

# **INTERNATIONAL JOINT COMMISSION WHEATLEY HARBOUR STAGE 3 REMEDIAL ACTION PLAN REVIEW**

## **Introduction**

Under the 1987 Protocol to the Great Lakes Water Quality Agreement (Agreement), Remedial Action Plans (RAPs) for designated Areas of Concern (AOCs) are to be developed and implemented by the Parties (Canadian and U.S. Governments) in cooperation with State and Provincial Governments. The AOCs are geographic areas that fail to meet the general or specific objectives of the Agreement, where such failure has caused or is likely to cause impairment of the beneficial use or of the area's ability to support aquatic life. Further, the Agreement states RAPs will be submitted to the International Joint Commission (Commission) for review and comment at each of three stages.

The Stage 3 RAP for the Wheatley Harbour AOC has been reviewed by the Commission. The criteria for this evaluation were based on the relevant portions of the 1987 Protocol to the Agreement. As defined in Sections 4(d)(iii) and 4(a)(vii-viii) of Annex 2 of the Agreement, respectively, Stage 3 RAPs are to be submitted to the Commission for review and comment when monitoring indicates that identified beneficial uses have been restored. They are to include a process for evaluating remedial measure implementation and effectiveness and a description of surveillance and monitoring processes to track the effectiveness of remedial measures and the eventual confirmation of the restoration of beneficial uses.

## **General Comments**

### **Does the Stage 3 Remedial Action Plan contain a process for evaluation of remedial measure implementation and effectiveness?**

Based on best available information, delisting objectives related to the five use impairments were developed by the Wheatley Harbour Implementation Team (WHIT). The WHIT was formed in February 2004 to oversee the RAP and coordinate efforts toward delisting. In December 2007, the WHIT determined that all required actions had been completed and that impaired beneficial uses within the AOC had been restored. Section 3 of the Stage 3 RAP details the remedial actions that were undertaken in support of the RAP goals. Therefore, the Wheatley Harbour Stage 3 RAP outlines the use of a team of subject matter experts to assess remedial measure implementation and effectiveness.

### **Does the Stage 3 Remedial Action Plan contain a description of surveillance and monitoring processes to track the effectiveness of remedial measures and the eventual confirmation of the restoration of uses?**

Section 4 of the Wheatley Harbour Stage 3 RAP addresses the topics of monitoring and surveillance. As noted in this section of the document, the RAP does not recommend developing new, AOC-specific monitoring programs to monitor contaminated sediment in Wheatley Harbour and the Muddy Creek wetland. The document notes that existing programs which routinely sample Wheatley Harbour for other purposes should be utilized to accomplish this task.

While the document details three programs that could contribute data to the monitoring of sediment conditions in the AOC, no concrete steps are described to ensure that the data are appropriately collated and distributed to participants in the RAP. The document notes that the federal and provincial leads for the Wheatley Harbour RAP should coordinate among agencies to ensure these data continue to be collected and they are provided to the RAP for review as they become available.

### **Comments on Beneficial Use Restoration**

A summary of the documentation regarding the status of each impaired beneficial use and the Commission's comments concerning progress toward restoration of beneficial uses are provided below.

### **Restrictions on Fish and Wildlife Consumption**

The Stage 3 Remedial Action Plan describes the delisting criterion that utilizes an existing monitoring program, the Ontario Ministry of Environment Sport Fish Contaminants Monitoring Program. Fish tissue polychlorinated biphenyl (PCB) concentrations and fish consumption restrictions for Wheatley Harbour and the Central Basin of Lake Erie are displayed in figure 4 of the RAP document. Based on these comparisons, the WHIT determined that consumption restrictions in Wheatley Harbour are consistent with those in the Central Basin of Lake Erie. Sampling has determined that no active sources of PCBs exist. The WHIT concluded the beneficial use should not be considered to be impaired.

The Commission notes that data on PCBs and other contaminants are only as recent as 2005 and advises that information for this beneficial use impairment be more current. To that end, Commission staff examined fish consumption advisories for these two locations in the 2009-2010 Guide to Eating Ontario Sport Fish and noted these published fish consumption advisories. The RAP document notes that the data in figure 4 are from the Ontario Ministry of the Environment Sport Fish Contaminants Program, but it is unclear if these data are reflected in the 2009-2010 Guide to Eating Ontario Sport Fish or predate this recent document. However, a related citation in the text of the Stage 3 RAP is not listed in the References section of the document and a listing of the Guide to Eating Ontario Sport Fish in that section of the RAP document is the 2007 edition rather than the most recent 2009-2010 edition. The August 13, 2009 Draft of the Wheatley Harbour Stage 3 RAP should be updated to reflect the most recent fish consumption advisories that are displayed in the 2009-2010 Guide to Eating Ontario Sport Fish.

Despite the documented reductions in PCB levels in fish tissue, fish consumption advisories persist due to regional (Lake Erie) conditions. Accordingly, the beneficial use impairment remains, however appropriate remedial actions are beyond the scope of the RAP. Thus, the Commission concludes that while restrictions on the consumption of fish and wildlife in the Wheatley Harbour AOC remain, they are not attributable to local sources and these restrictions should not adversely impact the removal of Wheatley Harbour's AOC designation.

## **Degradation of Fish and Wildlife Populations**

The WHIT assessed possible degradation of fish and wildlife populations by focusing on the assemblage of fish species within the AOC. Through electrofishing surveys conducted in 1987, 2006 and 2008, it concluded that the fish community appears to be well-balanced and functional. The AOC was noted for its use as nursery and feeding habitat with large schools of young-of-the-year white bass and white perch noticed in 2006.

Contaminant levels in young-of-the-year fish were analyzed from 1982 through 2006. The Stage 3 RAP concludes that results of this monitoring effort suggest a major improvement in the PCB levels in sediment within the AOC.

The Stage 3 RAP also provides a discussion of contaminants in mink. However, it notes that of the mink carcasses collected for study, none were from within the AOC or the Muddy Creek watershed. Accordingly, the information is not relevant to the degradation of populations in the AOC and the Commission suggests that this section of the RAP report be removed before the Stage 3 RAP document is finalized.

In the early 1990s, PCB and several organochlorine pesticide levels in tree swallow eggs and chicks from Wheatley Harbour were examined and PCB concentrations in tree swallow eggs from Wheatley Harbour were higher than those from a nearby relatively pristine marsh area. The RAP states that despite high PCB concentrations, no significant differences were found among sites in hatching or fledging success. These data do not reflect current conditions and no other information was presented to inform the readers of the Stage 3 RAP.

The WHIT concludes the fish community appears balanced and diverse and the relative abundance of fish in 2008 was much higher than in 1987. Based on this and related information, the WHIT determined that fish and wildlife populations in the AOC should not be considered impaired.

The Commission finds limited AOC-specific information is provided to describe the current status of fish and wildlife populations. In particular, there are to be a narrow focus on potential contaminant impacts of fish and wildlife populations with nil consideration of water quality enhancements due to improvements in Omstead Food Limited's wastewater treatment facilities. The Commission suggests that greater attention be directed to assembling suitable documentation to support the WHIT's conclusion regarding restoration of this beneficial use.

## **Restrictions on Dredging Activities**

The beneficial use impairment, restrictions on dredging activities, provides a means to track additional dredging expenditures by the commercial navigation industry as a result of the handling and disposing of contaminated sediment. Dredging for commercial and recreational fishing is required within the Wheatley Harbour AOC. Necessary dredging includes coarser material from the harbor mouth and finer materials from the inner harbor. Ontario Ministry of

the Environment guidelines allow for the in-lake disposal of the sand from the harbor mouth, but prohibit in-lake disposal of the finer materials. Therefore, land-based disposal was selected in developing the delisting criterion for fine-grained material from the inner harbor. Since specific standards, other than those regarding the nutrient value of the material, for the application of dredged material on agricultural land do not exist in Ontario, agricultural land standards used for the re-development of brownfields, detailed in Ontario Regulation 153/04, were used as a surrogate criterion. The Stage 3 RAP contains an evaluation of sediment quality in comparison to the Ontario Regulation 153/04 Standards. In general, contaminant levels in Wheatley Harbour sediment are acceptable with only a single site exceeding the cadmium Standard marginally. The WHIT concludes in the Stage 3 RAP that the beneficial use is not impaired.

The Commission notes the continuing improvements in sediment quality and that sand from the harbor mouth is now used to replenish the barrier beach at Hillman Marsh. In the case of the single exceedance of interest, Cadmium at site 2, the Commission notes the reduction in concentration from 2004 to 2008 and the fact that the exceedance of the Standard is marginal. Accordingly, the Commission agrees with the conclusion that the beneficial use is not impaired within the Wheatley Harbour AOC.

### **Eutrophication or Undesirable Algae**

One delisting criterion for the AOC compares total phosphorus concentrations from within the AOC to concentrations in watersheds within the same ecoregion, the Lake Erie Lowland. The target is to have no persistent water quality problems in the AOC. Persistence, in this case, is defined as existing for a prolonged period (continuous) or repeated occurrences of limited durations. Two characteristics of eutrophication are noted in the delisting criteria- nuisance algae and oxygen stress (dissolved oxygen concentrations less than the Provincial Water Quality Objective of four milligrams per liter).

Total phosphorus concentrations in the AOC are similar, and in some cases lower, than other similar systems in the general area. Dissolved oxygen concentrations in the AOC are noted to be consistently above the Objective. There are no documented reports of persistent algal blooms or nuisance algae. The WHIT recommends that the beneficial use be considered not impaired.

The Commission is pleased with the progress in reducing phosphorus loading to the Wheatley Harbour from the Omstead Foods Limited process water discharge. In order to protect the existing water quality conditions in the AOC, the Commission notes that the importance of continued monitoring of phosphorus inputs from industry and agricultural non-point sources. Based on information detailed in the Stage 3 RAP, the criteria for restoration of the beneficial use are being met and the beneficial use has been restored.

### **Loss of Fish and Wildlife Habitat**

The Stage 3 RAP notes that quantity and quality are the two issues regarding fish and wildlife habitat in the AOC. The delisting criteria specifies no net loss of natural cover below the current baseline of 18 percent and water and sediment quality within the Muddy Creek wetland resulting in no bioaccumulation of PCBs in fish above a target as determined by an ecological risk

assessment. The Stage 3 RAP confirms the target for natural areas cover in the AOC has been surpassed and sediment in Muddy Creek does not pose a risk to upper trophic level fish and wildlife in the AOC. Based on this information, the WHIT suggests that restoration targets are met and the beneficial use is not impaired.

The Commission believes that the quality of habitat should be examined beyond possible degradation due to excessive concentrations of PCBs in sediment or biota. The U.S. Geological Survey's National Wetlands Research Center maintains a series of habitat suitability index models that provide habitat information for evaluating impacts on fish and wildlife habitat from water or land use changes. In particular, models for species such as yellow perch, mink, and great blue heron are available and utilization of such models could provide valid evaluation of benefits derived from enhancements to water quality as a result of improved treatment of industrial releases. A complete listing of available habitat suitability models can be accessed at [www.nwrc.usgs.gov/wdb/pub/hsi/hsiindex.htm](http://www.nwrc.usgs.gov/wdb/pub/hsi/hsiindex.htm). The Commission concurs that this use impairment no longer exists, but it recognizes that a wider scope of habitat quality parameters could be evaluated through use of existing habitat suitability models.

## **CONCLUSION**

The Commission concurs that to the extent the RAP can have influence over local conditions, beneficial uses in the Wheatley Harbour AOC have been restored. Efforts to reduce phosphorus loading from industrial discharges to receiving waters have resulted in significant environmental improvements within the AOC. With respect to the report's assessment that PCB concentrations in fish are expected to continue to decline in the future, the Commission recommends continued monitoring of these concentrations as part of the long-term protection of beneficial uses in the Wheatley Harbour AOC.