



July 30, 2014

Mr. Chris Korleski
Director, Great Lakes National Program Office
U.S. Environmental Protection Agency
77 West Jackson Blvd.
Chicago, IL 60604-3590
U.S.A.

Re.: White Lake Area of Concern Final Delisting Report

Dear Mr. Korleski,

We are writing in reply to your letter dated June 25, 2014, formally requesting the Commission's review of the Final Delisting Report for the White Lake Area of Concern (AOC), in accordance with Annex 1 of the Great Lakes Water Quality Agreement. The Commission appreciates the increased attention to AOC delisting in the United States and is pleased to review this second Delisting Report being produced under the renewed 2012 Agreement.

The Commission has reviewed available White Lake Remedial Action Plan (RAP) reports and finds that there is adequate justification to remove the eight impaired beneficial uses, including Restrictions on Dredging Activities, Eutrophication or Undesirable Algae, Degradation of Benthos, Restrictions on Fish and Wildlife Consumption, Degradation of Aesthetics, Restrictions on Drinking Water Consumption or Taste and Odor Problems, Degradation of Fish and Wildlife Populations, and Loss of Fish and Wildlife Habitat. Further, we agree that White Lake should be delisted as an Area of Concern. More detailed comments that support this assessment are attached.

Commission staff visited the Area of Concern and met with select RAP participants on October 22, 2013, and attended the Public Advisory Council's (PAC) Delisting Public Meeting held on June 25, 2014. Commission staff have also commented on an earlier version of the Delisting Report. The Commission has appreciated this engagement and the responsiveness of U.S. EPA and Michigan Department of Environmental Quality (MDEQ) staff to our earlier comments.

Since the listing of White Lake as an Area of Concern in 1987, significant progress has been made to restore White Lake, particularly related to contaminated sediment remediation and habitat restoration. We applaud the investments and partnerships that have made delisting possible. All involved should be commended for their ability to formulate and incorporate local delisting criteria, as appropriate in the context of a binational agreement.

Beyond this delisting, the Commission strongly supports current activities of the PAC to develop a Strategic Plan for its continued involvement in White Lake stewardship. The approach being taken by the PAC with agency support serves as a potential model for other AOCs nearing delisting.

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The Commission is conveying this determination, by copy of this letter, to the U.S. Department of State, Foreign Affairs, Trade and Development Canada, and Environment Canada. Consistent with its current policy, the Commission will make these comments available to the public.

We congratulate the U.S. EPA, MDEQ, White Lake PAC and all RAP partners on the delisting of the White Lake Area of Concern.

Sincerely,



Lana Pollack
Chair
U.S. Section



Gordon Walker
Interim Chair
Canadian Section

attachment

cc. Christopher Wilkie, Foreign Affairs, Trade and Development Canada
Susan Saarnio, U.S. Department of State
Catherine Stewart, Environment Canada
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Jon Allan, Michigan Office of the Great Lakes
John Riley, Michigan Office of the Great Lakes
Greg Mund, White Lake Public Advisory Council

**INTERNATIONAL JOINT COMMISSION
WHITE LAKE AREA OF CONCERN FINAL DELISTING REPORT REVIEW**

July 30, 2014

Introduction

Under the Great Lakes Water Quality Protocol of 2012 (the 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 Agreement specifies that AOC Delisting Reports will be submitted to the International Joint Commission (Commission) and to other agencies and stakeholders for review and comment.

The Final Delisting Report for the White Lake AOC has been reviewed by the Commission, and comments for several IJC review criteria are included below.

Overall, the Commission concurs that the AOC delisting is justified. Significant efforts have been made to delist the site and, in particular, all involved should be commended for their ability to formulate and incorporate local delisting criteria, as appropriate in the context of a binational agreement. Our review identified a number of places where more details would help the reader to understand the significant efforts that have been undertaken to date and the future for the site, as described below.

Have the identified delisting criteria been met for the impaired beneficial uses? Were appropriate standards, criteria, and guidelines used, and any assumptions justified?

The White Lake RAP report, prepared by the Michigan Department of Natural Resources in 1987 and updated in 1995, identified eight beneficial use impairments (BUIs) for the AOC.

Restrictions on Dredging Activities

The Restrictions on Dredging BUI was listed in 1987 because concentrations of chromium, lead and zinc exceeded the dredge spoil limits at several locations in the AOC. The delisting criterion for this BUI is based on the State's guidance, which utilizes a tiered approach. The first (and preferred) tier applies to White Lake AOC, which specifies that the BUI is considered restored when there have been no restrictions on routine commercial or recreational navigational channel dredging by the U.S. Army Corps of Engineers (ACE). Restrictions are assessed based on findings from the most recent dredging cycle and would include the need for special handling or use of a confined disposal facility for dredge spoils due to chemical contamination.

A Dredging Activities Technical Committee was formed in 2008, which determined that for the 2008 dredge cycle contaminant concentrations in the dredge spoils were less than U.S. EPA open water disposal criteria. Spoils were therefore approved for and used in the federal beach nourishment program for Lake Michigan. Sampling completed for seven dredge cycles also confirmed suitability for open water disposal.

The Commission finds adequate justification for removal of this BUI.

Eutrophication or Undesirable Algae

The Eutrophication or Undesirable Algae BUI was listed because high nutrient levels were present in White Lake due to municipal sewage and tannery discharges. The State of Michigan does not have numeric nutrient water quality standards. Rather, Michigan Department of Environmental Quality (MDEQ) uses a narrative test to determine whether waters should be included on Michigan's 303(d) list of impaired waters due to nutrients or excessive algal growth. This approach was also adopted as the delisting criterion in the State's guidance.

The MDEQ accepted the White Lake Public Advisory Council's (PAC) locally-developed target for the Eutrophication and Undesirable Algae BUI as being functionally equivalent to the restoration criteria in the Guidance, while remaining within the scope of the AOC program. According to the White Lake PAC's criteria, the Eutrophication and Undesirable Algae BUI was to be considered restored when:

- 1) No waterbodies within the AOC are included on the list of impaired waters due to nutrients or excessive algal growths in the current *Clean Water Act Water Quality and Pollution Control in Michigan: Section 303(d) and 305(b) Integrated Report*; and
- 2) The following average annual concentrations/values meet criteria in White Lake after 5 years.
 - Total Phosphorous – 30 µg/l
 - Chlorophyll a – 10 µg/l
 - Secchi Disk depth ~2.0 m
 - Trophic Status Index – 50-55

Since the 1970s, average total phosphorus concentrations have declined from 50µg/L to 30µg/L, average chlorophyll-a concentrations have declined from 12 µg/L to 8 µg/L, and secchi disk transparencies have increased from less than 1.7m to approximately 2m. Trophic Status Index for 2004-2006 was 50, within the target range of 50-55. Analysis completed by MDEQ staff in 2010 and 2012 found that no waterbodies within the AOC are included on the State's list of impaired waters due to nutrients or algal blooms. Further, sampling at White Lake between 2006-2008 and in 2011 by Grand Valley State University and the White Lake PAC confirmed that average values met criteria #2.

Although a continued focus on nutrient mitigation is warranted in White Lake, as it is throughout much of the Great Lakes basin, current annual average values for the target criteria are at or below the thresholds associated with nuisance/harmful algal blooms. Thus, the Commission finds adequate justification for removal of this BUI.

Degradation of Benthos

The Degradation of Benthos BUI was listed because of sediment toxicity related to heavy metals and organic chemicals, and impacts to species diversity from the discharge of municipal sewage. Because of the importance of White Lake as a recreational resource and due to public concern related to sustaining the current trend of improving water quality, the White Lake PAC voted to adopt a target for delisting the Degradation of Benthos BUI that exceeds the State of Michigan criteria. The target, which was approved by the MDEQ and is described in detail in the Delisting Report, requires that all remedial actions for known contaminated sediment sites with degraded benthos are completed and monitored, and in addition that average benthic macroinvertebrate populations in White Lake meet the following conditions:

- Sediment Toxicity - Amphipod survival >60%
- Hexagenia - Present in river mouth littoral zone with an increasing trend over 3 years
- Amphipods - Present in river mouth littoral zone with an increasing trend over 3 years
- % Oligochaeta - < 75% or a decreasing trend
- Chironomidae (#/m²) - > 500 or an increasing trend
- Diversity (Shannon-Weaver) - 1.5 or an increasing trend

Sediment toxicity and benthic community characterization work was completed by Grand Valley State University at priority sites following remedial actions including contaminated sediment removals at Tannery Bay and the former Hooker/Occidental Chemical outfall, as well as in the open lake at historical sampling locations. Additional sampling was completed at Mill Pond Creek by MDEQ and Muskegon Conservation District. The results confirm that delisting criteria were consistently met or exceeded.

The Commission finds adequate justification for removal of this BUI.

Restrictions on Fish Consumption

The 1987 RAP report lists the Restrictions on Fish Consumption BUI due to non-point source runoff and the discharge of municipal and industrial wastes which resulted in elevated levels of PCBs and chlordane levels found in carp. Chlordane was discontinued for use as a pesticide in 1980, and no source of the compound was found in White Lake.

The State's *Guidance for Delisting Michigan's Great Lakes Areas of Concern* utilizes a tiered approach for this BUI. Per the Guidance, in decreasing order of preference, the approach to be used is: a comparison approach (Tier 1), appropriate control site (Tier 2), or trend analysis (Tier 3). In 2008, the White Lake PAC submitted, and the MDEQ approved, locally-developed targets which are functionally equivalent to Tier 2 of the Guidance for this BUI. Those targets focus on the edible portions of largemouth bass and common carp, and in essence states that the BUI will be considered restored when contaminant levels in edible portion analyses of key fish species are not significantly different from Pentwater Lake for two consecutive five year sampling periods.

Grand Valley State University was contracted to collect and analyze fish from Muskegon Lake, Pentwater Lake, and White Lake and complete a Tier 2 comparison between White Lake and an appropriate control site (Pentwater Lake). Muskegon Lake was also sampled to satisfy monitoring requirements for that AOC.

As summarized in the Delisting Report, a comparison of the 2006 with the 2011 data indicated that mean concentrations of PCBs in largemouth bass decreased in both lakes over the five year period, while mercury concentrations rose slightly in both. The increase in mercury is thought to be the result of a regional phenomenon, such as atmospheric deposition, as opposed to local sources. From 2006 to 2011 mean concentrations of PCBs in carp decreased by about 75 percent in Pentwater Lake, while they decreased by about 66 percent in White Lake. Mean concentrations of mercury in carp rose slightly in both lakes. The results from the 2006 and 2011 fish tissue sampling found no statistically significant difference between the White Lake AOC and the control site. Therefore, according to the Guidance restoration criteria outlined above, this BUI was restored in the AOC.

The Commission finds adequate justification for removal of this BUI given that contaminant concentrations in the edible portions of fish at White Lake are comparable to an appropriate control site. The Delisting report could be strengthened by briefly commenting on White Lake fish consumption advisories in comparison to other comparable nearby fisheries using the Michigan Department of Community Health's recently updated *Eat Safe Fish Guide*. This analysis would be above and beyond the required restoration criteria but would provide supplemental evidence to readers that White Lake is comparable to other west Michigan lakes.

Degradation of Aesthetics

The 1987 RAP report listed the Degradation of Aesthetics BUI due to nuisance shoreline algal accumulations, and the White Lake PAC's 2002 RAP update also noted shoreline development and associated impacts e.g. oil sheens from personal watercraft.

In 2009, the MDEQ approved local aesthetics criteria, developed by the White Lake PAC, that parallel the State criteria and additionally specify that particular "important public areas" do not exhibit any designated use impairments. The BUI will be considered restored when monitoring data for two successive monitoring cycles indicates that important public areas in the White Lake AOC do not exhibit persistent, high levels of "unnatural physical properties" (as defined by Rule 323.1050 of the Michigan WQS) in quantities which interfere with the State's designated uses for surface waters. Important public locations in White Lake include the Bush Creek/east bay and Genesco property where hides are present, shallow water areas with submerged debris, and the abandoned Whitehall and Montague dumps in the wetlands.

The BUI removal report documents the findings of aesthetics assessments completed in 2011 and 2013. These assessments found no impairment of the State's designated uses, and attributes improvements in White Lake aesthetics to shoreline habitat restoration projects completed to restore this BUI, as well as additional waste/sediment removals at Tannery Bay in 2013.

The Commission finds adequate justification for removal of this BUI.

Restrictions on Drinking Water Consumption or Taste and Odor Problems

The Restrictions on Drinking Water Consumption BUI was listed as an impairment in 1995 because of concerns related to contaminated groundwater from a variety of chemical and other industrial manufacturing waste disposal practices in the area. The two communities in the AOC – Whitehall and Montague – have public water supply systems served by municipal well fields. A number of private wells also exist in the AOC, which are not part of the public drinking water system.

The BUI removal report and Delisting Report describe in some detail differences of opinion between MDEQ and the White Lake PAC related to delisting criteria for this BUI. Ultimately, the State took the position that the criteria in the State's Guidance applies to the AOC.

The State's Guidance specifies that this BUI will be considered restored when monitoring data for 2 years indicates that public water supplies:

- meet the current and most stringent human health standards, objectives, or guidelines (at the point of distribution into the water system) for levels of disease-causing organisms, hazardous or toxic chemicals, or radioactive substances; and
- treatment needed to make raw water potable and palatable does not exceed standard methods in those supplies. In the event a public drinking water intake must be closed due to contamination of surface water, standard treatment methods are considered to have been exceeded.

The PAC's recommended delisting criteria for this BUI were not accepted by the MDEQ because in the State's view the requirements of the PAC went beyond the scope of the AOC program by seeking to include remediation of groundwater sources not impacting a public drinking water source. Ultimately, the PAC expressed satisfaction with State's commitment to pursue drinking water issues through its regulatory programs (i.e., outside of the RAP program) and endorsed removal of this BUI in December, 2013.

The Commission agrees with MDEQ's position that the original intent of Annex 2 (RAPs and LaMPs) in the 1987 Agreement was to protect the integrity of surface waters, and also commend the White Lake PAC for encouraging State commitments to address remaining groundwater issues at three sites in the AOC through its regulatory programs. Based on the BUI removal report, it appears as though groundwater plume characterization has been extensive in the AOC, and is continuing. We think that the Delisting Report would benefit from a statement – if available data support it – that groundwater contamination is not affecting the quality of the waters of White Lake.

As reported in the Delisting Report, based on available chemical monitoring data, water quality reports, and communication with technical staff, both Whitehall's and Montague's drinking water supplies meet all federal and state drinking water standards for water quality for a two year period (2011-2012). Each drinking water supply employs conventional treatment methods (i.e., filtration and disinfection) to treat source water. Treatment has not exceeded standard methods, nor have there been any incidences of municipal well closures during the last two years.

The Commission finds adequate justification for removal of this BUI.

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

The Degradation of Fish and Wildlife Populations and the Loss of Fish and Wildlife Habitat BUIs were listed as impaired in 1987 and 1995 RAP documents due to industrial discharges of toxics, shoreline development leading to habitat loss, and depletion of dissolved oxygen in deeper waters. The BUIs are related and were considered together in the Delisting Report.

The Delisting Report includes the White Lake PAC's delisting criteria for fish habitat and populations, which are consistent with the State's Guidance and were approved by MDEQ. The delisting criteria center around an appropriate and quantitative index of biotic integrity (IBI) to determine the condition of White Lake along a degradation continuum, including comparison to a suitable reference location (Pentwater Lake). White Lake's IBI is statistically similar to Pentwater Lake, did not decline during the sampling period (2009-2011), and is indicative of acceptable fish community health, and thus overall ecological health of the lake.

The Delisting Report also includes the White Lake PAC's wildlife habitat and populations delisting criteria, which are also consistent with the State's Guidance and were approved by MDEQ. Those criteria focus on completion of a number of 'place based' habitat restoration projects, all of them along or adjacent to the shoreline. As part of this process, a White Lake Shoreline Habitat Restoration Blueprint and White Lake Shoreline Habitat Management Plan were prepared and implemented by the Muskegon Conservation District and White Lake PAC. Numerous restoration projects were completed from 2010 to 2012.

The Commission finds adequate justification for removal of these BUIs. However, the Delisting Report would be strengthened by the inclusion of a more fulsome description of the location and details of 'planning tools' used in the AOC i.e., conservation easements, management activities and deed restrictions, or at least a link to where this information can be easily found. Additionally a more substantial rationale for coupling the Population and Habitat BUIS into one assessment would be useful for guiding the reader through the logic that was applied for coupling those assessments.

Did qualified individuals peer review the delisting report and/or individual beneficial use impairment removal reports associated with the delisting?

The RAP report was prepared by Michigan DEQ in consultation with U.S. EPA staff. White Lake Public Advisory Council members have reviewed the Delisting Report.

MDEQ staff prepared each of the individual BUI removal reports that cumulatively justify delisting. Some of the BUI removal reports include the names and affiliations of the subject matter specialists involved in report preparation and/or review. Named individuals have expertise in the relevant subject matter areas.

The Commission believes that the report would be improved by including the names, titles, and affiliations of those subject matter specialists involved in the BUI removal report preparation or review, and Delisting Report preparation and review.

Has RAP implementation been an important step in the elimination of the impaired beneficial uses?

As reported in the Delisting Report, the major environmental problems affecting the lake at the time of listing were contaminated groundwater discharges to the lake from Occidental Chemical Corporation (formerly Hooker Chemical) property, heavy metals and other compounds contaminating sediment from the Whitehall Tannery property, and excess nutrients from municipal wastewater discharges, among other concerns. Over time, other facilities were found to be contributing to water quality concerns in the lake and nearby groundwater, including the E.I. du Pont de Nemours and Company (DuPont) and the former Whitehall Wastewater Treatment facility, among others.

The Delisting Report includes a useful timeline of remedial actions and milestones (Figure 3) and specific remedial actions – especially those related to habitat restoration and contaminated sediment remediation - are summarized in the BUI reports and Delisting Report. Because the Delisting Report (p. 5, and elsewhere) specifies that the original impairments are in part the result of municipal wastewater discharges, the Commission believes the Delisting Report would be improved by adding a description of wastewater and stormwater related remedial actions that have contributed to AOC recovery. This would help the reader to better understand how delisting has been accomplished and the amount of work that has been undertaken in that effort.

If any beneficial uses remain impaired, are these impairments a result of influences outside of the AOC or are the result of natural causes, and have all reasonable actions been taken within the AOC to address the impairments?

All BUIs have been removed. Although fish consumption advisories remain in effect for White Lake, advisories also exist for other west Michigan lakes affected by regional processes e.g., atmospheric deposition.

The Delisting Report acknowledges – and Commission representatives have heard from local residents – that additional cleanup is required at sites outside of, but proximal, to the AOC. Other programs exist to address those cleanup needs.

Subject to the clarifications sought elsewhere in this review, the Commission concurs that all reasonable actions to address the identified impairments in the AOC have been taken.

Have Work Plans and resource commitments been made for long term monitoring and other necessary activities?

This section of the Delisting Report references planned avian and herptile monitoring at habitat restoration and protection sites, MDEQ's Resource Conservation and Recovery Act activities related to the DuPont property, and further actions required to prevent groundwater taking from private wells.

Ongoing monitoring of AOC conditions is, in the Commission's opinion, critically important to prevent backsliding and affirm the success of restoration actions. RAP reports suggest many community members also view ongoing monitoring as a priority.

It would be helpful if the Delisting Report (p. 35) clarified what additional actions will be taken if marsh monitoring being undertaken from 2014-2016 does not confirm improvements in marsh populations.

The Delisting Report includes no information on how ongoing Statewide programs will be brought to bear on the AOC. MDEQ's Fish Contaminant Monitoring Program, MDCH's educational materials for eating AOC fish safely, MDEQ's NPDES permit program, MDNR's fisheries management program, and Michigan's multi-department Aquatic Invasive Species (AIS) program, among others, may have important roles to play in ensuring the long term health of White Lake. The Commission believes adding reference to these programs would improve a reader's understanding of the role of ongoing programs in maintaining or improving the quality of White Lake.

Has public consultation been adequate?

The Commission finds that the White Lake Public Advisory Council (PAC) has been a particularly active PAC, as compared to other AOCs. They have been an active participant in the RAP since its inception, and published the *White Lake Community Action Plan* in 2002 (with a reprint in 2005). The PAC took an active role in developing BUI delisting criteria for most of the AOC's BUIs. The PAC has played an instrumental role in encouraging agencies to make commitments in the AOC that arguably may not have been made if the PAC did not exist.

The Commission also commends MDEQ and U.S. EPA staff who have worked collaboratively and effectively with the White Lake PAC over an extended period of time.

Conclusion

The Commission concurs that to the extent the RAP can have influence over local conditions, beneficial uses in the White Lake AOC have been restored, and delisting the AOC is justified.