

Peninsula Harbour Area of Concern Status of Beneficial Use Impairments September 2010

Peninsula Harbour is located on the northeastern shore of Lake Superior, at the town of Marathon, midway between Sault Ste. Marie and Thunder Bay. The Area of Concern includes the harbour, from the peninsula to Ypres Point, and extends about 4 km offshore into Lake Superior past Pebble Beach, southeast of the peninsula.

Environmental concerns have focused on the impacts of the effluent discharges from the municipal sewage treatment plant, a pulp mill and a chlor-alkali plant that operated adjacent to the pulp mill from 1952 to 1977. These concerns included problems with bacterial contamination, aesthetic impairments, loss of fish habitat, and high levels of toxic contaminants in lake bottom sediments and fish.







PARTNERSHIPS IN ENVIRONMENTAL PROTECTION

Peninsula Harbour was designated an Area of Concern in 1987 under the Canada—United States Great Lakes Water Quality Agreement. Areas of Concern are sites on the Great Lakes system where environmental quality is significantly degraded and beneficial uses are impaired. Currently, there are 9 such designated areas on the Canadian side of the Great Lakes, 25 in the United States, and 5 that are shared by both countries. In each Area of Concern, government, community and industry partners are undertaking a coordinated effort to restore environmental quality and beneficial uses through a remedial action plan.

Remedial Action Plan Partners

Environment Canada and the Ontario Ministry of the Environment coordinate the development and implementation of the remedial action plans to protect and restore these Areas of Concern in Canada. Other partners in the cooperative effort in the Peninsula Harbour Area of Concern have included (in alphabetical order) the Community Liaison Committee, EcoSuperior Environmental Programs, Marathon Pulp Inc., the Ojibways of the Pic River First Nation, the Ontario Ministry of Natural Resources, the (former) Public Advisory Committee, and the Town of Marathon.

Remedial Action Plan Process

The Great Lakes Water Quality Agreement requires that remedial action plans be developed and implemented in three stages:

Stage 1: Identifying the Environmental Challenges

In Stage 1, the governments of Canada and Ontario, working with community stakeholders, undertook an extensive program of research and monitoring to assess environmental quality and identify the causes of degradation in the Area of Concern. The *Stage 1 Remedial Action Plan Report*, summarizing the outcome of these efforts, was completed in 1991. By that time, the problems of bacterial contamination and aesthetic impairments in the harbour had been addressed to a large extent by upgrades to the pulp mill and the municipal wastewater treatment plant.

The report identified five environmental challenges needing to be addressed and known as *beneficial use impairments* in the Remedial Action Plan process. Their current status is described below in *Progress on Environmental Challenges*.

Stage 2: Planning and Implementing Remedial Actions

In Stage 2, the governments of Canada and Ontario, working with community stakeholders, undertook a detailed review of potential remedial actions to restore, protect and monitor environmental quality in the Area of Concern. The draft *Stage 2 Remedial Action Plan Report*, which identified recommended remedial actions, was completed in 2000. The report examined options for remediating contaminated sediments, which led to further study and scientific work to characterize the environmental risks and benefits, technical feasibility and the costs of managing the contaminated sediment.

Stage 3: Monitoring Actions and Delisting of the Area of Concern

The *Stage 3 Remedial Action Plan Report*, confirming that the environmental challenges have been addressed successfully, will be completed once the sediment management strategy has been implemented and the partner agencies and organizations confirm the results through monitoring. Implementation of the sediment management strategy is scheduled for 2011, with a follow-up monitoring plan providing assessment in three to five years. As of September 2010, there is no estimate of when Peninsula Harbour will be delisted as an Area of Concern.



PROGRESS ON ENVIRONMENTAL CHALLENGES

The federal and provincial governments and partners have made considerable progress in addressing the environmental challenges, particularly with regards to problems of bacterial contamination and aesthetic impairments in the harbour. The remaining environmental challenges in Peninsula Harbour are linked to the presence of sediments contaminated with mercury, PCBs¹ and organic debris (wood wastes). The wood wastes represent the accumulation of wood fibre and bark from log booming activities, which ended in 1983.

Remedial actions are focusing on the accessible water areas of the harbour, where sediments have high concentrations of mercury and PCBs. Remediation of the deeper areas will be achieved through natural sedimentation processes. In 2008, Environment Canada and the Ontario Ministry of the Environment, with input from Pic River First Nation, the Town of Marathon and the community, selected a strategy for managing contaminated sediment in the Area of Concern. The selected strategy involves placing a thin 15-cm layer cap of clean sand over the area in Jellicoe Cove with the highest levels of contamination. The cap will reduce the risk of the contaminants spreading from the cove into the rest of Peninsula Harbour, and will reduce fish and wildlife exposure to contaminants. Implementation of this approach is expected to start in 2011.

Status of Beneficial Use Impairments

The tables below summarize, for each of the five beneficial use impairments in the Peninsula Harbour Area of Concern, their status as of September 2010; key actions taken by various partner agencies and organizations under the Remedial Action Plan; and future key actions planned by the partners as they work towards the full restoration of environmental quality and eventual delisting of the Area of Concern.

¹ Polychlorinated biphenyls (PCBs) are synthetic chemicals that have wide industrial applications. The manufacturing and importing of PCBs were banned in North America in 1977. PCBs are very persistent (long-lasting) in the environment and can be transported over long distances.

Status – IMPAIRED

Degradation of Benthos²

Status: Impaired

Monitoring has confirmed impairment of the benthic community structure within Jellicoe Cove.

KEY ACTIONS		
COMPLETED	REMAINING	
 Implemented federal pulp and paper regulations and the provincial Municipal/ Industrial Strategy for Abatement (MISA) regulations in the mid-1990s, which led to process changes and upgrades to wastewater treatment at area pulp and paper mills 	 Monitor the establishment of a new benthic community within Jellicoe Cove after placement of the thin-layer cap and compare this new community to those in surrounding areas 	
 Conducted an environmental risk assessment of the Area of Concern, which, following public review and comment, led to the development of options for managing contaminated sediment 		
 Developed a plan to reduce the risk of contamination spreading from Jellicoe Cove into the rest of Peninsula Harbour by placing a cap over the area with the highest level of contamination; this approach will reduce exposure of benthos to contaminants within Jellicoe Cove 		

Degradation of Fish and Wildlife Populations

Status: Impaired, for fish populations

Impairment of Lake Trout populations has been identified as a result of over-exploitation, the introduction of Sea Lamprey and the destruction of spawning habitat.

KEY ACTIONS		
COMPLETED	REMAINING	
 Assessed Lake Trout stocks in western Lake Superior, including sites located within the Area of Concern (2002) 	 Continue to monitor the fish community to assess the health of fish populations within and adjacent to the Area of Concern 	
 Undertook stocking of Lake Trout both within and adjacent to the Area of Concern (1981 to 2006) 		

² Benthos and benthic community refer to the invertebrate organisms, such as worms, nymphs and insect larvae that dwell for all or part of their lives in the bottom sediments of lakes and rivers. Scientists often use the health and abundance of these organisms as indicators of contaminant toxicity and ecosystem health.



Loss of Fish and Wildlife Habitat

Status: Impaired

Degradation of spawning habitat from the accumulation of wood fibre and bark in Jellicoe and Beatty Coves has been identified as one of the causes resulting in the reduction and loss of Lake Trout populations.

KEY ACTIONS		
COMPLETED	REMAINING	
 Greatly reduced the levels of organic matter entering the harbour through past upgrades at the mill and wastewater treatment plant 	• Assess the extent of quality fish habitat throughout the Area of Concern	

Restrictions on Dredging Activities

Status: Impaired

Navigational dredging of sediment from within the Area of Concern may be restricted due to elevated levels of mercury and PCBs or due to restrictions imposed by the contaminated sediment management plan.

KEY ACTIONS		
COMPLETED	REMAINING	
 Implemented federal pulp and paper regulations and the provincial Municipal/ Industrial Strategy for Abatement (MISA) regulations in the mid-1990s, which led to process changes and upgrades to wastewater treatment at area pulp and paper mills 	 Determine localized restrictions on dredging as a result of the placement of the thin-layer cap 	

• Considered needs for operational/navigational dredging in sediment management plan (2009)

Restrictions on Fish and Wildlife Consumption

Status: Impaired

Restricted consumption of Longnose Sucker, White Sucker, Walleye, Round Whitefish, Lake Whitefish and Lake Trout is advised due to elevated levels of mercury, PCBs or toxaphene.

KEY ACTIONS		
COMPLETED	REMAINING	
 Implemented federal pulp and paper regulations and the provincial Municipal/ Industrial Strategy for Abatement (MISA) regulations in the mid-1990s, which led to process changes and upgrades to wastewater treatment at area pulp and paper mills Conducted an environmental risk assessment of the Area of Concern, which, following public review and comment, led to the development of options for managing contaminated sediment 	 Develop and implement a long-term monitoring plan to guide the assessment of mercury and PCB levels in sport fish Determine whether contaminant levels in fish are significantly higher in Peninsula Harbour compared to other Lake Superior sites following implementation of the contaminated sediment management plan 	
 Developed a plan to reduce the risk of contamination spreading from Jellicoe Cove into the rest of Peninsula Harbour by placing a cap over the area with the highest level of contamination 		
 Collected fish samples for the Ontario sport fish contaminant monitoring program (2002, 2007 and 2008) 		



FOR MORE INFORMATION

Environment Canada: www.ec.gc.ca/raps-pas

Lake Superior Binational Forum: www.superiorforum.org

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