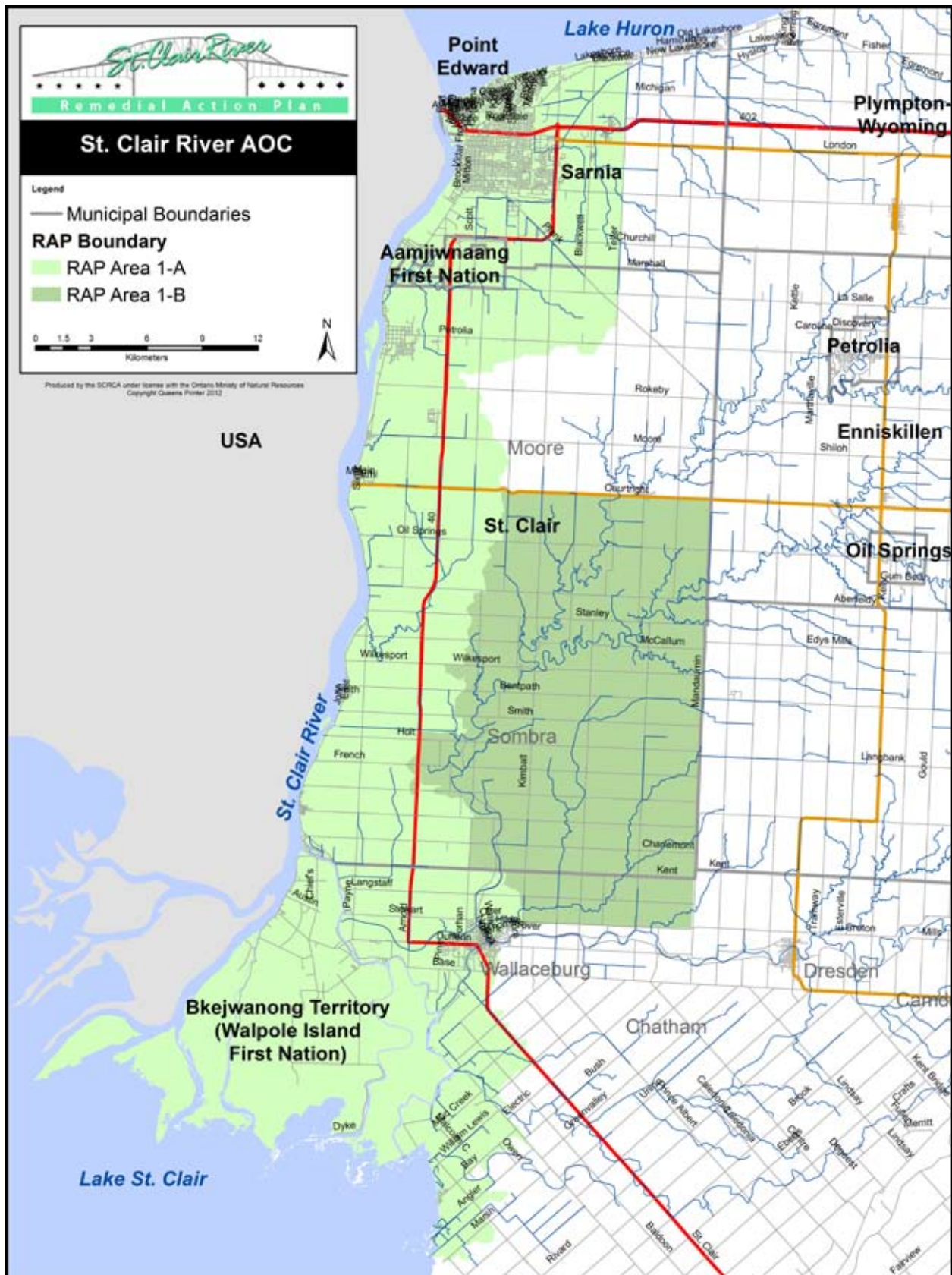


Figure 1: Map of the St. Clair River Area of Concern (AOC), including Area 1A and 1B Boundaries (SCRCA, 2012).

INTRODUCTION

In 1985, the International Joint Commission (IJC) identified the St. Clair River as an Area of Concern (AOC) in the Great Lakes Basin as it did not meet the objectives of the Great Lakes Water Quality Agreement (GLWQA), signed in 1972 by the Canadian and United States governments. As a result of degraded chemical, physical and biological integrity, impairments to beneficial uses were identified, attributed primarily to elevated contaminant concentrations in the water, biota and sediments of the St. Clair River. The loss of aquatic and coastal habitats was also a concern. These observations led to the formation of a Binational Remedial Action Plan (RAP) Committee in 1987, consisting of federal, provincial and state representatives from Michigan and Ontario. The committee's key responsibility was to develop a RAP to improve and rehabilitate the environmental conditions in the St. Clair River AOC.

The Stage 1 RAP report was published in 1991. It described the environmental conditions of the St. Clair River and identified the status of Beneficial Use Impairments (BUIs) based on criteria developed by the IJC. Of the 14 possible beneficial uses, eight were "Impaired" and four were classified as "Requires Further Assessment" (RFA) based on 1985-86 surveys of water, biota and sediment, and data up to 1990. The "Impaired" BUIs were attributed primarily to industrial and municipal discharges in the upper reaches of the St. Clair River. The follow-up Stage 2 RAP report was completed in 1995 and introduced a framework for restoring the environmental integrity of the St. Clair River. The report outlined 45 different activities required to fulfil BUI delisting criteria and lead to the re-designation of all BUIs to "Not Impaired." Once all BUIs are re-designated to a "Not Impaired" status, a recommendation to the IJC can be made to "delist" the St. Clair River as an AOC. The process of "delisting" an AOC is a significant milestone as it signifies that the health of the aquatic environment has been significantly improved. Table 1 outlines the current (2013) status of BUIs in the St. Clair River AOC.

Table 1: The 14 Beneficial Use Impairments (BUIs) identified by the International Joint Commission (IJC) and their current (2013) status in the St. Clair River Area of Concern (AOC).

Beneficial Use Impairment	Status (2013)
Restrictions on Fish and Wildlife Consumption	Impaired
Tainting of Fish and Wildlife Flavour	Not Impaired
Degraded Fish and Wildlife Populations	Requires Further Assessment
Fish Tumours or Other Deformities	Requires Further Assessment
Bird or Animal Deformities or Reproductive Problems	Requires Further Assessment
Degradation of Benthos	Impaired
Restrictions on Dredging Activities	Impaired
Eutrophication or Undesirable Algae	Not Impaired
Restrictions on Drinking Water Consumption or Taste and Odour Problems	Impaired
Beach Closings	Impaired
Degradation of Aesthetics	Impaired
Added Costs to Agriculture or Industry	Not Impaired
Degradation of Phytoplankton and Zooplankton Populations	Not Impaired
Loss of Fish and Wildlife Habitat	Impaired

The Canadian Remedial Action Plan Implementation Committee (CRIC), formed in 2005, has led the organization and implementation of remedial activities in the St. Clair River AOC. A Work Plan was developed in 2007 and expanded on required restoration activities outlined in the Stage 2 RAP report. An update report published in 2012 highlighted the significant accomplishments achieved since 2007; eighty-five percent of the recommended remedial activities had either been completed or initiated by the end of 2011. This work plan outlines the final actions needed to re-designate the remaining "Impaired" or "RFA" BUIs and "delist" the St. Clair River as an AOC in the Great Lakes Basin. It will cover the years 2012-2017 and is anticipated to be the last work plan for the St. Clair River AOC prior to "delisting."

BENEFICIAL USE IMPAIRMENTS (BUIs)

Restrictions on Fish and Wildlife Consumption

Fish Consumption = IMPAIRED

Wildlife Consumption = REQUIRES FURTHER ASSESSMENT (on a Great Lakes Basin basis)

Revised Delisting Criteria (2012): This BUI will be considered restored when fish consumption advisories in indicator fishes (e.g., walleye, brown bullhead, and smallmouth bass) in the AOC are the same or less restrictive than the associated Great Lakes or appropriate reference sites and when the general guidance for the consumption of indicator wildlife (e.g., snapping turtles, geese) are no different than the non-AOC sites in the Great Lakes.

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Use the 2009 fish tissue survey results including a comparison of mercury levels in indicator fish (walleye, brown bullhead and smallmouth bass) to levels reported in previous surveys to assess the status of fish consumption.	X						OMOE
Conduct sport fish surveys every four years to monitor key indicator species and report on survey results until the survey is either replaced with another monitoring program or is no longer necessary for the AOC.		X				X	OMOE, OMNR
Report on “head and mouth” river monitoring results for concentrations of metals and organic contaminants of concern from 2000 to 2012.	X						EC
Report on sediment chemistry from 2008 to current to determine trends in contaminants for use in BUI assessment and, if required, deploy sediment traps in the St. Clair River to determine spatial and temporal trends in contaminants in the AOC.	X	X	X				EC, OMOE



Water sampling. *St. Clair Region Conservation Authority.*

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Management and remediation of 3 remaining contaminated sediment priority areas within the St. Clair River to reduce local risks to fish consumption. The following steps will be required:							
1. Develop Sediment Management Options.	X						Sediment Technical Team
2. Conduct a Public, First Nation and Stakeholder consultation to outline options.	X	X					Sediment Technical Team
3. Selection of preferred options for Priority Areas 1, 2 and 3.		X					EC, OMOE
4. Request funding for preferred management options, which includes detailed engineering design and implementation.		X					EC, OMOE
5. Undertake detailed engineering design and environmental assessment on selected preferred options.		X	X				Project Manager (TBD)
6. Review, tender and award project and begin mobilization.				X			Project Manager (TBD)
7. Implementation of preferred sediment management options.					X	X	Project Manager (TBD)

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Evaluate effectiveness of sediment remediation and implement adaptive management to improve effectiveness of remediation if necessary.						X	OMOE, EC
Undertake assessment of sediments for contaminants of concern in the Walpole Island delta and share results with the WIFN community.	X	X					OMOE, WIFN
Review and share with WIFN the waterfowl report summarizing the current and historic contaminant levels in waterfowl livers from the AOC.		X					EC
Report on existing consumption risk approaches and consumption guidelines that could be used to help evaluate this BUI (specifically around waterfowl, muskrat and turtles).		X	X				EC, OMOE, WIFN
Review all relevant data collected and undertake an assessment to determine current status based on delisting criteria and if an "Impaired" status results, prepare an action plan.					X	X	CRIC, EC, OMOE



Wood Ducks (*Aix sponsa*). St. Clair Region Conservation Authority.



Ruddy Duck (*Oxyura jamaicensis*) on the St. Clair River. St. Clair Region Conservation Authority.

Degraded Fish and Wildlife Populations

Fish Populations = NOT IMPAIRED

Fish Body Burdens = REQUIRES FURTHER ASSESSMENT (on a Great Lakes Basin basis)

Wildlife Populations = REQUIRES FURTHER ASSESSMENT (on a Site Specific basis)

Wildlife Body Burdens = REQUIRES FURTHER ASSESSMENT (on a Great Lakes Basin basis)

IJC Delisting Criteria (1991): This BUI will be considered restored when environmental conditions support healthy, self-sustaining communities of desired fish and wildlife at predetermined levels of abundance that would be expected from the amount and quality of suitable physical, chemical and biological habitat present. An effort must be made to ensure that fish and wildlife objectives for Areas of Concern are consistent with Great Lakes ecosystem objectives and Great Lakes Fishery Commission fish community goals. Further, in the absence of community structure data, this use will be considered restored when fish and wildlife bioassays confirm no significant toxicity from water column or sediment contaminants.

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Coordinate technical analysis and summary of EC decadal waterfowl surveys.	X						EC
Collect and synthesize wildlife population reports for waterfowl, marsh birds, indicator amphibians and turtles for the SCR area.	X	X				X	EC, OMNR, SCRCA
Collaborate with WIFN and AFN on science results and solicit input/Aboriginal Traditional Knowledge on findings.	X	X					EC, OMNR
Assess wildlife population dynamics component of the BUI.		X	X				EC, OMNR
Revise and/or replace "AOC yardstick" values.		X	X				EC, OMOE
Review 2012 EC reports on reproductive health for frogs and turtles and share results. Determine next steps.	X						EC
Review all relevant data collected and undertake an assessment to determine current status based on delisting criteria and if an "Impaired" or "Requires Further Assessment" status results, prepare an action plan.			X				CRIC, EC, OMOE

Fish Tumours or Other Deformities

REQUIRES FURTHER ASSESSMENT (on a Site Specific basis)

IJC Delisting Criteria (1991): This BUI will be considered restored when the incidence rates of fish tumours or other deformities do not exceed rates at unimpacted control sites and when survey data confirm the absence of neoplastic or preneoplastic liver tumours in bullheads or suckers.

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Conduct a workshop within the WIFN community to discuss fish health concerns, share research conducted to date within the AOC on incidence of fish tumours, and the possibility of conducting additional fish tumour research within the Walpole Island delta.	X						EC, WIFN
Plan and conduct the liver tumour study in the Walpole Island delta.		X	X				EC, WIFN
Analyze fish livers for tumours and report on results.		X	X	X			EC
Collate and summarize OMNR data on prevalence of skin lesions and liver tumours in walleye.	X	X					OMNR
Review all relevant data collected and undertake an assessment to determine current status based on delisting criteria and if an "Impaired" or "Requires Further Assessment" status results, prepare an action plan.				X			CRIC, EC, OMOE



Fish sampling in the St. Clair River. *St. Clair Region Conservation Authority.*

Bird or Animal Deformities or Reproductive Problems

REQUIRES FURTHER ASSESSMENT (on a Site Specific basis)

IJC Delisting Criteria (1991): This BUI will be considered restored when the incidence rates of deformities (e.g. cross-bill syndrome) or reproductive problems (e.g. egg-shell thinning) in sentinel wildlife species do not exceed background levels in inland control populations.

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Review and consult on findings of the two reports on reproductive health and development of snapping turtles and leopard frogs in the St. Clair River AOC.	X	X					EC
Review all relevant data collected and undertake an assessment to determine current status based on delisting criteria and if an "Impaired" or "Requires Further Assessment" status results, prepare an action plan.			X				CRIC, EC, OMOE

Degradation of Benthos

IMPAIRED

Revised Delisting Criteria (2012): This BUI will be considered restored when the benthic community structure, diversity and abundance are not significantly different to suitable, unimpacted reference sites within the AOC of comparable physical (sediment, grain size, water velocity) and chemical characteristics; and when benthic invertebrate tissue contaminant concentrations (body burdens) are comparable to suitable, unimpacted reference sites within the AOC or when all remedial options, recommended to address the areas of interest for contaminated sediment, have been completed and follow-up monitoring confirms their effectiveness.

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Undertake assessment of sediments for contaminants of concern in the Walpole Island delta (also for Restrictions on Fish and Wildlife Consumption BUI).	X	X					OMOE, WIFN
Review all relevant data collected and undertake an assessment to determine current status based on delisting criteria.	X						CRIC, EC, OMOE, OMNR
<ul style="list-style-type: none"> If assessment determines that this BUI is impaired then follow actions for sediment remediation under "Restrictions on Fish and Wildlife Consumption" BUI plan. 							

Restrictions on Dredging Activities

IMPAIRED

Revised Delisting Criteria (2012): This BUI will be considered restored when there is no limitation on the disposal of dredging spoils from routine dredging in the St. Clair River.

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Review all relevant data collected and undertake an assessment to determine current status based on delisting criteria and if an "Impaired" or "Requires Further Assessment" status results, prepare an action plan.		X					CRIC, OMOE, EC

Restrictions on Drinking Water Consumption or Taste and Odour Problems

IMPAIRED

Revised Delisting Criteria (2012): This BUI will be considered restored when there are no treatment plant shutdowns due to exceedances of drinking water guidelines over a two year period.

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Review all relevant data collected such as: <ul style="list-style-type: none"> the nature and frequency of spills from vessels and land-based sources; the nature and frequency of communal water intake closures; river water quality; actions taken by industries to prevent and reduce spills; water treatment processes; and loading of industrial and municipal discharges to the St. Clair River, and undertake an assessment to determine current status based on delisting criteria and if an "Impaired" status results, prepare an action plan.		X	X				CRIC, OMOE, EC

Beach Closings

IMPAIRED

Revised Delisting Criteria (2012): This BUI will be considered restored when less than 20% of the geometric means of water samples collected over the swimming season, at identified beaches within the St. Clair River AOC, exceed the Provincial Water Quality Objective for *E. coli* or is similar to a suitable non-AOC reference site, when assessed over a period of at least three to five years.

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Complete third year of river wide assessment for <i>E. coli</i> along the St. Clair River.		X					SCRCA, LCHSD, OMOE
Review all relevant data collected and undertake an assessment to determine current status based on delisting criteria and if an "Impaired" status results, prepare an action plan, drawing on (as appropriate):		X					CRIC, EC, OMOE
<ul style="list-style-type: none"> Identify data collection required to identify key sources that are still impacting on ability to achieve beach delisting criteria. Steps that might be considered will include: <ul style="list-style-type: none"> DNA identification of <i>E. coli</i> sources at problem sites; and Conduct sampling "to determine if the AOC creeks that enter into the river have a significant impact upon the presence and concentrations of <i>Escherichia coli</i>." 		X	X				EC, OMOE
<ul style="list-style-type: none"> Complete key actions identified in the City of Sarnia Master Plan for sewage treatment which includes plant optimization, elimination of bypasses and CSOs. 			X	X	X	X	City of Sarnia
<ul style="list-style-type: none"> Continue separation of cross connections within the City of Sarnia Sanitary Drainage Area 1. 			X	X	X	X	City of Sarnia
<ul style="list-style-type: none"> Evaluate municipal infrastructure upgrades on sewage treatment plants, stormwater treatment, and combined sewer overflows and facility optimization to determine what additional steps need to be undertaken. 					X	X	City of Sarnia, St. Clair Township, Chatham-Kent

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
<ul style="list-style-type: none"> Investigate private septic systems for homes within the St. Clair River watershed including the delta to determine if they are causing negative effects on the water quality of the St. Clair River. 					X	X	City of Sarnia, St. Clair Township, Chatham-Kent Health Services, WIFN
<ul style="list-style-type: none"> Support the ongoing maintenance of private sewage disposal systems, if it is concluded this is necessary for re-designation of this BUI. 					X	X	City of Sarnia, St. Clair Township, Chatham-Kent

E. coli and water sampling along St. Clair River beaches and park areas. *St. Clair Region Conservation Authority.*



Degradation of Aesthetics

IMPAIRED

Revised Delisting Criteria (2012): This BUI will be considered restored when the waters are devoid of anthropogenic substances at levels that produce a persistent objectionable deposit and/or odour.

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Complete river wide survey of river aesthetics.	X						SCRCA
Review all relevant data collected and undertake an assessment to determine current status based on delisting criteria and if an "Impaired" status results, prepare an action plan, drawing on (as appropriate) those items listed under Beach Closings work plan.	X	X					CRIC, EC, OMOE

Loss of Fish and Wildlife Habitat

IMPAIRED

Revised Delisting Criteria (2012): The Fish and Wildlife Habitat BUI in the Ontario portion of the St. Clair River Area of Concern will no longer be considered impaired when:

1. Administrative and legislative mechanisms are in place to protect recognized aquatic, wetland and terrestrial habitats from destruction and degradation.
2. Wetland coverage within the subwatershed of Area 1A is 6-10%, or is restored to the extent possible, and 155 hectares of wetland habitat is rehabilitated, created, or protected within the Chenel Ecarte, Walpole Island First Nation delta or along the eastern shore of Lake St. Clair.
3. Habitat connectivity between the St. Clair River and Sydenham River and between Walpole Island First Nation, Bickford Oak Woods and the Aamjiwnaang First Nation has been improved using landscape ecology principles.
4. 50% of the tributary lengths in Area 1A are buffered by a minimum width of 5 metres of natural vegetation to improve fish habitat.
5. Nearshore and shoreline fish habitat has been enhanced at 6-12 priority sites along the St. Clair River to demonstrate the benefits of integrating shoreline protection with fish habitat enhancement.
6. Wetland habitat quality achieves an integrated ranking of "Good" or better based on the IBI scores for water quality, submerged aquatic vegetation, aquatic invertebrates, fish and birds or, when the quality of the wetlands in the AOC are shown to be comparable to reference wetlands outside the AOC.
7. A long-term Fish and Wildlife Habitat Management Plan for Ontario is completed to facilitate habitat restoration and protection beyond AOC delisting.



Walpole Island Marsh. *St. Clair Region Conservation Authority.*

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
For the remaining time that CRIC is in place, it should continue to encourage Lambton County and its member municipalities within the AOC and the Municipality of Chatham-Kent to strengthen "Natural Heritage Policies" when amending their Official Plans (OPs) to provide greater protection to water quality and fish and wildlife habitat within the AOC.	X	X	X	X	X		SCRCA, OMNR
Create an updated Natural Heritage Strategy Report using the most current GIS resources and interpretive tools to identify wetland and forest coverage and feasibility for restoration within the subwatersheds of the AOC.		X					SCRCA
Conduct a quantitative analysis of coastal wetland habitat change (loss/gain) since 1991.	X	X					SCRCA, OMNR, WIFN
Prioritize wetland candidate sites in accordance with the 2007 <i>Updated Habitat and NPS Rehabilitation Priority Guidelines</i> .	X						EC, OMOE, OMNR, SCRCA
Engage landowners, seek funding, plan and complete prioritized wetland restoration projects.	X	X	X	X			RLSN, SCRCA, WIFN
Evaluate unevaluated wetlands for protection in municipal plans.		X	X				OMNR, WIFN
Track progress on wetland goals for the AOC.	X	X	X	X			EC, SCRCA
Collaborate with MTO to access the remaining properties that will complete the Hwy 40 project, improving habitat connectivity between WIFN, the McKeough Floodway, headwaters of the St. Clair River tributaries, Bickford Oak Woods and Aamjiwnaang First Nation forest.	X	X	X	X			RLSN
Map the corridors within the Official Plans for Chatham-Kent and Lambton and identify and implement opportunities to enhance connectivity where/if they exist.	X	X					SCRCA, OMNR, RLSN
Systematically identify public, private and industrial land use and ownership adjacent to tributaries flowing directly into the St. Clair River where riparian coverage is less than 5 m.	X						SCRCA

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Create and implement a strategic <i>Riparian Habitat Enhancement Outreach and Implementation Plan</i> that promotes the ecological value of riparian habitat (vegetative buffers) within major tributaries and details how the plan will be implemented over the next 3-5 years (to rehabilitate up to 20 km/yr of riparian habitat).	X						RLSN
Track and map riparian buffer projects to assess progress.	X	X	X	X	X		RLSN, SCRCA
Develop an Integrated Shoreline Management Plan for the St. Clair River that will list the priority sites to be progressed in support of re-designation.	X	X	X				SCRCA, DFO
Acquire necessary data layers to complete and apply <i>Fish Habitat Suitability Model</i> .	X	X	X				DFO
Encourage and seek out opportunities to promote the naturalization of the SCR shoreline.		X	X				SCRCA
Conduct pre- and post-project implementation fish surveys at restoration sites and report on findings.	X	X	X	X	X		SCRCA, DFO
Track shoreline projects and assess and report on progress.	X	X	X	X	X		SCRCA
Review the results of the EC AOC Wetland Health Assessments, implement management recommendations where feasible and report on progress.	X	X	X				EC, OMOE, SCRCA
Conduct a wetland assessment at a select wetland within Walpole Island to compare with a reference wetland outside the AOC to determine if they are comparable as per the target and share results.		X	X				WIFN
Write a Fish and Wildlife Habitat Management Plan.			X	X	X		EC, OMNR, SCRCA
Review all relevant data collected and undertake an assessment to determine current status based on delisting criteria and if an "Impaired" status results, prepare an action plan.					X	X	CRIC, EC, OMOE

PUBLIC OUTREACH AND EDUCATION WORK PLAN

The purpose of the Public Outreach and Education Committee (PO&E) is to assist in achieving the CRIC mandate of delisting the St. Clair River AOC. The CRIC committee established the PO&E subcommittee to deliver on three specific objectives:

- Develop a Public Outreach and Education section for the 2012-2017 St. Clair River AOC Work Plan;
- Provide advice, assistance and expertise in engaging the public and the local communities throughout the work plan period; and
- Support CRIC subcommittees by producing and developing public outreach strategies, documents and events.

The PO&E plan is designed to support re-designation of all delisting criteria, thus the plan does not refer to each specific criteria.

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Raise public and youth awareness about the St. Clair River AOC progress via events, supporting programs, and media opportunities such as: <ul style="list-style-type: none"> • Conservation Authority education program to school age children; and • Children’s Water Festival. 	X	X	X	X	X	X	OMOE, FOSCR, SCRCA
Support BPAC outreach and celebration events such as BUI re-designations, boat cruises, and distribution of outreach information and display material.	X	X	X	X	X	X	BPAC, FOSCR, RAP Coordinator
Support a BPAC biennial scientific symposium.	X		X		X		BPAC, FOSCR, RAP Coordinator
Engage municipalities and First Nations by presenting biennial updates to: <ol style="list-style-type: none"> 1) councils; 2) environment committees; and 3) environment department staff. 		X		X			RAP Coordinator

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Distribute newsletters and reports to First Nation households and/or through community centres, as recommended by AFN and WIFN communications outreach.	X	X	X	X	X	X	AFN, WIFN, RAP Coordinator, FOSCR
Plan with WIFN and AFN attendance at special/environmental events and meetings such as: Earth Days, Nin.Da.Waab.Jig Open House and Ecosystem Circles.	X	X	X	X	X	X	AFN, WIFN, RAP Coordinator, FOSCR
Consider signage opportunities on First Nation territories (e.g., Talfourd Creek).	X	X		X			AFN, WIFN, RAP Coordinator, FOSCR
Expand contact list for industry to send update reports, E-Newsletters, notification of events or projects, etc.		X					FOSCR
Identify leading industries willing to be involved in AOC promotion.		X					FOSCR
Solicit and report on industry actions that are supportive of RAP objectives such as improved discharge quality, reduced connections to the river, etc.		X		X			FOSCR
Promote industrial staff participation in environmental opportunities (e.g., clean-up days, tree planting, etc.).		X		X			FOSCR
Contact Tourism-Sarnia/Lambton, river tour operators, and the Chamber of Commerce to expand distribution opportunities and networks for AOC-related documents.		X	X	X	X		SCRCA, FOSCR, RAP Coordinator
Produce display materials for use in outreach by BPAC, FOSCR and other partners.		X	X	X	X		SCRCA, FOSCR, RAP Coordinator
Continue the production of the FOSCR E-Newsletter, enhance distribution, and survey recipients for suggestions (request permission to distribute and contribute articles to the E-Newsletter by employees of local commercial and industrial facilities).	X	X	X	X	X	X	FOSCR

ACTION	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	Beyond	LEAD
Post fact sheets about the AOC and best management practices at marinas, bait shops, and sporting goods stores and through Fish Derby registration packages and boat courses (e.g., Fish Consumption Guide).			X				SCRCA, FOSCR
Investigate developing five-minute spots and/or run SMO animations for broadcast on local cable.		X					FOSCR
Meet with local journalists to educate and brief them on the goals and objectives of the RAP.		X		X			FOSCR
Investigate the use of social networking tools (e.g., Facebook, Twitter).		X		X			FOSCR



Posters and displays at the Aamjiwnaang First Nation Pow Wow. St. Clair Region Conservation Authority.



Aerial view of Sarnia Marina. *Christina Jones.*



Riverboat at Corunna. *Nadine Wark.*



Kayak along shoreline. *Todd Cloes.*



Cormorants. *Andrea Nickerson.*



Bluewater Bridge in fog. *Dave Trzasko.*



Sunrise over the St. Clair River. *Virginia Marie Samson.*

CONCLUSION

Remedial activities completed since the late 1980s have significantly improved the ecological health of the St. Clair River AOC. Improvements and advancements have been documented in numerous updates to the Stage 2 RAP report published in 1995. To date, shoreline enhancements and habitat restoration and creation have increased the biological connectivity between the aquatic and terrestrial environments. Recent legislation and upgrades to both municipal and industrial facilities have decreased the volume and frequency of spills into the river. Improvements have been observed in the aesthetics of the river. The proposed remediation of mercury contaminated sediment will greatly contribute to the improvement of a number of "Impaired" BUIs.

The 71 priority actions identified in this work plan are expected to significantly advance the St. Clair River AOC towards "delisting." The process by which this plan was developed highlights the cooperation between government agencies, First Nations, industry and community groups. These partnerships have already contributed to the improved environmental health of the St. Clair River and will continue to be integral in the preservation of the river beyond "delisting." The CRIC looks forward to the next 5 years of cooperation and progress towards delisting the St. Clair River AOC.

More information on the St. Clair River AOC is available online at the Friends of the St. Clair River (www.friendsofstclair.ca) and the St. Clair Region Conservation Authority (www.scrca.on.ca) websites.

LIST OF ACRONYMS

AFN	Aamjiwnaang First Nation
AOC	Area of Concern
BPAC	Binational Public Advisory Council
BUI	Beneficial Use Impairment
CRIC	Canadian Remedial Action Plan Implementation Committee
CSO	Combined Sewer Overflow
DFO	Department of Fisheries and Oceans
EC	Environment Canada
FOSCR	Friends of the St. Clair River
GIS	Geographic Information System
IJC	International Joint Commission
LCHSD	Lambton Community Health Services Department
MTO	Ministry of Transportation of Ontario
NPS	Non-Point Source
OMNR	Ontario Ministry of Natural Resources
OMOE	Ontario Ministry of the Environment
OP	Official Plan
RAP	Remedial Action Plan
RFA	Requires Further Assessment
RLSN	Rural Lambton Stewardship Network
PO&E	Public Outreach and Education
SCR	St. Clair River
SCRCA	St. Clair Region Conservation Authority
SMO	Sediment Management Option
WIFN	Walpole Island First Nation

GLOSSARY

Area of Concern (AOC) – Geographic locations recognized by the International Joint Commission (IJC) where water, sediment, and fish quality are degraded, and the objectives of the Great Lakes Water Quality Agreement (GLWQA) of local environmental standards are not being achieved.

Beneficial Use Impairment (BUI) – A change in the chemical, physical or biological integrity of a Great Lakes System sufficient to cause any of the 14 use impairments.

Combined Sewer Overflow (CSO) – Combined storm and sanitary sewer systems.

Delist – The removal of an Area of Concern (AOC) from the list of AOCs achieved only when the criteria for the restoration of beneficial uses as defined by the Remedial Action Plan (RAP) are met and agreed upon by agencies and the local community.

Environmental Remediation – The removal of pollution or contaminants from environmental media, such as soil, groundwater, sediment or surface water, for the general protection of human health and the environment.

Great Lakes Water Quality Agreement (GLWQA) – A joint agreement between Canada and the United States, which commits the two countries to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin ecosystem (from Article 2 of the 1978 GLWQA). Originally signed in 1972, the Agreement was amended in 1978, 1987 and 2012.

Habitat – An ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism.

International Joint Commission (IJC) – A binational organization established in 1909 by the Boundary Waters Treaty. Through the IJC, Canada and the United States cooperatively resolve problems along their common border, including water and air pollution, lake levels, power generation, and other issues of mutual concern.

Non-Point Source (NPS) – Source of pollution in which pollutants are discharged over a widespread area from a number of small inputs rather than from distinct, identifiable sources.

Point Source – A source of pollution that is distinct and identifiable, such as an outfall pipe from an industrial plant.

Remedial Action Plan (RAP) – A document drafted with the purpose of restoring and protecting beneficial uses in the Areas of Concern (AOCs) within the Great Lakes Basin.

Sediment – The fines or soils on the bottom of the river or lake.



Park at Point Edward at night; Bluewater Bridge. *George Rosema.*



with funding support from Environment Canada and
the Ontario Ministry of the Environment

published by

St. Clair Region Conservation Authority
205 Mill Pond Cr.
Strathroy, ON, N7G 3P9
E-Mail stclair@scrca.on.ca
Website: www.scrca.on.ca