

St. Marys River Area of Concern
(Canadian Section)

Beneficial Use Impairment Status Report:
Degradation of Fish and Wildlife Populations – Wildlife Populations
Loss of Fish and Wildlife Habitat – Wildlife Habitat

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Executive Summary

In 1987, the International Joint Commission identified the St. Marys River as one of 43 Areas of Concern (AOC) in the Great Lakes basin, and Canada and the United States committed to restoring it under the *Canada-U.S. Great Lakes Water Quality Agreement*.

The *Degradation of Fish and Wildlife Habitat* was identified as one of ten beneficial use impairments (BUI) in the St. Marys River Stage 1 Remedial Action Plan (RAP) in 1992, due to significant loss and alteration of habitat resulting from industrialization, urbanization and shipping activities. The wildlife portion of the *Degradation of Fish and Wildlife Populations* BUI was designated as REQUIRES FURTHER ASSESSMENT due to a lack of assessment criteria and documentation indicating impairment. However, there was an assumption at the time that habitat loss and chemical contaminants could be having a negative impact on wildlife populations. In 2002, the Stage 2 RAP report identified four wildlife-specific actions needed to further investigate the matter:

- Action FFM-2: Continued support for the Marsh Monitoring Program (*Loss of Fish and Wildlife Habitat*)
- Action FFM-5: Complete an assessment of Common and Black Tern populations for the area (*Degradation of Fish and Wildlife Populations*)
- Action FFM-6: Analyze contaminant levels in eggs from Herring Gull, Black Tern, and Common Tern nests in the AOC (*Degradation of Fish and Wildlife Populations*)
- Action FFM-8: Reproductive assessments of Herring Gulls, Black Terns and Common Terns within the AOC (*Bird and Animal Deformities or Reproductive Problems*)

Since the river was designated as an AOC, vast improvements have been made to help restore water quality and ecosystem health. These improvements help to support healthy wildlife populations and improve overall habitat quality.

This document serves as an official record to account and recommend change in status, on the Canadian side of the St. Marys River AOC, the wildlife portion of the *Degradation of Fish and Wildlife Populations* BUI and the *Loss of Fish and Wildlife Habitat* BUI to NOT IMPAIRED.

The redesignations are supported by studies (Appendix 1 and Appendix 2) that address the Stage 2 RAP recommended actions. It should be noted that although the wildlife portions of both BUIs have been found to be NOT IMPAIRED, the fish portions remain in a state of impairment pending the completion of remedial actions and an evaluation on the current conditions. Neither BUI will be fully redesignated until all elements of the delisting criteria have been met.

Acronyms and Abbreviations

Area of Concern (AOC)

Beneficial Use Impairments (BUI)

Binational Public Advisory Council (BPAC)

Biological oxygen demand (BOD)

Canadian Wildlife Services (CWS)

Department of Fisheries and Oceans (DFO)

Environment and Climate Change Canada (ECCC)

Flora and Fauna Monitoring related actions (FFM)

Flora and Fauna related actions (Action FF)

Index of biotic integrity (IBI)

International Joint Commission (IJC)

Ministry of Environment, Conservation and Parks (MECP)

Ministry of Natural Resources and Forestry (MNRF)

Non-Government Organization (NGO)

Non-Point Source related actions (NPS)

Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

Point Source related actions (Action PS)

Polybrominated diphenyl ethers (PBDEs)

Polychlorinated biphenyls (PCBs)

Remedial Action Plan (RAP)

Sault Ste. Marie Region Conservation Authority (SSMRCA)

Ultraviolet (UV)

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1. Introduction

The St. Marys River Area of Concern

The St. Marys River is a 112km waterway that interconnects Lake Superior and the North Channel of Lake Huron in the Great Lakes. Historically, the St. Marys River has experienced significant environmental degradation and impaired beneficial uses, which lead to its designation as an Area of Concern (AOC) under the *Canada-U.S. Great Lakes Water Quality Agreement* in 1987. An AOC is an area where significant impairment of beneficial uses has occurred as a result of human activities at a local level, to the point where it affects the enjoyment or use of the area and/or the overall health of the ecosystem. Métis

The St. Marys River AOC has a Remedial Action Plan that guides protection efforts and helps restore beneficial uses. These beneficial use impairments (BUIs) are reductions in the chemical, physical, or biological integrity of the area sufficient to cause environmental issues and have been identified in a Stage 1 RAP report (1992) for the St. Marys River AOC. In 2002, a number of remedial actions and monitoring initiatives were identified, in a Stage 2 RAP report, to help address these issues. Currently the St. Marys River RAP team is working on restoring nine BUIs, two of which include wildlife components:

- Degradation of Fish and Wildlife Populations
- Loss of Fish and Wildlife Habitat

Note: *Bird and Animal Deformities or Reproductive Problems* was a third BUI implicating wildlife in the St. Marys River AOC. Its status was changed from requires further assessment to not impaired on the U.S. side in February 2014 (following an assessment by the State of Michigan) and on the Canadian side in January 2016, after a 4-year study by Environment and Climate Change Canada (ECCC). That BUI assessment and redesignation contributes to the weight-of-evidence in examining wildlife populations and habitat.

About this Report

The purpose of this report is to synthesize knowledge from multiple areas related to the wildlife populations and habitat in the St. Marys River AOC. All recommended remedial and monitoring actions pertaining to the wildlife components of the *Degradation of Fish and Wildlife Populations* BUI and the *Loss of Fish and Wildlife Habitat* BUI have been completed. The attached technical reports provide detailed rationale including study methods, field and laboratory analysis, results, and discussion and conclusions. This document serves as an official account to recommend the change in status, on the Canadian side of the St. Marys River AOC, the wildlife portion of the *Degradation of Fish and Wildlife Populations* BUI and *Loss of Fish and Wildlife Habitat* BUI to NOT IMPAIRED. The fish portion of both BUIs remain in a state of impairment, pending the completion of remedial actions and an evaluation on the current conditions. Neither BUI will be fully redesignated until all elements of the delisting criteria have been met.

2. Beneficial Use Impairments Relating to Wildlife

Degradation of Fish and Wildlife Populations

In the Stage 2 Remedial Action Plan (RAP) report, the wildlife portion of the *Degradation of Fish and Wildlife Populations* BUI was designated as “Requires Further Assessment”. Although wildlife populations appeared to be stable or increasing, it was noted that assessment criteria was needed. At the time, Common Tern (*Sterna hirundo*) populations were declining while Ring-billed Gull (*Larus delawarensis*) numbers were increasing. As stated in the Stage 1 RAP report, habitat loss and alteration were causing a reduction in nesting habitat and the larger, earlier nesting Ring-billed Gulls were displacing Common Terns along with other smaller species from nesting sites. The Stage 2 RAP report recommended an assessment of Common Tern and Black Tern (*Chlidonias niger*) populations for the entire St. Marys River (Action FFM-5) and a reproductive assessment of Herring Gulls and Black and Common Terns (Action FFM-8, which fell under the *Bird and Animal Deformities or Reproductive Problems* BUI). In addition, both the Stage 1 and 2 RAP reports noted chemical contaminants within the tissues of waterfowl, particularly mercury and polychlorinated biphenyls (PCBs). The Stage 2 RAP report recommended a full analysis of contaminant levels in the eggs of Herring Gulls and Black and Common Terns within the AOC (Action FFM-6),

Loss of Fish and Wildlife Habitat

At the time of developing the Stage 1 RAP report in the early 1990s, significant loss of fish and wildlife habitat had occurred as a result of shoreline alteration, industrialization, urbanization and shipping activities, particularly around the St. Marys River rapids (Stage 1 RAP). *Loss of Fish and Wildlife Habitat* was designated a BUI. By the early 2000s, the Stage 2 RAP report maintained the impaired status. For wildlife habitat, this was mainly due to wetland loss and littoral zone degradation from decades of urban and industrial development around the twin cities of Sault Ste. Marie and the operation of the Compensating Works controlling water flow out of Lake Superior and over the rapids. Among the list of remedial and monitoring actions recommended in the Stage 2 RAP report, marsh monitoring surveys were identified to be conducted in order to properly assess habitat loss in the St. Marys River watershed (Action FFM-2).

3. Remedial Actions Identified to Address BUIs Relating to Wildlife

Continued Support for the Marsh Monitoring Program (Action FFM-2)

In 2011, the Canadian RAP Agencies and Binational Public Advisory Council (BPAC) discussed the need for a comprehensive assessment of wildlife habitat conditions (specifically coastal wetlands) and associated wildlife populations, and to evaluate the degree of impairment, if any. A multi-year study by the Canadian Wildlife Service of Environment and Climate Change Canada (ECCC) started in 2012, and in August 2016, the 5-year monitoring effort was completed. The study assessed baseline wildlife habitat conditions and evaluated coastal wetland water quality, and breeding bird, amphibian, aquatic

macroinvertebrate and submerged vegetation communities within the AOC, concluding the wildlife habitat and populations are not impaired (Darwin, 2016, see Appendix A). Key findings include:

- Water quality within the AOC’s coastal wetlands is comparable to non-AOC reference sites; suggesting overall water quality can be considered not impaired. Algoma University’s water quality survey (2013-15) supports this (Ginou 2016).
- Breeding marsh birds in the AOC are in relatively undisturbed condition, and sites inside and outside the AOC are in comparable condition; suggesting there is no impairment.
- There is no clear response disturbance within the amphibian and aquatic macroinvertebrate communities, suggesting those populations are not impaired.
- There are some differences between submerged aquatic vegetation communities in the AOC versus non-AOC reference sites, but the overall area is not impaired for this community type.

Complete an Assessment of Common and Black Tern Populations for the Area (Action FFM-5)

In 2009, the Canadian RAP Agencies and BPAC discussed the need to assess the populations of Common Terns and Black Terns within the AOC; two indicator species long identified in the Remedial Action Plan. In 2014, ECCC completed the population assessment based on nest count surveys conducted between 2010 and 2013, supplemented with historical breeding data from 1978-80, 1989, 1999-00, and 2007-08 (Hughes et al. 2014b, see Appendix B). Population trends for colonial waterbirds breeding on the North Channel of Lake Huron were included to provide a broader context of trends in diversity and abundance within the AOC. The study concluded Commons Terns and Black Terns are breeding within the AOC, that there is no evidence that breeding status within the AOC differs from that outside of AOC, and that nesting and population patterns are influenced by life history strategies of the species and factors that are regional or basin-wide in nature, and not specific to influences within the AOC. Key findings include:

- Despite natural fluctuations, Common Tern populations have had no significant change over the past 30 years, with 70 nests found in 1978-80 versus 78 in 2007-08.
- Evidence from nest count surveys between 1980 and 2013 suggest trends in populations of nesting Common Terns in the AOC are likely related to factors consistent with the life history strategies of the species, and are not specific to influences in the AOC.
- Black Terns seem to be limited on the Ontario side of the river, with a breeding colony found only at Echo Bay. It is not possible to report on temporal trends in abundance of Black Terns in the AOC due to limited data. However, based on the data that is available, there is no evidence to suggest that breeding status of Black Terns nesting within the AOC differs from those nesting at sites downstream in the North Channel.
- The relative low population of nesting Black Terns is likely reflective of low densities reported throughout the region, Ontario and the Great Lakes basin and not due to AOC-specific conditions.
- Overall, the total number of colonial waterbird nests on the Ontario side of the St. Marys River increased by almost 23% between 1999 and 2008; largely driven by dramatic increases in Ring-billed Gulls.

Analyze Contaminant Levels in Eggs from Herring Gull, Black Tern, and Common Tern Nests in the AOC (Action FFM-6) and complete Reproductive Assessments of Herring Gulls, Black Terns and Common Terns within the AOC (Action FFM-8)

In parallel to the above-mentioned assessment of Common Tern and Black Tern populations within the AOC, in 2014, ECCC also completed its three-year Common Tern and Herring Gull study based on fieldwork and laboratory analysis to assess deformities, reproductive health, and chemical contamination in eggs of these indicator species. The study report (Hughes et al. 2014a, see Appendix C) concludes that there is no evidence of impaired reproduction or deformities in colonial waterbirds attributable to local contamination effects within the AOC, and the reproductive success for birds studied within the AOC is similar to that from outside the AOC. Key findings include:

- Contaminant levels are low overall and not sufficiently elevated to have an adverse impact on reproductive success and development [which is an impact related to polychlorinated biphenyls (PCBs) and other organochlorines, dioxins/furans, heavy metals like mercury, and polybrominated diphenyl ethers (PBDEs)].
- No physical deformities have been detected within gull or tern chicks (the original issue identified by the RAP). There is a low incidence of embryonic deformities that cannot be linked to contaminant burdens or geographical area (i.e., there is no significant difference between AOC and non-AOC bird colonies); and the reproductive success for Herring Gulls within the AOC is high, and that of Common Terns is similar to the rest of the region.

The report supported the official redesignation of the *Bird and Animal Deformities or Reproductive Problems* BUI from Requires Further Assessment to NOT IMPAIRED in January 2016 via a notification letter to the International Joint Commission (Appendix D). This is consistent with the same change in BUI status by the United States Environmental Protection Agency in 2014. The previous designation of REQUIRES FURTHER ASSESSMENT had been in place since 2002.

Other Stage 2 Remediation and Monitoring Actions

The Stage 2 RAP report lists 23 recommended actions for the restoration of the *Degradation of Fish and Wildlife Populations* BUI and the *Loss of Fish and Wildlife Habitat* BUI. Table 1 summarizes the status of these actions. Refer to Appendix E for a summary of each action and its current status. All actions specific to wildlife populations and habitat have been completed. The actions that are currently underway, as they have yet to be completed, are those specific to fish populations and habitat.

Table 1: Stage 2 RAP Recommended Remedial Actions and Monitoring Activities for the *Degradation of Fish and Wildlife Populations* BUI and the *Loss of Fish and Wildlife Habitat* BUI.

Remediation and Monitoring Actions		Actions Underway/ Under Review	Actions Complete/ Addressed/ Ongoing
PS-1:	Virtually eliminate all known persistent and bioaccumulative contaminants from industrial and municipal discharge		•
NPS-1:	Development of a multi-agency sediment management program	•	
NPS-4:	Identification and control of contaminants from the Algoma Slag Dump		•
NPS-6:	Control of agricultural and other non-point sources of pollution		•
NPS-7:	Remediation for contaminated terrestrial and aquatic disposal sites		•
FF-1:	Bar River habitat project		•
FF-2:	Watershed development Plan for Bennett and West Davignon Creeks	•	
FF-3:	Watershed Development Plan for the East Davignon and Fort Creeks etc.	•	
FF-6:	Remediation of rapids habitat and associated wetlands	•	
FF-7:	Develop a 10 year fisheries assessment program		•
FF-8:	Continued support of Sea Lamprey control efforts		•
FF-9:	Stabilize shoreline of the Algoma Slag Dump to provide habitat for plant growth (e.g., via soil addition) to soften and stabilize the landscape		•
PSM-6:	Monitoring receiving water at St. Marys Paper		•
PSM-8:	Monitoring study to examine short-term variability and monthly ranges of contaminant discharges from wastewater treatment plants		•
NPSM-9:	Identify terrestrial and aquatic disposal sites transferring contaminants into waterways		•
NPSM-11:	Assess the potential hazards associated with spills from shipping vessels		•
FFM-2:	The Marsh Monitoring program		•
FFM-5:	The CWS surveys of the Common and Black Tern populations		•
FFM-6:	Analysis of contaminant levels in eggs		•
FFM-7:	Monitoring of population changes due to habitat enhancement (COMPLETE for Wildlife; PENDING for Fish)	•	
FFM-9:	Evaluate influence of water levels and flows on spawning and production		•
FFM-10:	Determine minimum water levels and flow rates necessary for spawning		•
FFM-11:	Monitoring water quantity		•

***Actions FF-4, FF-5, FFM-1, PSM-1, NPSM-2 and NPSM-3 are not applicable as they are Michigan-specific actions.

4. Delisting Criteria

These are measurable targets for restoring beneficial uses, and ultimately the AOC, and establish a benchmark for when a beneficial use can be deemed no longer impaired. The delisting criteria for the suite of BUIs were updated in consultation with the Binational Public Advisory Council (BPAC) and received endorsement in February 2015. The BPAC represents stakeholders on both the American and Canadian sides of the AOC.

Delisting Criteria for Degradation of Fish and Wildlife Populations

The delisting criteria for *Degradation of Fish and Wildlife Populations* states that the BUI will no longer be impaired when:

The BUI will no longer be impaired when the overall fish community health within the AOC is comparable to that of a suitable reference site, as assessed using an index of biotic integrity through a minimum of two consecutive studies.

In the Stage 1 and 2 RAP reports the wildlife portion of the Degradation of Fish and Wildlife Populations BUI was never deemed IMPAIRED, but was designated as REQUIRES FURTHER ASSESSMENT. Delisting criteria are only appropriate for when a beneficial use is impaired, and thus the RAP requires a measurable target to determine when it is no longer impaired. As a result, the delisting criteria for the *Degradation of Fish and Wildlife Populations* BUI only focuses on the fish component.

Fisheries and Oceans Canada completed an overall assessment of the AOC fish community using the index of biotic integrity (IBI) approach in two separate studies, encompassing fieldwork and data analysis in 2006-08 and 2014-15. Both studies conclude the St. Marys River is home to a relatively healthy fish community that is complex, diverse, and dominated by native species. Final results were shared and discussed with BPAC in October 2017, but before initiating a formal write-up recommending a BUI redesignation, other information/data sources will be used to supplement the IBI approach. Specifically, results from the binational St. Marys River Fisheries Task Group's fish surveys (produced every 3 years) will be used to confirm the status of "managed" fish populations. This is expected in November 2018.

Delisting Criteria for Loss of Fish and Wildlife Habitat

The delisting criteria for *Loss of Fish and Wildlife Habitat* states that the BUI will no longer be impaired when:

- i. Coastal wetland wildlife habitat conditions within the AOC are comparable to those of suitable reference sites, as assessed using an index of biotic integrity (ACHIEVED);
- ii. Rapids habitat conditions are enhanced through feasible conservation and restoration measures identified in the Stage 2 Remedial Action Plan (UNDERWAY); and
- iii. The closely linked *Degradation of Fish Populations* BUI is no longer deemed impaired (UNDERWAY).

5. References

- Darwin, A. (2016) St. Marys River Area of Concern: Coastal Wetland Habitat Assessment Report. Environment and Climate Change Canada – Canadian Wildlife Service.
- Ginou, C. (2016). Water Quality Monitoring and Analysis: An Investigation of the Eutrophication and Undesirable Algae, and the Degradation of Aesthetics Beneficial Use Impairments in the Canadian St. Marys River Area of Concern (2013-2015). Algoma University Remedial Action Plan Office. 94 pp.
- Hughes, K.D., Crump, D., Williams, K., and Martin, P.A. (2014a) Assessment of the Wildlife Reproduction and Deformities Beneficial Use Impairment in the St. Marys River Area of Concern (Ontario). Environment and Climate Change Canada – Ecotoxicology and Wildlife Health Division.
- Hughes, K.D., Moore, D.J., and Martin P.A. (2014b) An Assessment of Breeding Populations of Common Terns and Black Terns in the St. Marys River Area of Concern (Ontario). Environment and Climate Change Canada – Ecotoxicology and Wildlife Health Division.
- St. Marys River Remedial Action Plan: Stage 1 Report (RAP 1). (1992). St. Marys River Area of Concern Environmental Conditions and Problem Definitions. Ontario Ministry of the Environment, Conservation and Parks and Michigan Department of Natural Resources.
- St. Marys River Remedial Action Plan: Stage 2 Report (RAP 2). (2002). St. Marys River Area of Concern Remedial Strategies for Ecosystem Restoration. Environment Canada, United States Environmental Protection Agency. Ontario Ministry of the Environment, Conservation and Parks, and Michigan Department of Environmental Quality.

6. Appendices

Appendix A: St. Marys River Area of Concern – Coastal Wetland Habitat Assessment Report

Appendix B: An Assessment of Breeding Populations of Common Terns and Black Terns in the St. Marys River Area of Concern (Ontario)

Appendix C: Assessment of the Wildlife Reproduction and Deformities Beneficial Use Impairment in the St. Marys River Area of Concern (Ontario)

Appendix D: Notification Letter to the IJC

Appendix E: Summary and Status of the Stage 2 Remedial and Monitoring Actions Specific to the *Degradation of Fish and Wildlife Populations* BUI and the *Loss of Fish and Wildlife Habitat* BUI

Appendix E: Summary and Status of the Stage 2 Remedial and Monitoring Actions Specific to the *Degradation of Fish and Wildlife Populations* BUI and the *Loss of Fish and Wildlife Habitat* BUI

Action PS-1: Virtual elimination of all persistent and bioaccumulative contaminants from industrial and municipal discharge.

** Note that this action has been interpreted as virtual elimination of all known persistent and bioaccumulative contaminants.*

Current Status: ONGOING

Work completed to date:

St. Marys Paper

- As of 2012, the St. Marys Paper plant has been decommissioned and the site dismantled, therefore there is no wastewater discharge to the river. Before the closure, contaminants in the mill's wastewater were reduced significantly between 1995 and 2006 due to the installation of an activated sludge secondary treatment facility (reducing suspended solids by over 91%, biological oxygen demand (BOD) by more than 97%, and odour-causing phenols by over 95%).

Algoma (formerly Essar Steel Algoma)

- In 1991, Algoma installed a main filtration plant for wastewater discharge, which reduced levels of suspended solids and phenols. It also decommissioned the Terminal Basin settling ponds, reducing discharges into the river.
- Between 1997 and 1999 Algoma invested in: a new biological treatment facility to treat Cokemaking wastewater, new direct casting facility, toxicity control system on the Bar and Strip process effluent, and a water recirculation system on Ironmaking Blast Furnace water facilities. These improvements led to reduced phenol, ammonia, cyanide, oil and grease, and suspended solids concentrations in wastewater and optimized water re-use by up to 90%.
- Since 2002, Algoma has made upgrades to the Secondary Emission Control, Composition Adjustment System with Oxygen Blowing, and hot metal transfer Baghouses at the steelmaking operations to improve the capture efficiency of particulate matter.
- In 2004, the facility established an extensive continuous air quality monitoring program surrounding the entire facility. There are two continuous on-line monitoring stations and four continuous off-line monitoring stations used to measure several different parameters, including suspended particulate matter, dustfall, total reduced sulfur, metals, polycyclic aromatic hydrocarbons and volatile organic compounds. For more information on this see Algoma's website (www.algoma.com).
- In 2005, the company completed its Environmental Management Agreement with the Ministry of the Environment and Environment and Climate Change Canada for environmental improvements, and addressed surface water run-off from the coal piles by diverting it into a settling area to eliminate coal entering the river.
- Beginning in 2007, a wind berm measuring 600 meters long by 10 meters high was constructed to deflect wind over Algoma's coal piles to reduce the generation of wind-blown coal and particulates.

- 2009 saw a new 70 megawatt co-generation facility that converts previously flared by-product fuels from the coke and iron making processes into electricity and steam for the steelworks. This is the only facility of its kind in Canada and it reduces the facility's reliance on the provincial grid by approximately 50%. The use of these byproduct fuels to generate electricity, effectively off-sets the release of approximately 500,000 tonnes of carbon dioxide per year.
- In 2009, in an effort to address air emissions, Algoma added baghouses to its No. 7 blast furnace, the de-kish operations (see Action PS-9), and the lime plant baghouse was also upgraded. An extensive monitoring program was also initiated for the material storage and reprocessing site that monitors groundwater and surface water quality on a quarterly basis for the entire 320 hectare site.

City of Sault Ste. Marie's East End Wastewater Treatment Plant

- In 2006, Sault Ste. Marie upgraded the East End Wastewater Treatment Plant to include secondary treatment using the first biological nutrient removal system in Ontario, including ultraviolet (UV) light for disinfection, meaning no chlorine is discharged to the river.
- The City of Sault Ste. Marie is implementing a stormwater management policy/master plan that identifies ways to improve the management of stormwater runoff and reduce the inputs of contaminants to the river, such as oil, grease, nutrients and bacteria. With financial support from Environment and Climate Change Canada, this is an effort to address stormwater quantity and quality issues within new and existing development around the city.

Action NPS-1: Development of a multi-agency sediment management program

*This action includes short and long term activities ranging from the assessment of immediate remedial options to the implementation of management actions. As such, there are ten actions (a)-(j) listed in the Stage 2 RAP Report.

Current Status: **UNDERWAY**

Work completed to date:

- In 2009, Environment and Climate Change Canada (ECCC) and the Ministry of Environment, Conservation and Parks (MECP) formed a multi-agency sediment management technical team, which includes representatives from Algoma University, Department of Fisheries & Oceans, Ministry of Natural Resources and Forestry, Sault Ste. Marie Conservation Authority, and the City of Sault Ste. Marie. BPAC representatives occasionally participate in or observe the meetings.
- (a) In 2010, ECCC completed mapping/ characterization of contaminated sediment.
- (b) In 2008, the Canada-Ontario Decision-Making Framework for Assessment of Great Lakes Contaminated Sediment was developed by the Sediment Task Team on behalf of ECCC and the MECP as a consistent, scientifically defensible, and publically accepted decision making framework; the framework has been applied to the St. Marys River and will guide future decisions.
- (c) In 2010, ECCC completed a study that concluded management action is not required for sediment upstream of Bellevue Marine Park and in the Lake George Channel. The same study recommended further assessment for the area east (downstream) of Bellevue Marine Park.
- In 2012, the Sault Ste. Marie Innovation Centre initiated a project to assess the quantity and quality of sediment being deposited in the area east of Bellevue Marine Park. The results will help identify suitable management actions for the contaminated sediment in this area.

- (d) In 2012, the Sault Ste. Marie Innovation Centre completed a report that describes a conceptual site model for sediments in the St. Marys River and includes recommendations for further efforts toward a contaminated sediment management strategy. The Conceptual Site Model represents the site-specific state of understanding of contaminant sources, fate, transport, and potential exposure of receptors and is to be updated as new information becomes available.
- (g) This sub-action is beyond the scope of the AOC and RAP program. Atmospheric inputs are already addressed under a number of other programs (i.e. Lake Superior Lakewide Management and Action Plan, Lake Huron Binational Initiative, and federal and provincial regulations with respect to domestic sources of atmospheric emissions).

Current work and actions to be undertaken:

- (e) The City has various stormwater management initiatives underway.
- (f), (h), (i), (j) These sub-actions are pending and depend on the management actions taken.
- Continued work on the sediment management plan is planned for 2018 pending completion of sediment quality, stability and biological studies.
- A Dredging Administrative Controls document has been created to provide guidance for dredging proponents and permitting agencies on the regulatory oversights in the planning and undertaking of dredging activities. It was finalized in 2016, and will be linked to the planned sediment management plan.

Action NPS-4: Identification and control of contaminants from the Algoma Slag Dump

** Including stabilization of shoreline and nearshore sediments. Broken into 2 subsections (a)-(b) of the Stage 2 Report.*

Current Status: COMPLETE

Work completed to date:

- (a) This three-party Environmental Management Agreement (2001-2005) is complete.
- Related to Action NPS-2: Starting in 2010, Algoma has implemented an extensive ground and surface water monitoring program as part of the Environmental Compliance Approval for the landfill. Analysis is performed on a quarterly basis and reported annually to the MECP.
- (b) For information on shoreline stabilization, see Action FF-9.

Current work and actions to be undertaken: No further action required.

Action NPS-6: Control of agricultural and other non-point sources of pollution

** Broken into 5 subsections (a)-(e) in the Stage 2 Report.*

Current Status: COMPLETE [agriculture]; COMPLETE [urban stormwater]

Work completed to date:

Agricultural-based pollution

- In 2013-14, ECCC commissioned a study to: 1) determine the current potential for water quality impacts on the AOC from agricultural activities; 2) determine how this compares to other regions

along Great Lakes that are not AOCs (as reference site) and to the agricultural sector in the Province of Ontario; and 3) inventory the current regulations and programs now in place that govern agricultural sources of water pollution in Ontario (i.e., which were not in place when Action NPS-6 was recommended, such as Ontario's *Nutrient Management Act, 2002* and *Clean Water Act, 2006*).

- Overall, the study concludes impacts from Ontario-based agriculture in the AOC are low. Specifically, these farms around the AOC: consist of more smaller operations with mixed farming (diversity of livestock and crops) as opposed to larger, more intensive livestock farms in other jurisdictions like South Huron; utilize manure use/management that is much less risky for impacting water quality than other jurisdictions like South Huron (i.e., there are fewer farms occupying smaller acreage that tend to use composted or solid manure, not liquid); and have cut the use of commercial fertilizer – and although very few report using herbicides, insecticides and fungicides – the number that do is significantly lower compared to farms in South Huron and the rest of Ontario.
- The report's finding is similar to conclusions reached in the Sault Ste. Marie Region Source Protection Plan, which after assessing the impact of agricultural activities on the wellheads and surface water intakes in the Source Protection Area; concluded agriculture is of limited significance.
- In addition: sub-actions (a), (b) are covered under Ontario's *Nutrient Management Act* (MECP/ OMAFRA); (c), (d) are covered under regulations administered by the Conservation Authority; and (e) is covered under the Canada-Ontario Environmental Farm Plan.

Urban stormwater runoff

- In February 2015, City Council approved the new *Storm Water Management Master Plan and Guidelines*.
- The City undertook targeted monitoring between 2012 and 2015 to determine baseline:
 - water quality data for potential installation of oil/grit separators;
 - data at the Bellevue Park pond to quantify the potential impairment and assess potential mitigating actions, and;
 - data at the East End Snow Dump to assess potential impacts and identify mitigating measures.Results were presented to the BPAC in 2016.
- Continue to monitor and support progress in better managing urban stormwater as a non-point source of pollution to the AOC. This included evaluating rainwater inflow and infiltration in the Dell Avenue sanitary sewer system for three years (ending in 2016) to identify areas with high flows and thus potentially mitigate wastewater outflows and treatment bypasses to the St. Marys River.
- Pending the City's budgeting process, including approval by council, the City plans to implement a city-wide approach to stormwater management.
- The City will be implementing a stormwater management project that will help reduce the risk of flooding and help mitigate future damage from flooding by improving and upgrading the stormwater system.

Action NPS-7: Remediation for contaminated terrestrial and aquatic disposal sites

** If identified through Action NPSM-9 and NPSM-12.*

Current Status: ADDRESSED

- Known contaminated terrestrial and aquatic disposal sites within the AOC are already addressed through other actions.
- Known sites are being addressed and the related monitoring actions are outside of the scope of the RAP.

Action FF-1: Bar River habitat project

** Includes recovery of the walleye habitat and spawning stock.*

*Current Status: **COMPLETE***

Work completed to date:

- With support from ECCC and the local office of the Ministry of Natural Resources and Forestry (MNR), tree planting was carried out in Spring 1999 by the local chapter of Scouts Canada and teachers and students from Central Algoma Secondary School. Cedar, spruce and some hardwood species cultivated in the Ontario Forest Research Institute's arboretum were planted on three properties in the upper reaches of the Bar River.

Current work and actions to be undertaken:

- In July 2013, ECCC-CWS conducted a follow-up site reconnaissance to determine the efficacy of the original restoration project and to provide a qualitative evaluation of the current condition of the Bar River. The team looked to identify any significant impacts from livestock or farming practices, which were the original stressors that prompted the restoration project in 1999.
- The conclusion is that, overall, the positive effects of the 1999 restoration project are still evident, particularly with the improvement of stream bank and riparian zone conditions through plantings and livestock restriction. The stream bank remains well vegetated and continues to stabilize the riverbank, and fencing appears successful in reducing the instances of livestock access to the river. There were isolated locations with damaged livestock fences, and these have been flagged to the Ontario Ministry of Agriculture & Food, as the relevant authority for appropriate follow-up.
- But for the Bar River overall, observations suggest the project has had a lasting, positive effect on the St. Marys River years after its implementation, and can be seen as a positive step in helping delist the St. Marys River as an AOC.

Action FF-2: Watershed Development Plan for Bennett and West Davignon Creeks

** Broken into 23 subsections (a)-(w) in the Stage 2 Report.*

*Current Status: **ONGOING***

Work completed to date:

- Sub-actions (a)-(g), (k)-(o), (q), (s)-(t), (v)-(w) are covered by the Sault Ste. Marie Region Conservation Authority (SSMRCA) mandate / regulations.
- (h) is implemented through the City of Sault Ste. Marie's Official Plan and MNR regulations.
- (i) – (j) MECP and Algoma will ensure that these sub-actions have been addressed. All but one underground fuel storage tank at Algoma has been removed and the sites remediated. The former Domtar site has been remediated and covered with a clay cap and vegetated. Some hydrocarbon contaminated sites within the bounds of the slag storage area were remediated and covered with clay caps to prevent infiltration of water.
- (n) SSMRCA also allows the Department of Fisheries and Oceans and U.S. Fish & Wildlife Service to control Sea Lamprey (e.g. using lampricide) via the Great Lakes Fisheries Commission
- (p) is the responsibility of Ministry of Agriculture & Food and private property owners.
- (r) is addressed by the City of Sault Ste. Marie under the stormwater management policy and

master plan.

- (u) is the responsibility of private property owners.

Current work and actions to be undertaken:

- (w) SSMRCA encourages NGOs to accomplish this sub-action with respect to the Diversion Channel as long as it does not impede flood flows. ECCC will accept project proposals to its *Great Lakes Sustainability Fund*.
- Algoma University is in consultation with the SSMRCA and the City to identify where habitat improvements can be made along tributaries connecting to the AOC as a component to developing sub-watershed plans.

Action FF-3: Watershed Development Plan for the East Davignon and Fort Creeks etc.

Current Status: ONGOING

Similar to Action FF-2, please see above for detailed explanation. Some additional sub-actions are listed below.

Work completed to date:

- In 2005, SSMRCA identified sediment studies and improvements.
- In 2009, SSMRCA completed improvements South of Second Line, planted trees, established pond which increased wildlife, improved flow with sediment and garbage removal.

Current work and actions to be undertaken:

- Many are the same as above.
- Discuss possibilities of assessing Root River, Crystal Creek, Big Carp River, and Little Carp River.

Action FF-6: Remediation of rapids habitat and associated wetlands

** Broken into 8 possible options (a)-(h) in the Stage 2 Report.*

Current Status: UNDERWAY

Work completed to date:

- In October 2013, following a competitive bid process, ECCC hired a contractor to collect necessary data and evaluate the physical, ecological and economic feasibility of undertaking actions FF-6 c and f (creating new or augmenting existing rapids areas in the St. Marys River) and FF-6 e (creating wetlands in association with the existing Big Rapids).
- ECCC also entered into contracts with Batchewana First Nations and Garden River First Nations to secure their knowledge, data and insights into past and current habitat conditions within specific locations, and for their ideas on future potential options to create and/or augment rapids habitat.
- In March 2015, results of the feasibility study were presented and discussed with BPAC, and the report was shared with community stakeholders. A total of five conceptual designs were developed, with commentary on the overall benefit to the specific study area and to the AOC. The options identified to be most feasible are: 1) channel modifications/ enhancements and wetland creation on Whitefish Island, followed by: 2) wetland creation, channel realignment, and habitat enhancements at the mouth of Fort Creek.

- The latter was discussed with City officials in June 2015, who indicated Fort Creek (currently a brownfield) is not an option because the City-owned area is already slated to be part of the City's proposed "Gateway site" under the long-term Canal District Neighbourhood plan.

Current work and actions to be undertaken:

- In January 2017, ECCC and the Batchewana First Nation signed a contract to advance proposed aquatic habitat restoration on Whitefish Island, starting with project planning and design, community consultation and approvals, construction logistics and material sourcing. There are concept drawings (shared with BPAC in December 2016) that illustrate options for naturalizing channel bed and bank areas, replacing concrete/rock berms with natural materials and plants, creating wetland features, improving fish passage and sediment transport to benefit Brook Trout and other fish, and building a series of islands and shoals east of the island to provide nursery habitat for Whitefish and Walleye.

Action FF-7: Develop a 10 Year Fisheries Assessment Program for the river

** Includes an assessment of mortality rates for walleye, pike, and yellow perch.*

Current Status: COMPLETE

Work completed to date:

- In 2002, the St. Marys River Fisheries Task Group completed the St. Marys River Fisheries Assessment Plan to guide fisheries management for the next ten year period. The plan provides a standardized approach for regular assessment of the river's fishery and aquatic resources
- The plan ensures coordination of management actions for the St. Marys River Fishery through the Great Lakes Fishery Commission's Lake Huron Committee.

Current work and actions to be undertaken:

- As part of the above plan, the Task Group has ongoing Fish Community Surveys.
- This assessment was setup for a ten-year period and will be reviewed periodically to ensure that it reflects the ongoing needs of the St. Marys River fisheries.

Action FF-8: Continued support for Sea Lamprey control efforts

Current Status: ADDRESSED

- There are dedicated programs dealing with Sea Lamprey that are led by the Sea Lamprey Control Centre (Fisheries and Oceans Canada) in Sault Ste. Marie. It functions independently of the RAP.
- This action is already addressed because aquatic invasive species are a lake- and basin-wide management issue.

Action FF-9: Stabilize shoreline of the Algoma Slag Dump to provide habitat for plant growth (e.g., via soil addition) to soften and stabilize the landscape

Current Status: COMPLETE

Work completed to date:

- In the early 1980s, the slag pile banks along the St. Marys River were sloped and stabilized.
- In 2010, approximately 2.6 km of shoreline was covered with biosolids from St. Mary's Paper and successfully hydro-seeded.
- The entire perimeter of Algoma's material storage and re-processing yard (5.3 km) has stabilized slopes and is not subject to any erosion.

Current work and actions to be undertaken: No further action needed.

Action PSM-6: Monitoring receiving water at St. Marys Paper

Current Status: **NO LONGER APPLICABLE**

As of 2012, the St. Marys Paper plant is decommissioned and no longer discharging to the river. During its operation, ECCC and the MECP implemented requirements for monitoring the receiving waters of the mill (e.g., Canada's *Environmental Effects Monitoring* program to assess the impacts of effluent on the receiving environment and Ontario's *Municipal Industrial Strategy for Abatement* that established effluent limits and monitoring requirements). While in operation between 1995 and 2006, contaminants within the mill's effluents were reduced significantly due to the installation of an activated sludge secondary treatment facility (reducing suspended solids by over 91%, biological oxygen demand (BOD) by more than 97%, and odour-causing phenols by over 95%). This action is no longer applicable given the plants decommission.

Action PSM-8: Monitoring study to examine short-term variability and monthly ranges of contaminant discharges from wastewater treatment plants

Current Status: **COMPLETE**

Work completed to date:

The East End and West End Plants have monitoring programs in place that are implemented by the municipality as required by Environmental Compliance Approval issued by the MECP.

Current Work and Actions to be Undertaken: No further action required.

Action NPSM-9: Identify terrestrial and aquatic disposal sites transferring contaminants into waterways

Current Status: **ADDRESSED**

This action is already addressed through the MECP's regulatory programs and falls outside of the scope of the RAP program.

Action NPSM-11: Assess the potential hazards associated with spills from shipping vessels

Current Status: **COMPLETE**

Work completed to date:

- In 2012-13, ECCC commissioned an assessment and report on vessel-based discharges to the St. Marys River¹. Even though Action NPSM-11 calls for an assessment on shipping vessels, the report looks at all vessels from large freighters to small personal watercraft.
- Covering a decade of reported cases [from 2001 to 2011], the report summarizes the suspected causes, pollutant types, discharge severity, season and timing of the spill/discharge as captured by the Canadian Coast Guard's "Marine Pollution Incident Reporting System" database.
- The St. Clair River AOC is also assessed in the report, and to provide context, it compares the AOC-specific incidents with those that have happened around the Great Lakes system as recorded by Canadian authorities.
- Based on the decade's worth of data, it is concluded that, "the number of vessel discharge incidents within the St. Marys River AOC vary from year to year, but remains fairly low." Key facts include:
 - the prevalence of vessel discharges in the St. Marys is very low (3%), with 14 reported incidents compared to 39 within the St. Clair River AOC and 380 in the Great Lakes [433 in total].
 - the proportion of pollution (i.e., number of litres discharged) in the St. Marys River is very low (<2%), with 1,941 litres entering the river compared to over 104,885 litres discharged to the Great Lakes; and of that total number of litres discharged to the St. Marys River, almost 98% of it is attributed to a single incident involving an 'operational discharge' in 2007 (1892.71 litres of diesel oil was discharged).
 - there exists a number of domestic, binational and international regulations/standards, agreements and programs that oversee vessel operations; and prevent, mitigate, and monitor vessel discharges in the Great Lakes system.

Current work and actions to be undertaken: No further action required.

Action FFM-2: The marsh monitoring program

**The Marsh Monitoring program was established to provide baseline information on marsh birds and amphibian populations and their habitat.*

Current Status: **COMPLETE**

Work completed to date:

- In August 2016, ECCC-Canadian Wildlife Service completed its 5-year monitoring effort (2011-16) to assess baseline wildlife habitat conditions and evaluate the degree of impairment (if any) of coastal wetland water quality, and breeding marsh bird, amphibian, aquatic macroinvertebrate and submerged aquatic vegetation communities within the AOC. Non-AOC reference sites were also evaluated for comparison, and an index of biotic integrity (IBI) was used to factor in several metrics in the overall assessment.
- Stages of the study involved: in 2011, ECCC-CWS (with help from the local MNR office) initiated the acquisition and review of existing data, imagery and documentation on baseline conditions and

¹ French Planning Services Inc. 2013. Background Report: Assessing the Potential Hazards to the River Associated With Vessel Discharges: St.

habitat availability within the AOC. In 2012, a reconnaissance survey was carried out for site selection based on geophysical parameters. In 2013, 2014 and 2015 breeding bird and amphibian (key indicator species) surveys were undertaken at selected sites. In June 2015, the project lead presented preliminary results to BPAC.

- The final report was shared with BPAC in October 2016, and the project lead presented and discussed the results at BPAC's meeting in December 2016. The main conclusions detailed in the final report include:

- water quality within the AOCs coastal wetlands is comparable to non-AOC reference sites; suggesting overall water quality can be considered not impaired. Algoma University's water quality survey (2013-15) corroborates this.

- breeding marsh birds in the AOC are in relatively undisturbed condition; thus this can be considered not impaired.

- there is no clear response to disturbance within the amphibian and aquatic macroinvertebrate communities, suggesting they can be considered not impaired.

- there are some differences between submerged aquatic vegetation communities in the AOC versus non-AOC reference sites, but the overall area is not impaired for this community type.

- The wildlife habitat component of the Loss of Fish and Wildlife BUI had been designated as "requires further assessment" since the Stage 2 report in 2002. After this 5-year monitoring effort, the AOC's coastal wetland habitat and biotic communities were found Not Impaired, thus satisfying the wildlife component of the BUI delisting criteria (i.e., coastal wetland wildlife habitat conditions within the AOC are comparable to those of suitable reference sites, as assessed using an index of biotic integrity).

Current work and actions to be undertaken:

- Although the wildlife component of the Loss of Fish and Wildlife Habitat BUI has been found to be not impaired, the entire BUI will not be redesignated until all elements of the delisting criteria have been met. The delisting criteria states the BUI will no longer be impaired when: i) coastal wetland wildlife habitat conditions within the AOC are comparable to those of suitable reference sites, as assessed using an index of biotic integrity (ACHIEVED); ii) rapids habitat conditions are enhanced through feasible conservation and restoration measures identified in the Stage 2 Remedial Action Plan (see Action FF-6); and iii) the closely linked "Degradation of Fish Populations" BUI is no longer deemed impaired (see Action FFM-3).

Action FFM-5: The CWS surveys of the Common and Black Tern populations

Current Status: **COMPLETE**

Work completed to date:

- In December 2014, ECCC completed a population assessment for the terns based on nest count surveys it conducted between 2010 and 2013, supplemented with historical breeding data from 1978-80, 1989, 1999-00, and 2007-08. Population trends for other colonial waterbirds were included to provide a broader context of trends in diversity and abundance within the AOC. Key facts include:

- overall, the total number of colonial waterbird nests on the Ontario side of the river increased by almost 23% between 1999 and 2008; largely driven by dramatic increases in Ring-billed Gulls.
- despite natural fluctuations, Common Tern populations have had no significant change over the past 30+ years, with 70 nests found in 1978-80 versus 78 in 2007-08;
- evidence from nest count surveys between 1980 and 2013 suggest trends in populations of nesting Common Terns in the AOC are likely related to factors consistent with the life history strategies of the species, and are not specific to influences in the AOC;
- Black Terns seem to be limited on the Ontario side of the river, with a breeding colony found only at Echo Bay. It is not possible to report on temporal trends in abundance of Black Terns in the AOC due to limited data, but there is no evidence to suggest that breeding status within the AOC differs from those nesting at sites downstream in the North Channel.
- the relative low population of nesting Black Terns is likely reflective of low densities reported throughout the region, Ontario and the Great Lakes basin; not due to AOC-specific conditions.

Current work and actions to be undertaken: No further action required.

Action FFM-6: Analysis of contaminant levels in eggs

Current Status: **COMPLETE**

Work completed to date:

- In February 2014, ECCC completed a report on its 3-year common tern and herring gull study, which was based on fieldwork and laboratory analysis in 2011, 2012 and 2013 to assess deformities, reproductive health, and chemical contamination (in eggs) of these indicator species. The report was shared with BPAC in March 2014, which followed a presentation of the preliminary findings the previous June. An addendum was circulated in December 2014 with added detail on embryonic deformities.
- The study's conclusion is, "there is little evidence of impaired reproduction or deformities in colonial waterbirds [herring gulls and common terns] attributable to local contamination effects within the St. Marys River AOC". Key findings include:
 - contaminant levels are low overall and not sufficiently elevated to have an adverse impact on reproductive success and development [this is the case for polychlorinated biphenyls (PCBs) and other organochlorines, dioxins/ furans, heavy metals like mercury, and polybrominated diphenyl ethers (PBDEs)];
 - no physical deformities have been detected within gull or tern chicks [the original issue identified by the RAP]. There is a low incidence of embryonic deformities that cannot be linked to contaminant burdens or to geographical area (i.e., there is no significant difference between AOC and non-AOC bird colonies); and the reproductive success for herring gulls within the AOC is high, and that of the common tern is similar to the rest of the region.

Current work and actions to be undertaken:

- In January 2016, the Bird and Animal Deformities or Reproductive Problems BUI was officially re-designated to "Not Impaired," consistent with the decision by the United States and State of Michigan in February 2015. The previous designation of "Requires Further Assessment" had been in place since 2002.

Action FFM-7: Monitoring of population changes due to habitat enhancement

Current Status: **COMPLETE** [Wildlife Habitat] **PENDING** [Fish Habitat]

This action is to be addressed only after fish and wildlife “habitat enhancement efforts” are implemented.

Work completed to date:

Wildlife: see Action FFM-2, FFM-6, and FFM-8. **Fish:** In 2009, the DFO produced a Nearshore Fish Community Survey that concluded the overall health of the St. Marys River fish community compares favourably with healthy reference sites from Lake Huron. DFO undertook a follow-up survey in 2014-2015.

Current work and actions to be undertaken:

Wildlife: No further action required. As outlined under Action FFM-2, Action FFM-6, and Action FFM-8; through a number of comprehensive studies the wildlife component for both the Degradation of Fish and Wildlife Populations BUI and Loss of Fish and Wildlife Habitat BUI have been determined to be Not Impaired. **Fish:** DFO is to complete its second Nearshore Fish Community Survey to evaluate the overall health of the St. Marys River fish community, and the results will be reviewed in parallel with the latest fish creel survey results from the St. Marys River Fisheries Task Group. It was presented to BPAC in November 2017. In addition, it is anticipated there will be a post-construction monitoring component of the proposed aquatic habitat restoration project on Whitefish Island being planned in partnership with Batchewana First Nation (see Action FF-6).

Action FFM-9: Evaluate influence of water levels and flows on spawning and production

Current Status: **ADDRESSED**

This and other actions related to St. Marys River water levels/flows are beyond the scope of the RAP program. The associated policies and controlling measures are the purview of the International Lake Superior Board of Control and regulations set by the International Joint Commission (IJC). In November 2014, the Board of Control announced it was adopting *Regulation Plan 2012* (effective January 2015) as the means for regulating Lake Superior outflows in a manner that will allow for more natural flows in the St. Marys River, with smaller month-to-month changes in flows compared to the previous plan in place since 1977. The Board cites that as an important factor in the sustainability of the river’s ecosystem and for protecting Lake Sturgeon habitat from rare but serious impacts².

The Regulation Plan 2012 is the outcome of the IJC’s *International Upper Great Lakes Study*³ (2007-12). The study – a 5-year, \$17.6 million binational effort – examined alternative water-level regulation scenarios (including potential ecological impacts) on Lakes Superior, Michigan-Huron, and Erie. The Ecosystem Technical Working Group of that study provided information on the

² Fact sheet on Regulation Plan 2012 found at: www.ijc.org/files/tiny_mce/uploaded/ILSBC/Plan2012_FactSheet.pdf

³ For information on the *International Upper Great Lakes Study*, visit: www.iugls.org

potential ecological impacts on the St. Marys River rapids should the water level/flow regulations change. In March 2012, upon completion of the study, the Study Board recommended “Lake Superior Regulation Plan 2012” as the improved regulation plan governing outflows from Lake Superior. The Study Board – made up of a panel of experts from Canada and the U.S. – believe the proposed plan offers important environmental benefits over the status quo, including benefits to the St. Marys River.

Action FFM-10: Determine minimum water levels and flow rates necessary for spawning

Current Status: **ADDRESSED**

Refer to Action FFM-9, as the same argument applies for removing this action from the list.

Action FFM-11: Monitoring water quantity

Current Status: **ADDRESSED**

Refer to Action FFM-9, as the same argument applies for removing this action from the list.

ECCC and the U.S. Army Corp. of Engineers monitor St. Marys River water quantity as part of the International Joint Commission’s Lake Superior Board of Control and its program for monitoring the water level of Lake Superior and ordering adjustments to the Compensating Works at the St. Marys Rapids as per the water level/flow regulations of the day. As mentioned under Action FFM-9, effective January 2015, the Board of Control is adopting *Regulation Plan 2012* as the means for regulating Lake Superior outflows in a manner that will allow for more natural flows in the St. Marys River.