

The Michigan Department of Environmental Quality Biennial Remedial Action Plan Update for the Detroit River Area of Concern



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Purpose of the Biennial Remedial Action Plan Update

A Michigan Department of Environmental Quality (MDEQ) Biennial Remedial Action Plan (RAP) Update will be prepared at least every 2 years for each Area of Concern (AOC), and will be the primary tool for documenting and communicating progress to the public and agencies. These documents are meant to be brief, user-friendly updates on recent remedial actions and assessments in the AOC. They are prepared by the MDEQ in consultation with the Public Advisory Council (PAC) and the U.S. Environmental Protection Agency (USEPA). These biennial RAP updates will also be posted on the MDEQ AOC web site.

The biennial RAP update is one component of the MDEQ'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 MDEQ's *Guidance for Delisting Michigan's Great Lakes Areas of Concern (Guidance)* (MDEQ, 2006).

The purpose of this Detroit River biennial RAP update is to track progress on the Michigan portion of the AOC by providing an update on those remedial actions completed in recent years, and BUI assessment results that are based on the readiness of a BUI removal and subsequent technical committee review. The Appendix highlights some of the recent remedial activities that have been completed in Canada's portion of the Detroit River AOC. Some of these activities have had, or are likely to have, an impact on restoring beneficial uses in Michigan's portion of the AOC. Comprehensive background information is provided in the 1991, 1996, and 2002 Detroit River RAP documents (Michigan Department of Natural Resources [MDNR] and Ontario Ministry of the Environment [OMOE], 1991).

How to Use this Document

For each of the 11 BUIs in the Detroit River AOC, this biennial RAP update includes:

- A description of the significance of the BUI based on previous RAP documentation
- A summary of the restoration criteria for the BUI outlined in the *Guidance* document
- A brief summary of relevant remedial actions, if any, completed in recent years
- A brief summary of the technical committee's assessment activities and results, if any, completed in recent years
- A list of annotated references and studies that may be used by a technical committee when the MDEQ AOC coordinator, in consultation with the

Introduction

Background

In 1987, amendments to the Great Lakes Water Quality Agreement (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, 1988). 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, including the Detroit River. The BUIs provided a tool for describing effects of the contamination, and a means for focusing remedial actions.

The 1991 Detroit River RAP identified 11 of the GLWQA's 14 beneficial uses as being impaired (MDNR and OMOE, 1991). Table 1 is a matrix for tracking the progress of assessments and removal of these BUIs from the Detroit River AOC. These impairments have been primarily caused by combined sewer overflows (CSOs), industrial and municipal discharges, and nonpoint sources such as stormwater runoff from urban and industrial areas. Contaminants include oils and grease, heavy metals, and polychlorinated biphenyls (PCBs) to the river from industrial facilities in the area.

Table 1. Detroit River BUI Removal Matrix.

Beneficial Use Impairment	Beneficial Use		
	Remains Impaired	Assessment in Progress	BUI Removed
Restrictions on fish and wildlife consumption	x		
Tainting of fish and wildlife flavor	x		
Fish tumors or other deformities	x		
Bird or animal deformities or reproductive problems	x		
Degradation of benthos	x		
Restrictions on dredging activities	x		
Restrictions on drinking water consumption or taste and odor problems	x		
Beach closings	x		
Degradation of aesthetics	x		
Degradation of fish and wildlife populations	x		
Loss of fish and wildlife habitat	x		

The Detroit River comprises the lowest link of the Upper Great Lakes Connecting Channels, conveying water from Lakes Michigan, Superior, and Huron to Lake Erie. The Detroit River flows approximately 32 miles in a southerly direction from Lake St. Clair to Lake Erie, forming the international boundary between the Province of Ontario, Canada and the State of Michigan, United States. The boundary of the AOC includes the river from Windmill Point at Lake St. Clair to the Detroit Light at Lake Erie (Figure 1.) (MDNR and OMOE, 1991).

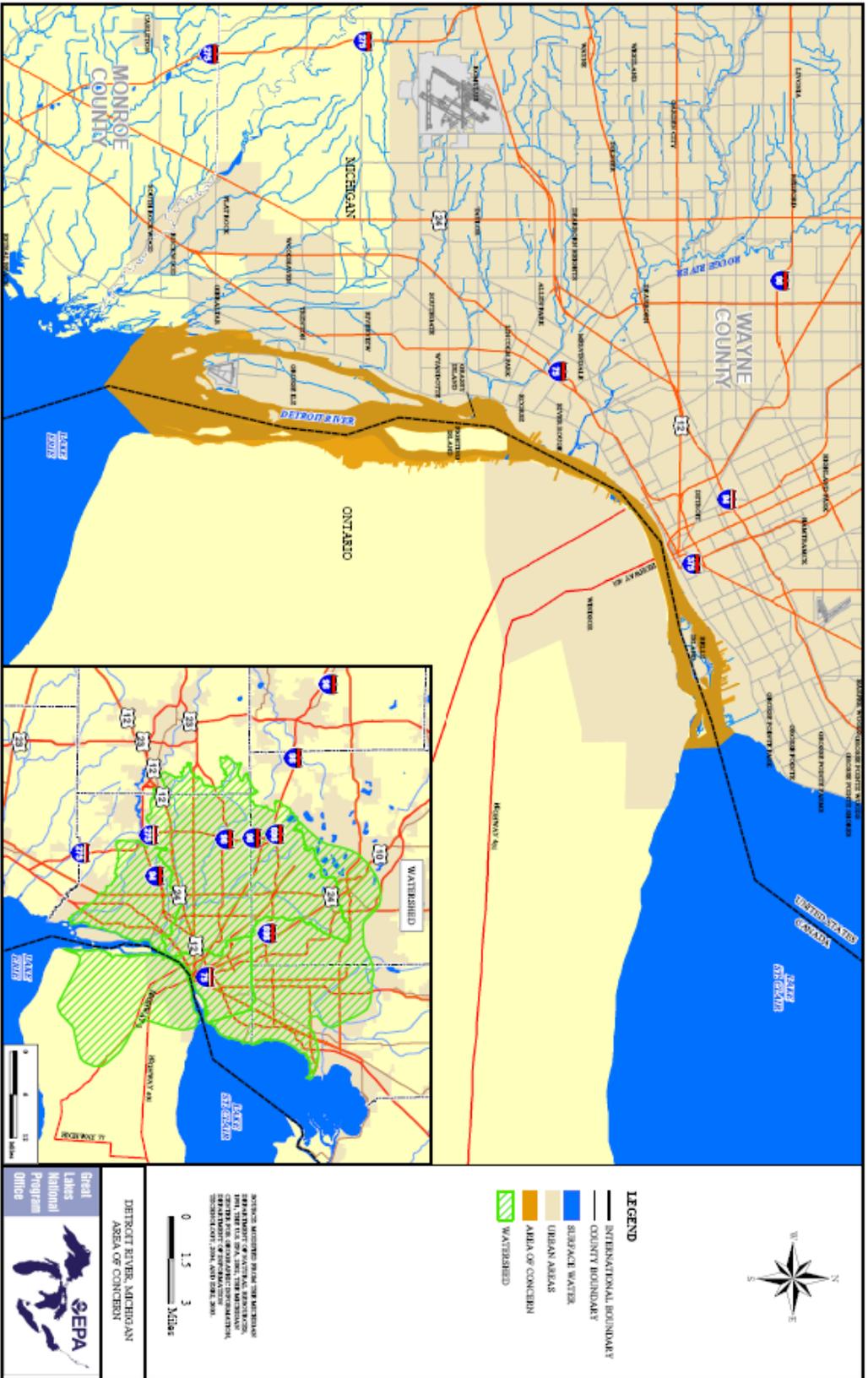


Figure 1. The Detroit River Area of Concern.

Restrictions on Fish and Wildlife Consumption

Significance in the Detroit River Area of Concern

As a result of historical chromium, lead, mercury, and polychlorinated biphenyl (PCB) contamination in the Detroit River, a fish contamination and consumption advisory has been identified as the primary impaired use in the AOC (MDNR and OMOE, 1991). The Michigan Department of Community Health (MDCH, 2007), "Michigan Family Fish Consumption Guide", recommends no consumption of carp and various consumption advisories for freshwater drum for the general population, women, and children. Various consumption advisories also exist for northern pike, suckers, walleye, and yellow perch for women and children only (MDCH, 2007).

Restoration Criteria

The Detroit River PAC is currently developing local criteria for restoring this beneficial use. These criteria will require approval from the MDEQ.

Remedial Actions

See the Degradation of Benthos section below for recent remedial actions completed on contaminated sediments in the Detroit River AOC.

Assessment Activities and Results

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the Detroit 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 (see below) to provide a decision on whether or not to support a recommendation to formally remove this BUI.

Annotated References and Studies

Bohr, J. and J. Zbytowski. 2006. Michigan Fish Contaminant Monitoring Program: 2005 Annual Report. MDEQ-WB Report #MI/DEQ/WB-06/091. <http://www.deq.state.mi.us/documents/deq-wb-swas-fcmreport2005.pdf>

The MDEQ's fixed station whole fish contaminant trend monitoring project was initiated to measure spatial and temporal trends of certain bioaccumulative contaminants. Since 1990, carp and walleye have been collected seven times from the Detroit River for trend monitoring.

Michigan Department of Community Health. 2007. Michigan Family Fish Consumption Guide: Important Facts to Know if You Eat Michigan Fish. http://www.michigan.gov/mdch/1,1607,7-132-2944_5327-13110--,00.html

Certain kinds and sizes of fish from the Great Lakes, and some Michigan lakes and streams, contain levels of toxic chemicals that may be harmful if those fish are eaten too often. The MDCH advises caution about eating

Michigan fish for the general population, women of childbearing age, and children under 15 years old.

Tainting of Fish and Wildlife Flavor

Significance in the Detroit River Area of Concern

According to the 1991 RAP document, there had been no reports of fish, wildlife or waterfowl tainting in the Detroit River. Therefore, this use was not considered to be impaired (MDNR and OMOE, 1991). In 1992 and 1993, the MDNR and the Michigan Department of Public Health (MDPH) each conducted a fish flavor impairment study, respectively. In the 1992 preliminary study conducted by MDNR, four of the six walleye caught from the Trenton Channel were found to taste impaired at the 95% confidence level of significance, and three walleye tasted impaired at the 99% confidence level as compared to control walleye purchased from a seafood market (Waggoner, 1992; MDEQ, 1996). A follow up study was conducted in 1993 that concluded the results of the study were consistent with findings from the 1992 study and a small percentage of the walleye in the Trenton Channel may exhibit flavor impairment (Wood 1994; MDEQ, 1996). Therefore, in 1996 the Technical Working Groups (TWG) recommended changing the status of "tainting of fish flavor" to "impaired" to reflect the results of the MDNR/MDPH studies (MDEQ, 1996).

Restoration Criteria

The Detroit River PAC is currently developing local criteria for restoring this beneficial use. These criteria will require approval from the MDEQ.

Remedial Actions

No recent remedial actions have taken place.

Assessment Activities and Results

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the Detroit River BPAC 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.

Annotated References and Studies

Waggoner, C.A. 1993. An Investigation of Fish Flavor Impairment in Walleye from the Detroit River. Michigan Department of Natural Resources, Surface Water Quality Division, MI/DNR/SWQ-93/005.

Preliminary screening of fish flavor impairment in Detroit River walleye collected from the Trenton Channel by the Michigan Department of Natural Resources and the Michigan Department of Public Health.

Collected walleye flavor was compared to walleye purchased from a seafood market.

Wood, C.A. 1994. An Investigation of Fish Flavor Impairment in Walleye from the Detroit River, Lake St. Clair and Lake Erie. Michigan Department of Natural Resources, Surface Water Quality Division, MI/DNR/SWQ-0941022.

Follow-up study to Waggoneer's (1993) fish flavor impairment study comparing walleye collected from two locations within the Detroit River to walleye from a control site in southern Lake Huron.

Fish Tumors or Other Deformities

Significance in the St. Mary's River Area of Concern

A survey of the incidence of liver tumors found elevated levels of liver tumors in bullhead, walleye, bowfin, redhorse sucker and white sucker from the Detroit River. The incidence of oral and dermal tumors in Detroit River fish was similar to or less than incidence rates found in fish collected from other Great Lakes tributaries and harbors (MDNR and OMOE, 1991).

Restoration Criteria

The Detroit River PAC is currently developing local criteria for restoring this beneficial use. These criteria will require approval from the MDEQ.

Remedial Actions

No recent remedial actions have taken place.

Assessment Results

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the Detroit 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 (see below) to provide a decision on whether or not to support a recommendation to formally remove this BUI.

Annotated References and Studies

No known reports or studies are available at this time.

Bird or Animal Deformities or Reproductive Problems

Significance in the Detroit River Area of Concern

According to the 1991 RAP document, no documented bird or animal deformities associated with the Detroit River AOC had been reported (MDNR and OMOE, 1991). Therefore, this beneficial use was not considered impaired. It was noted that herring gull eggs collected from Fighting Island had significantly higher levels of DDE, HCB, and PCBs than eggs from other colonies in Lake Erie and the Niagara River, but the levels of contaminants had decreased notably since 1974 (MDNR and OMOE, 1991). Based on data collected and reviewed by the TWGs since 1991 and the Detroit River RAP Teams response to review comments, there was an apparent lack of data to support listing this BUI as “impaired” or “unimpaired” (MDEQ, 1996). Therefore, the status of this BUI was revised to unknown.

Restoration Criteria

The Detroit River PAC is currently developing local criteria for restoring this beneficial use. These criteria will require approval from the MDEQ.

Remedial Actions

See the Degradation of Benthos section below for recent remedial actions completed on contaminated sediments in the Detroit River AOC.

Assessment Results

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the Detroit 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 (see below) to provide a decision on whether or not to support a recommendation to formally remove this BUI.

Annotated References and Studies

Michigan Department of Environmental Quality. 2004. Michigan Wildlife Contamination Trend Monitoring. Year 2002 Annual Report. Nestling Bald Eagles. MI/DEQ/WD-04/024.

Michigan Department of Environmental Quality. 2006. Michigan Wildlife Contamination Trend Monitoring. Year 2003 Annual Report. Nestling Bald Eagles (Draft).

Since 1999, the MDEQ has funded researchers at Michigan State University (MSU) and Clemson University to measure contaminant levels in bald eagle blood and feathers each year. Bald eagle productivity is also monitored.

Degradation of Benthos

Significance in the Detroit River Area of Concern

Degraded benthic communities have been noted along the Michigan shoreline from the Rouge River to the mouth of the Detroit River. According to the 1991 RAP, benthic impairments are due to PCB contamination from a variety of sources from within and outside of the AOC, including: contaminated sediments, industrial point sources located along the river; heavy metals from urban non-point sources, and industrial point sources; suspended solids from combined sewer overflows; and oil and grease from industrial point sources, urban non-point sources, and combined sewer overflows (MDNR and OMOE, 1991).

Restoration Criteria

The Detroit River PAC is currently developing local criteria for restoring this beneficial use. These criteria will require approval from the MDEQ.

Remedial Actions

Frank and Poet Streambed and Stream Bank Restoration Project to re-establish the natural bank willow riparian corridor that partially exists on the west (right) bank of the creek. On the east (left) bank, due to the erosive undercutting that exists on this portion of the creek, some bank mitigation and stabilization will occur.

In 2004-05, the Detroit River AOC was chosen as first Great Lakes Legacy Act site for the dredging of Black Lagoon contaminated sediments. Removal of Black Lagoon contaminated sediments was a key remedial action identified in the 1996 RAP. The project dredged 115,600 cubic yards of contaminated sediments, and was completed in September 2005.

In 2003, Detroit Water and Sewerage Department completed a \$187 million Combined Sewer Overflow (CSO) disinfection basin at the head of Connors Creek – Michigan's largest CSO outfall. The project included dredging of the creek, and rehabilitating a portion of the Detroit River shoreline.

Assessment Activities and Results

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the Detroit 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 (see below) to provide a decision on whether or not to support a recommendation to formally remove this BUI.

Restrictions on Dredging Activities

Significance in the Detroit River Area of Concern

According to the 1991 RAP document, most of the sediments sampled along the entire Michigan shoreline were classified as heavily or moderately polluted (MDNR and OMOE, 1991). Upstream inputs from Lake St. Clair accounted for the largest estimated loads of total PCBs, cyanide, zinc, cadmium, copper, iron and nickel. Michigan CSOs contributed the largest estimated loads of mercury, lead and chromium while Michigan point sources contributed the largest estimated load of oil and grease (MDNR and OMOE, 1991).

Restoration Criteria

The Detroit River PAC is currently developing local criteria for restoring this beneficial use. These criteria will require approval from the MDEQ.

Remedial Actions

See the Degradation of Benthos section below for recent remedial actions completed on contaminated sediments in the Detroit River AOC.

Assessment Activities and Results

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the Detroit 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 (see below) to provide a decision on whether or not to support a recommendation to formally remove this BUI.

Annotated References and Studies

Great Lakes Dredging Team. 1999. Decision Making Process for Dredged Material Management. Draft Final, October 13, 1998, Amendment #1, January 18, 1999.

This document describes how to manage the dredged material, management options, treatment technologies available, the technical evaluation process, and regulatory information.

Restrictions on Drinking Water Consumption or Taste and Odor Problems

Significance in the Detroit River Area of Concern

Although restrictions on drinking water have not occurred, taste and odor problems were documented in the Detroit River in 1990 by residents of Windsor and the downriver communities served by the City of Detroit. The cause of the problem was not confirmed, however the Detroit Water and Sewerage

Department and the City of Windsor water treatment officials theorized that geosmin, a chemical naturally secreted by blue-green algae, may have been the causative agent. Taste and odor problems were also noted in Detroit drinking water in December 1990. Turnover in Lake St. Clair, compounded by a recent storm, was thought to be the cause (MDNR and OMOE, 1991).

Restoration Criteria

The Detroit River PAC is currently developing local criteria for restoring this beneficial use. These criteria will require approval from the MDEQ.

Remedial Actions

See the Degradation of Benthos section below for recent remedial actions completed on contaminated sediments in the Detroit River AOC.

Assessment Activities and Results

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the St. Clair River BPAC 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.

Annotated References and Studies

- Aiello, C. 2003. Michigan Water Chemistry Trend Monitoring 2001 Report. Michigan Department of Environmental Quality, Water Division. Report #MI/DEQ/WD-03/085.
- Aiello, C. 2004. Michigan Water Chemistry Monitoring Great Lakes Tributaries 2002 Report. Department of Environmental Quality, Water Bureau. Report #MI/DEQ/WD-04/049.
- Aiello, C. 2005. Michigan Water Chemistry Monitoring Great Lakes Tributaries 2003 Report. Department of Environmental Quality, Water Bureau. Report #MI/DEQ/WB-05/058.
- Aiello, C. 2006. Michigan Water Chemistry Trend Monitoring Great Lakes Tributaries 2004 Report. Michigan Department of Environmental Quality Water Division. Report #MI/DEQ/WD-06/045.

The Water Chemistry Monitoring Project allows for the calculation of contaminant loadings from key Michigan tributaries. The key goals of this project are to: 1) assess the current status and condition of individual waterbodies and determine whether standards are being met, 2) measure temporal and spatial trends, 3) to detect new and emerging water quality problems, and 4) provide data to support MDEQ water quality programs and evaluate their effectiveness. Water chemistry reports are available at: http://www.michigan.gov/deq/0,1607,7-135-3313_3686_3728-32361--,00.html

- GLEC and LimnoTech, Incorporated. 2006. Great Lakes Connecting Channels Data Evaluation and Trend Analysis Report. Report #MI/DEQ/WB-06/092. http://www.michigan.gov/deq/0,1607,7-135-3313_3686_3728-32361--,00.html

The MDEQ has conducted monitoring to determine the ambient water quality conditions in Michigan's portion of the Connecting Channels of the Great Lakes since 1969 in the Detroit River, and since 1998 in the St. Clair and St. Mary's Rivers. The monitoring was designed to document water quality, calculate loading rates and determine water quality trends over time.

Beach Closings

Significance in the Detroit River Area of Concern

The only public beach located in the Detroit River AOC on the Michigan side is on Belle Isle near the head of the river (MDNR and OMOE, 1991). Therefore, recreational contact with surface water contaminated with bacteria is an ongoing concern. The potential sources of bacterial contamination throughout the watershed include discharges from upstream wastewater facilities, especially CSOs, urban and rural stormwater runoff, failing septic systems, and illegal connections to storm sewers

Restoration Criteria

The Detroit River PAC is currently developing local criteria for restoring this beneficial use. These criteria will require approval from the MDEQ.

Remedial Actions

See the Degradation of Benthos section below for recent remedial actions completed on contaminated sediments in the Detroit River AOC.

Assessment Activities and Results

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the Detroit 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 (see below) to provide a decision on whether or not to support a recommendation to formally remove this BUI.

Annotated References and Studies

MDEQ's beach website: <http://www.deq.state.mi.us/beach/public/default.aspx>

The MDEQ awards grants each year to local health departments to monitor *E. coli* levels at Great Lakes and inland beaches. County health departments use the results to assess whether the total body contact recreation designated use is being attained and whether beach closings are necessary. Results are reported in annual beach monitoring reports and are posted on the MDEQ's beach website above (Edly and Wuycheck, 2006).

CSO & SSO Discharge website: http://www.deq.state.mi.us/csosso/find_event.asp

Facilities are required to report that a CSO and SSO discharge event occurred within 24 hours of the initial discharge. Later, after the event ends, a written report is submitted which contains additional information including volume of the discharge, and the start/end date and time. This information is posted on the above website.

Degradation of Aesthetics

Significance in the Detroit River Area of Concern

According to the 1991 Detroit River RAP, large volumes of CSOs frequently discharged to the Detroit River following wet weather events contributing discolored water (e.g. from slaughter houses), oil and grease, and other types of objectionable deposits and debris (MDNR and OMOE, 1991). In addition, spills or various materials have been noted in the river from point sources and nonpoint sources.

Restoration Criteria

The Detroit River PAC is currently developing local criteria for restoring this beneficial use. These criteria will require approval from the MDEQ.

Remedial Actions

No recent remedial actions have taken place.

Assessment Activities and Results

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the Detroit 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 (see below) to provide a decision on whether or not to support a recommendation to formally remove this BUI.

Annotated References and Studies

- Aiello, C. 2003. Michigan Water Chemistry Trend Monitoring 2001 Report. Michigan Department of Environmental Quality, Water Division. Report #MI/DEQ/WD-03/085.
- Aiello, C. 2004. Michigan Water Chemistry Monitoring Great Lakes Tributaries 2002 Report. Department of Environmental Quality, Water Bureau. Report #MI/DEQ/WD-04/049.
- Aiello, C. 2005. Michigan Water Chemistry Monitoring Great Lakes Tributaries 2003 Report. Department of Environmental Quality, Water Bureau. Report #MI/DEQ/WB-05/058.

Aiello, C. 2006. Michigan Water Chemistry Trend Monitoring Great Lakes Tributaries 2004 Report. Michigan Department of Environmental Quality Water Division. Report #MI/DEQ/WD-06/045.

The Water Chemistry Monitoring Project allows for the calculation of contaminant loadings from key Michigan tributaries. The key goals of this project are to: 1) assess the current status and condition of individual waterbodies and determine whether standards are being met, 2) measure temporal and spatial trends, 3) to detect new and emerging water quality problems, and 4) provide data to support MDEQ water quality programs and evaluate their effectiveness. Water chemistry reports are available at: http://www.michigan.gov/deq/0,1607,7-135-3313_3686_3728-32361--,00.html

Heidelberg College Tributary Monitoring Program: <http://wql-data.heidelberg.edu/>

Since 1982, the Heidelberg College Water Quality Laboratory has collected water samples from the River Raisin as part of its Ohio Tributary Monitoring Program. These samples have been collected at a USGS stream gaging station approximately 12 miles upstream from the mouth of the river. Water samples are analyzed for major nutrients and suspended solids. The data also provide uniquely detailed data sets on ambient water quality in the river and may support investigations on pollutant sources and transport into the River Raisin AOC.

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

Significance in the Detroit River Area of Concern

The 1991 RAP document identifies "Loss of fish and wildlife habitat" as an impaired use in the Detroit River AOC as a result of the significant physical loss of wetlands and other habitats which occurred through agricultural conversion, urban development, and industrial growth (MDNR and OMOE, 1991). The related beneficial use, "Degradation of fish and wildlife populations," was identified as an "Environmental Concern" in the 1991 RAP document. It was noted that the fish community structure has changed significantly toward benthivores over the past 100 years. However, an extensive literature review found no instances of impaired fish populations due to factors from within the AOC. Rather, some populations are impaired through out the Great Lakes basin due to basin wide factors (MDEQ, 1996).

The wildlife carrying capacity of the AOC is much reduced from pre-colonial conditions due to development resulting in the change or loss of habitat. The 1991 RAP document notes that improved or increased wetland habitat would result in enhanced fish and wildlife populations and would have a positive impact on the health of the river. However, the current status of wildlife populations is

listed as "unknown" due to an incomplete data base, lack of wildlife management plans, and wildlife inventories (MDEQ, 1996).

Restoration Criteria

Per the *Guidance*, these two BUIs are considered together in recognition of the integral relationship between them. The restoration criteria outlined in the *Guidance* is a process for local PACs to use to develop locally-derived restoration targets and plans for fish and wildlife habitat and populations. The Detroit River PAC is currently in the process of developing restoration criteria. The finalized restoration plans will be part of future biennial RAP updates, and will contain at least the following components:

- A short narrative on historical fish and wildlife habitat or population issues in the AOC
- Description of the impairment(s) and location for each aquatic habitat or population site(s) to address all habitat or population issues identified in the RAP documents
- A locally derived restoration target for each impacted habitat or population site
- A list of all other ongoing habitat or population planning processes in the AOC
- A scope of work for restoring each impacted aquatic habitat or population site
- A component for reporting on habitat or population restoration implementation action(s) to the MDEQ.

Removal of this BUI will be based on achievement of full implementation of actions in the steps above. Habitat values and populations need not be fully restored prior to delisting, as some may take many years to recover after actions are complete. Actions already implemented in the AOC may be reported and evaluated as long as the documentation contains all of the elements above.

Remedial Actions

In 2003, funding was secured to stabilize and provide fish habitat along the south shore of Elizabeth Park.

In 2003, the Detroit Recreation Department began a Sturgeon Habitat Project to construct habitat for a lake sturgeon-spawning reef off of Belle Isle.

In 2003, Humbug Marsh was acquired by Trust for Public Land. It includes 410 acres of unique fish and wildlife habitat along the Detroit River, representing the last mile of natural shoreline on the U.S. mainland side of the Detroit River.

In 2002, the Detroit River International Wildlife Refuge was designated – including the lower Detroit River and western shoreline of Lake Erie. The Detroit River is the first international wildlife refuge in North America. The Refuge was

officially expanded by Congress in 2003, and again in 2005 via a 70-acre parcel acquisition in Monroe County through the North American Wetlands Conservation Act, matched with donations from a number of federal, state, and nonprofit organizations. This acquisition will also help restore natural habitat near the Fermi II nuclear power plant. Since the creation of the IWR, numerous land acquisitions and donations by organizations such as the Trust for Public Lands, The Nature Conservancy, and the U.S. Army Corps of Engineers have also expanded the land included in the refuge.

In 2002, the Detroit Riverfront Conservancy secured over \$10 million in grants from the Kresge Foundation to create a 62-foot-wide, three-mile long riverfront park and walkway along the Detroit River in downtown Detroit. It is part of a larger plan by the City of Detroit to develop and rehabilitate the waterfront.

Assessment Activities and Results

This beneficial use is currently impaired. A technical committee will be convened when the MDEQ and the Detroit 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 (see below) to provide a decision on whether or not to support a recommendation to formally remove this BUI.

References

Edly, K. and J. Wuycheck. 2006. Water Quality and Pollution Control in Michigan: 2006 Sections 303(d) and 305(b) Integrated Report. Report MI/DEQ/WB-6/019.

http://www.michigan.gov/deq/0,1607,7-135-3313_3686_3728-12711--,00.html

International Joint Commission. 1988. Revised Great Lakes Water Quality Agreement of 1978, as amended by Protocol signed November 18, 1987. Consolidated by the International Joint Commission, United States and Canada. Available at: <http://www.ijc.org/rel/agree/quality.html#ann2>

Michigan Department of Community Health. 2007. Michigan Family Fish Consumption Guide: Important Facts to Know if You Eat Michigan Fish. http://www.michigan.gov/mdch/1,1607,7-132-2944_5327-13110--,00.html

Michigan Department of Environmental Quality. 1996. 1996 Detroit River Remedial Action Plan Report. Surface Water Quality Division, Lansing, MI.

Michigan Department of Environmental Quality. 2002. Qualitative Biological and Habitat Survey Protocols for Wadable Streams and Rivers, Great Lakes and Environmental Assessment Section, Procedure #51 (Revised May 2002).

Michigan Department of Environmental Quality. 2006. Guidance for Delisting Michigan's Great Lakes Areas of Concern. Report MI/DEQ/WB-06-001. http://www.michigan.gov/deq/0,1607,7-135-3313_3677_15430---,00.html

Michigan Department of Natural Resources and Ontario Ministry of the Environment. 1991. Detroit River Remedial Action Plan Stage 1.