

Stage 2 Remedial Action Plan Manistique River Area of Concern



Office of the Great Lakes
Great Lakes Management Unit
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Of special note is the work of the members of the Manistique River Public Advisory Council, who have worked tirelessly to restore the place they call home.

It is a privilege to work with my colleagues in the Departments of Environmental Quality and Natural Resources and with our counterparts in the U.S. Environmental Protection Agency and the U.S. Fish and Wildlife Service, among others.

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Manistique River Area of Concern Stage 2 Remedial Action Plan

Purpose of the Stage 2 Remedial Action Plan

A Michigan Department of Environmental Quality (DEQ) Stage 2 Remedial Action Plan (RAP) for each Area of Concern (AOC) is the primary tool for documenting and communicating restoration progress. The AOC-specific Stage 2 RAPs are meant to be brief, user-friendly documents that identify actions needed to restore Beneficial Use Impairments (BUIs) in each AOC. The Stage 2 RAPs are prepared by the DEQ in consultation with the respective AOC Public Advisory Council (PAC) and the U.S. Environmental Protection Agency (USEPA), Great Lakes National Program Office.

Identifying specific actions necessary to remove a BUI is one component of the DEQ's process for tracking AOC restoration, removing BUIs, and ultimately delisting AOCs. These processes and relevant restoration criteria are described in more detail in the DEQ's *Guidance for Delisting Michigan's Great Lakes Areas of Concern (Guidance)* (DEQ, 2008). Comprehensive background information on the AOC is provided in previous RAP documents, which are listed in the Reference section of this publication.

Disclaimer

The Great Lakes Water Quality Agreement (GLWQA) is a non-regulatory agreement between the U.S. and Canada, and criteria developed under its auspices are non-regulatory in nature. The actions identified in this document as needed to achieve BUI restoration criteria are not subject to enforcement or regulatory actions by virtue of being listed in this document.

The actions identified in this Stage 2 RAP do not constitute a list of pre-approved projects, nor is it a list of projects simply related to BUIs or generally to improve the environment. Actions identified in this document are directly related to removing a BUI and are needed to delist the AOC. However, in many AOCs, further information is needed to determine all actions required to remove a BUI. Thus, the AOC-specific BUI Tracking Matrix is not necessarily comprehensive and will be updated to reflect additional actions that are needed.

Introduction

In 1987, amendments to the GLWQA were adopted by the federal governments of the U.S. and Canada. Annex 2 of the amendments listed 14 BUIs which are caused by a detrimental change in the chemical, physical, or biological integrity of the Great Lakes system (International Joint Commission, 1987). The Annex directed the two countries to identify AOCs that did not meet the objectives of the GLWQA. The RAPs addressing the BUIs were to be prepared for all 43 AOCs identified. The BUIs provided a tool for describing effects of the contamination, and a means for focusing remedial actions.

The Manistique River AOC is located in Schoolcraft County in Michigan's central Upper Peninsula. The river flows southwest through the City of Manistique and into Lake Michigan. The AOC consists of the last 1.7 miles of the river, from the dam in Manistique downriver to the mouth of the harbor at Lake Michigan (Figure 1).

The 1987 RAP for the Manistique River AOC was written by the Department of Natural Resources (DNR, 1987). The document indicated known issues and identified actions and

studies needed to further define and remediate the issues. However, the RAP was written before the 1987 amendment to the GLWQA that outlined new guidelines for RAPs. The guidelines included identifying which of 14 potential beneficial use impairments existed in the AOC. Ten years later, the 1997 RAP update reflected the GLWQA requirements and identified five BUIs in the Manistique River AOC. The identified BUIs were: restrictions on fish and wildlife consumption, degradation of benthos, loss of fish and wildlife habitat, restrictions on dredging activities, and beach closings (DEQ, 1997).

The Manistique River Public Advisory Council (PAC) adopted the restoration criteria for all BUIs included in the *Guidance*, with the exception of the Loss of Fish and Wildlife Habitat BUI. On September 14, 2006, the DEQ approved the Manistique River Habitat Committee's restoration criteria developed for the Loss of Fish and Wildlife Habitat BUI, and it was removed in September 2008. The BUIs for Degradation of Benthos and Beach Closings were removed in November 2006 and May 2010, respectively. Table 1 is a summary of the status of BUI assessments and removals from the Manistique River AOC.

Table 1. Status of the Manistique River AOC BUIs			
Beneficial Use Impairment	Beneficial Use Remains Impaired	Assessment in 2011	BUI Removed
Restrictions on Fish and Wildlife Consumption	x		
Degradation of Benthos			x
Restrictions on Dredging Activities	x	x	
Beach Closings			x
Loss of Fish and Wildlife Habitat			x



Figure 1. The Manistigouche River Area of Concern

Restrictions on Fish and Wildlife Consumption

Significance in the Manistique River Area of Concern

As a result of historical PCB contamination in the lower Manistique River, fish contamination and consumption advisories were identified as the primary impaired uses in the AOC (DNR, 1987). The Michigan Department of Community Health (MDCH), A Family Guide for Eating Michigan Fish, recommends that no one eat carp from the Manistique River downstream of the Manistique Papers Dam due to high PCB concentrations. Restricted consumption of channel catfish, rock bass, smallmouth bass and suckers is advised for children and women of child bearing age. Restricted consumption of larger walleye is also advised (MDCH, 2010).

Restoration Criteria

The Manistique River PAC accepted the state's criteria for restoring this beneficial use. The fish consumption advisory in the Manistique River AOC is more stringent than Lake Michigan and needs to be assessed using either a comparison study or trend analysis of fish tissue contaminant concentrations.

Current Status and Actions to be Undertaken

Although this beneficial use is currently impaired, remedial actions completed by the USEPA Superfund program should allow for the re-assessment of this BUI in the near future. It is anticipated that recent and potential future contaminated sediment removal activities and natural sediment accumulation will show a significant downward trend in PCB concentration in the resident fish community. A technical committee will be convened when the DEQ and the Manistique River PAC determine that this BUI is ready for a formal review and assessment. The technical committee will review the results of all remedial actions completed and other supporting documentation to provide a decision on whether or not to support removal of this BUI.

Degradation of Benthos

Significance in the Manistique River Area of Concern

In the original 1987 RAP, the Degradation of Benthos BUI in the Manistique River AOC was identified primarily due to deposits of wood fibers and organic waste from the saw mill and paper mill operations; chemical waste, such as PCBs; and sanitary waste from the City of Manistique. Impacts to the Manistique River AOC were first noted in the mid-1950s. Further studies conducted in the mid-1970s showed a reduction in numbers and variety of bottom dwelling organisms in the AOC, as compared to an area upstream of the AOC (DNR, 1987). In 2006, the DEQ and the PAC assessed the status of the impairment in accordance with the criteria outlined in the *Guidance* and the USEPA concurred with the removal of this BUI (USEPA, 2006).

Restoration Criteria

According to the *Guidance*, the restoration criteria for this beneficial use requires that all remedial actions for known contaminated sediment sites with degraded benthos are completed (except for minor repairs required during operation and maintenance) and monitored according to the approved plan for the site.

Current Status and Actions to be Undertaken

According to the post dredging site investigation conducted in September 2004, natural re-sedimentation processes resulted in average PCB concentrations in the surface sediments throughout the harbor and river of 0.71 ppm (Weston Solutions, Inc., 2005a). Thus, the monitoring indicated that remediation goals had been met. Based on review of the Superfund

reports which documented that all remedial actions were complete and monitored, this BUI was removed in November 2006 (USEPA, 2006).

Restrictions on Dredging Activities

Significance in the Manistique River Area of Concern

The Restrictions on Dredging Activities BUI was identified as a result of historical PCB and heavy metal contamination in the lower Manistique River (DNR, 1987). The United States Army Corps of Engineers (COE) is responsible for navigational dredging in the Manistique River and Harbor. In 1996, the United States Congress authorized a change in the depth of the navigation channel from 14 to 19 feet to a project depth of 12.5 feet (COE, 2010).

The navigational channel was dredged by the COE during October and November 2010. In addition, the City of Manistique is in the process of arranging to dredge a larger area of the harbor and the marina outside the federally maintained navigation channel. Dredge spoils from the navigation channel were placed at an upland site to use as fill material for municipal infrastructure construction projects. The COE stated in its Environmental Assessment for the project that, "(s)ome low concentrations of polychlorinated biphenyls (PCBs) have been detected at select locations within the federal navigation channel; these concentrations are below State and Federal action levels" (COE, 2010). The DEQ approved the plan to use the spoils as fill material. Dredge spoils from the City's additional harbor and marina dredging will be disposed of in a Type II landfill, due to higher concentrations of PCBs and metals.

Restoration Criteria

The Manistique River PAC has accepted the state's criteria for restoring this beneficial use. According to the *Guidance*, this beneficial use will be considered restored when either there have been no restrictions on routine commercial or recreational navigational channel dredging by the COE, based on the most recent dredging cycle; or, in cases where dredging restrictions exist, a comparison of sediment contaminant data from the commercial or recreational navigation channel (at the time of proposed dredging) in the AOC indicates that contaminant levels are not statistically different from other comparable, non-AOC commercial or recreational navigation channels.

Current Status and Actions to be Undertaken

This beneficial use is currently impaired. Remedial actions were completed by the USEPA Superfund program and in the summer of 2010, the USEPA Great Lakes Legacy Act program conducted sediment site characterization sampling to determine the extent of any remaining PCB contamination outside the navigation channel. Presently, the COE cannot dredge the entire navigational channel due to a few PCB contaminated sites on the west side of the harbor. Remediation activities in the navigational channel to remove the PCB contamination sites should allow for reassessment of this BUI. A Statewide Assessment of the Restrictions on Dredging Activities BUI will be conducted the summer of 2011. A technical committee will be convened when the DEQ and the Manistique River PAC determine that this BUI is ready for a formal review and assessment. The technical committee will review the results of all remedial actions completed and other supporting documentation to provide a decision on whether or not to support a recommendation to formally remove this BUI.

Beach Closings

Significance in the Manistique River Area of Concern

There are no public beaches located in the Manistique River AOC. However, this BUI addresses potential bodily contact restrictions in the Manistique River due to historical direct discharges of storm water and untreated waste from the City's wastewater treatment plant. (Triad Engineering Incorporated and Terrafirma Environmental Inc., 2002). Since the 1987 RAP was written, the City of Manistique completed two out of the three Combined Sewer Overflow (CSO) separation projects. The remaining CSO separation project began in 2007.

Restoration Criteria

The Manistique River PAC accepted the state's criteria for this BUI, which outlines a three tiered approach. The first tier requires that no waterbodies within the AOC are included on the 303(d) list of impaired waters due to contamination with pathogens in the most recent Integrated Report. If the waterbody is listed due to the presence of CSOs, or are impacted by upstream CSOs, the second tier states that this BUI will be considered restored when updated information reveals that the CSOs have been eliminated or are being treated. Or, In cases where CSOs still exist and significant progress has been made towards their elimination or treatment, the third tier allows monitoring data to be used to document that state Water Quality Standards for *E. coli* are generally met, which enables removal of the BUI.

Current Status and Actions to be Undertaken

Weekly *E. coli* sampling was conducted from May through September 2007 by the City of Manistique. The results of this monitoring were consistent with the *Guidance* criteria as follows: 1) *E. coli* concentrations were below the Water Quality Standard 30-day geometric mean of 130 counts per 100 milliliters (ml), 2) at least 90 percent of sample results were below the daily geometric mean limits of 300 counts per 100 ml, and 3) no more than one of the sample results exceeded the partial-body contact water quality standard of 1,000 counts *E. coli* per 100 ml based on a daily geometric mean. Additionally, DEQ-approved plans in a National Pollutant Discharge Elimination System permit address any remaining CSOs and the Long Term CSO Control Plan is on schedule. A technical committee was convened and reviewed the results of all the monitoring data and other supporting documentation. Based on the sampling results from 2007, this BUI was removed in May 2010 (USEPA, 2010).

Loss of Fish and Wildlife Habitat

Significance in the Manistique River Area of Concern

Impacts to the fish and wildlife habitat in the Manistique River AOC were first noted in the mid-1950s. These impacts were attributed primarily to deposit of wood fibers and organic waste from sawmill and paper mill operations, and sanitary waste from the city of Manistique. The 1987 RAP stated that habitat studies of the Manistique River and harbor in the mid-1970s showed a reduction in numbers and variety of bottom dwelling organisms in the AOC, as compared to an area upstream of the AOC. This reduction was attributed to the chemical and physical degradation of benthic habitat from toxic levels of contaminants in the sediments, and the deposition of undesirable materials on the river and harbor substrates (DNR, 1987). In 2008, the DEQ and the PAC evaluated the restoration of this BUI based on the process in the *Guidance* and the USEPA has concurred with the removal of this BUI (USEPA, 2008).

Restoration Criteria

The Manistique River Habitat Committee, comprised of representatives from the DEQ, DNR, Manistique Papers, Schoolcraft County Sports Fisherman Association, USEPA, United States

Fish and Wildlife Service, and City of Manistique, established two criteria for restoration of this BUI. Because the Loss of Fish and Wildlife Habitat BUI was primarily listed as impaired due to degradation of benthos, the Habitat Committee recommended that this BUI be considered restored when:

1. The Degradation of Benthos BUI has been removed according to the *Guidance*.

Because of the importance to the local community for the aquatic habitat in the AOC to sustain a healthy fish population, the Habitat Committee also recommended that this BUI be considered restored when:

2. The reach of the Manistique River within the AOC supports a diverse fish community.

These targets were approved by the PAC and the DEQ, and meet the requirements for setting local delisting targets outlined in the *Guidance*.

Current Status and Actions to be Undertaken

The first criteria was met in November 2006, when the DEQ and the PAC assessed the status of the Degradation of Benthos BUI per the criteria outlined in the *Guidance* and the USEPA concurred with the removal of the BUI (USEPA, 2006).

The second criteria was evaluated by using DNR fisheries surveys. The Habitat Committee concluded that the lower Manistique River provides diverse physical habitat characteristics, which in turn support a diverse fish community. The habitat found in the AOC also supports the forage resources needed to maintain the current fish community and a healthy riverine environment (DNR, 2007). Therefore, the restoration criteria for this BUI, approved by the Habitat Committee, were met and the BUI was removed and approved in September 2008 (USEPA, 2008).

Actions to Delist: Manistique River AOC BUI Tracking Matrix

The following BUI Tracking Matrix is intended as a simple way to track ongoing progress with the remedial activities identified as being necessary to remove each BUI, and subsequently to delist the AOC entirely. As progress is made, the matrix will be updated to reflect current conditions. Completed activities will remain in the matrix as it is updated, but updates will reflect completed status and completed BUI removals.

The matrix lists each BUI, indicates whether each BUI is scheduled for assessment in the current year, and lists the actions/tasks necessary to advance toward BUI removal. If a funding source has been identified, it is listed along with the targeted start and end dates for each action. Project leads are identified as appropriate, along with the targeted BUI removal date.

The matrix represents the AOC program's current best effort to assess activity in an AOC at the time the document was updated. The matrix does not necessarily commit the listed entities/individuals to any particular activity. Contracts, grant agreements, etc. are the documents governing commitments that have been or will be made.

The dates listed reflect the DEQ's best estimate of project completion, given currently available information. Work does not always proceed as planned, and the DEQ recognizes that unforeseen circumstances can arise at any time. The DEQ is dedicated to facilitating the completion of each of the projects listed in the timeliest manner possible.

Manistique River AOC BUI Tracking Matrix

May 20, 2011

Area of Concern Name	Beneficial Use Impairment Name	Assessment in 2011? (Y/N)	Actions/Tasks Needed	Funding Source	Start Date	Targeted Completion Date	Project Lead	Targeted BUI Removal Date	Comments
Manistique River	Restrictions on Fish and Wildlife Consumption	No	Collect fish contaminant data	TBD	2013	2013	Swart (DEQ), Bohr (DEQ), MDCH	October 2014	
Manistique River	Restrictions on Fish and Wildlife Consumption	No	Collect sediment data and develop a plan to address residual contamination	TBD	June 2011	July 2011	Mucha (GLNPO)	October 2014	
Manistique River	Restrictions on Fish and Wildlife Consumption	No	Dredging activities to address sediment contamination and debris	TBD	2013	2013	GLNPO, DEQ	October 2014	
Manistique River	Degradation of Benthos	No	None					2006	
Manistique River	Restrictions on Dredging Activities	Yes	Remediation of sediments in federal navigational channel	TBD	TBD	TBD	DEQ, GLNPO	October 2013	
Manistique River	Restrictions on Dredging Activities	Yes	Evaluate dredge spoils in federal navigational channel, prepare and submit Beneficial Use Impairment removal documentation	GLRI Statewide Assessment Grant	August 2011	October 2012	Swart (DEQ)	October 2013	Dependant on GLNPO sampling, funding, and PAC support
Manistique River	Beach Closings	No	None					2010	
Manistique River	Loss of Fish and Wildlife Habitat	No	None					2008	

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