

**State of Michigan's
Prioritization Framework for the
Long-Term Vision for Assessment, Restoration, and Protection
Under the Clean Water Act Section 303(d) Program**



NOAA Image



USEPA Image

Submitted by:

**Michigan Department of Environmental Quality
Water Resources Division
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Introduction

To enhance water quality protection and restoration, as well as better ensure that desired environmental outcomes are achieved, Total Maximum Daily Load (TMDL) priorities must be clearly defined and aligned with other state program priorities. In December 2013, the United States Environmental Protection Agency (USEPA) announced the “Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program” (TMDL Vision). The TMDL Vision includes six goals: Engagement, Prioritization, Protection, Integration, Alternatives, and Assessment. An evaluation of the accomplishments of the TMDL Vision’s goals is to be completed in 2022.

“Prioritization” is defined by the TMDL Vision as a systematic approach developed by individual states to prioritize watersheds or waters for TMDL development, restoration, and protection for incorporation into the 2016 Integrated Report. Once a state identifies its priorities, it will be expected to address all of them between 2016 and 2022 through a combination of TMDLs, alternative approaches, program integration, public engagement improvements, and protection activities. This document outlines the Michigan Department of Environmental Quality (MDEQ), Water Resources Division’s (WRD) priorities.

TMDL Prioritization - Past and Present

In the past, Michigan did not prioritize TMDLs based solely on watershed location, cause, or pollutant. When a water body was identified as impaired, it was added to the TMDL schedule with a goal of completing a TMDL within 13 years of the first listing (per USEPA guidance). The current TMDL schedule runs through 2031. TMDL scheduling considered several factors including: consistency with the WRD’s five-year rotating basin monitoring approach; ensuring that TMDLs for a given water body with multiple impairments (e.g., *E. coli* and dissolved oxygen) were developed at the same time; addressing multiple assessment unit identifiers (AUID) from the same watershed during the same year; and staff workloads and available resources. However, this scheduling methodology did not directly align with other WRD goals. The TMDL Vision focuses less on TMDL production and more on how the Section 303(d) Program can support water quality objectives of Michigan. Therefore, the TMDL Vision gives us the opportunity to better align TMDL priorities with WRD priorities. The number of AUIDs impaired by each identified cause in the 2014 Integrated Report is listed in Table 1. We considered this list along with the mission and goals of the WRD to develop this prioritization framework.

In 2009, the WRD developed Measures of Success to better align our work processes and activities to achieve specific outcomes. This development process included input from all sections of the WRD, and has been updated with new measures and progress several times. The document was provided to the USEPA, Region 5, and is available online (MDEQ, 2013). The WRD’s mission is to make Michigan’s waters safe and clean for recreating, fishing, drinking, and healthy aquatic life. The WRD has identified five major goals to define aspects of this mission: (1) Enhance Recreational Waters; (2) Ensure Consumable Fish; (3) Protect and Restore Aquatic Ecosystems; (4) Ensure Safe Drinking Water; and (5) Protect Public Safety. For each goal, measurable outcomes (measures of success) are identified. The Measures of Success document notes that, “The use of outcome oriented goals and measurements serves to focus efforts, motivate staff, communicate progress, improve environmental health and compliance conditions, increase our accountability, and foster collaboration” (MDEQ, 2013). By linking our 2016 TMDL priorities to these goals and measures of success, we will ensure the

TMDL program is reflective of, and fully consistent with, WRD priorities and ensure better engagement and integration with other WRD programs. The 2016 TMDL Vision priority framework and the associated linkages to the WRD goals and outcomes are described below.

Table 1. Number of AUIDs on the Section 303(d) list, associated cause of impairment (pollutant), and identification of causes where one or more water body will be addressed by activities associated with the TMDL Vision Prioritization Framework (*).

Cause of Impairments on the 2014 Section 303(d) List	Count of AUIDs	One or more AUID to be addressed by TMDL Vision Framework
Mercury in Fish Tissue	572	*
Mercury in Water Column	303	*
<i>Escherichia coli</i>	142	*
Dioxin (including 2,3,7,8-TCDD)	98	
Chlordane	51	
Oxygen, Dissolved	41	*
DDT	24	
Copper	15	*
Sedimentation/Siltation	15	*
Cause Unknown	14	*
Selenium	4	
Temperature, Water	4	
Bacterial Slimes	3	
Organic Enrichment (Sewage) Biological Indicators	3	
Other Flow Regime Alterations	5	*
Total Dissolved Solids	3	
Petroleum Hydrocarbons	2	
Phosphorus (Total)	2	*
Nutrient/Eutrophication Biological Indicators	1	*
pH, High	1	
Polychlorinated Biphenyls	1	*
Polycyclic Aromatic Hydrocarbons (Aquatic Ecosystems)	1	*
Solids (Suspended/Bedload)	1	*

1. WRD Goal 1: Enhance Recreational Waters

To drive progress toward our goal of enhancing recreational waters so that all waters in Michigan are safe for human contact, the identified outcomes include:

- Outcome 1: Clean and safe beaches.
- Outcome 2: Rivers and streams are swimmable.
- Outcome 3: Untreated sewage, including Combined Sewer Overflows and Sanitary

Sewer Overflows, are prevented from entering Michigan water bodies.

1.1. Statewide Pathogen TMDL

Michigan has 615 public beaches on the Great Lakes and connecting channels, 602 inland lake beaches, and over 1,400 publicly maintained boat launches making our waters accessible to everyone. Michiganders are proud of their beautiful beaches and care about water quality. A recent Instagram campaign for beautiful Michigan beaches received 1,933 submissions over a 10-day period, and the Great Lakes Commission's "MyBeachCast" mobile application for beach water quality updates has been downloaded more than 5,000 times since its launch in 2013. The ability to utilize and enjoy our beaches is a priority for the people of Michigan that has been emphasized by our Governor, the WRD, and the MDEQ.

The MDEQ has worked toward achieving its priority goal of clean beaches for recreation through an extensive investment, which is costly for both local municipalities and state agencies. As part of these efforts the WRD is purchasing new analytical equipment for use by local health departments that will allow rapid testing of beach water. The WRD is also requiring dry weather screening and *E. coli* monitoring of permitted municipal separate storm sewer system (MS4) outfalls in TMDL watersheds to locate sewage issues, asserting our regulatory authority to eliminate on-site septic system issues, and requiring in enforceable documents sewer infrastructure improvements to eliminate untreated sewage overflows.

Clearly, our theme of "Pure Michigan" relies on clean water, and clean beaches are important to our citizens and visitors. However, in 2013, the MDEQ estimated that 48 percent of the rivers and streams exceed the Total Body Contact Recreation designated use and 20 percent of monitored beaches have had closures due to bacterial pollution (MDEQ, 2014). Keeping the people of Michigan and our visitors safe while recreating in Michigan's waters is an MDEQ priority. To help attain the goal of enhancing recreational waters and tie together the efforts that Michigan continues to expend on reducing *E. coli* contamination of surface waters, the MDEQ has made it a priority to develop a statewide pathogen TMDL.

This TMDL will identify waters where action is needed, set an *E. coli* concentration target based on protecting the Total and Partial Body Contact Recreation designated uses, and identify needed pollutant reductions in all waters that are not meeting these designated uses. The statewide *E. coli* TMDL will apply to inland lakes, rivers, and streams, beaches, and the Great Lakes.

Currently, pathogen TMDLs are scheduled to be developed annually in Michigan for the next 17 years. This number is certain to grow as additional water bodies are assessed and determined to not be meeting total and partial body contact recreation designated uses. This timeline is not in the best interest of the people of Michigan or the most efficient means to attaining the WRD goal of enhancing recreational waters.

The USEPA cites efficient program management as a reason for the TMDL Vision (USEPA, 2015). Michigan has only 1.5 Full Time Equivalencies (FTE) allocated to the TMDL program. A statewide *E. coli* TMDL will be a much more efficient way of addressing nonattainment of the total and partial body contact recreation designated uses in Michigan.

The statewide *E. coli* TMDL will eliminate the need for numerous individual watershed-based *E. coli* TMDLs and the associated repetitive paperwork burden, long wait periods, and staff time spent on TMDL development. A statewide TMDL will save the MDEQ a significant amount of

resources that would have been spent writing watershed-based TMDLs, while providing a faster path to implementation. For example, we can accelerate water quality restoration through implementation in National Pollutant Discharge Elimination System (NPDES) permits, particularly MS4 permits, by more than a decade. Requirements in permits discharging to impaired water bodies with a TMDL, such as the requirement of MS4 communities to demonstrate progress in meeting the *E. coli* water quality standards, will be made effective as soon as the permit is reissued after the TMDL is approved. Another example is helping interested stakeholders with source assessment, monitoring, and restoration solutions in their watershed to provide more site-specific information to enhance TMDL implementation at the local level. In these ways, our statewide *E. coli* TMDL aligns with the purpose of the USEPA's TMDL Vision, which emphasizes a path to better implementation of the Clean Water Act Section 303(d) program, water quality restoration, and coordination of water programs.

The content of the statewide TMDL continues to evolve based on WRD internal discussions, USEPA comments, and stakeholder input acquired through the Integrated Report and TMDL public notice processes. The TMDL may include a Geographic Information System analysis of our probabilistic *E. coli* data set along with 2010 Census data, 2011 land cover, the MDEQ's wetland restoration potential layer, and other spatial parameters (such as areas with a high water table and soil types not conducive to on-site septic systems). The TMDL may also include implementation guidance and examples of restoration actions that may help reduce *E. coli*. The WRD expects the final product will evolve even further throughout the process, particularly when stakeholder engagement activities grow.

1.2. Future Assessment Activities to Address Goal #1

Eighty percent of Michigan's lakes and streams are currently not assessed for attainment of the Total Body and Partial Body Contact Recreation designated uses (Goodwin et al., 2014). To meet the TMDL Vision's assessment goal, the MDEQ will continue assessing the recreational designated uses in waters that have not been monitored or where monitoring data are insufficient to determine the attainment status. Thus, a process will be developed to update the statewide *E. coli* TMDL to include newly detected impaired waters and to incorporate TMDL requirements in NPDES permits.

Michigan will monitor for the recreational designated uses through several avenues. Michigan's local health departments monitor beaches for *E. coli* with funding support from state and federal grants. In 2013, monitoring was conducted at 413 public beaches (MDEQ, 2014). The MDEQ also conducts targeted *E. coli* monitoring based on internal evaluation of assessment needs and requests from the general public. Waters that are newly identified as not attaining Michigan Water Quality Standards will be added to the approved statewide *E. coli* TMDL in each update of the Integrated Report and TMDL, so that implementation in NPDES permits and water restoration activities can begin immediately as noted above. The details of this process will be included in the statewide TMDL.

1.3. Future Prioritization for Watershed Restoration

After the development and approval of the statewide *E. coli* TMDL, a portion of the 1.5 FTEs devoted to TMDLs will develop a process for prioritizing TMDL implementation by watershed. This will allow flexibility regarding implementation of the TMDL Vision, and will allow the WRD to respond to public input gathered during the statewide *E. coli* TMDL development process. After USEPA approval of the TMDL, implementation of needed pollutant reduction actions for point sources will begin as soon as each discharge permit is reissued. Nonpoint source (NPS)

implementation in priority areas will take place consistent with available resources and NPS program guidance. To select priority areas, the WRD will consider using existing tools such as the USEPA's Recovery Potential Screening tool, the WATERSCAPE tool, or an alternate resource. Prioritization of implementation activities will aid in determining where resource expenditure (staff time and funding) would further the WRD goal of enhancing recreational waters. The MDEQ's NPS Program utilizes a Recovery Potential Screening tool to prioritize potential Section 319 grant projects. Use of this tool with similar indicators may provide additional integration of the NPS and TMDL priorities.

The WRD will continue to consider other factors to determine where to direct restoration and TMDL implementation efforts, including emerging issues, the 5-year rotating basin schedule, priorities from other MDEQ programs, and stakeholder input.

1.4. Public Engagement in the Statewide *E. coli* TMDL Process

One projected benefit of the statewide TMDL is to engage and educate the public in the widespread issue of *E. coli* pollution in surface waters as well as issues in their own watersheds. The TMDL and associated activities will expand the conversation with the public on their role as a potential contributor and solution to the problem, in addition to the MDEQ's role on this issue. Public engagement activities are likely to include:

- Webinars.
- Web site redesign.
- Educational fact sheets and brochures (both original and compiled from existing sources) to be posted on the MDEQ's Web site.
- Interactive online mapping system, which will include some of the major NPS and point sources of *E. coli*.
- Public meetings.

1.5. Additional TMDL Activities to Address Goal #1

In addition to the statewide *E. coli* TMDL, the Cass River *E. coli* TMDL (already public noticed), and the Bad Axe Creek *E. coli* and Phosphorus TMDL (in progress) will be submitted for USEPA approval. Both of these TMDLs will support the WRD's Goal 1: Enhance Recreational Waters. The Bad Axe Creek TMDL is a pilot project that is working to integrate the TMDL process with the Section 319 watershed management planning process to increase public engagement and the likelihood of successful implementation and more rapid water quality improvement. Lessons learned from the pilot project will improve coordination between the NPS and TMDL programs and between the MDEQ and stakeholders.

WRD Goal 2: Ensure Consumable Fish

To protect human health and wildlife by reducing exposure to contaminants in fish to levels that are safe.

- Outcome 1: Eliminate mercury contamination.
- Outcome 2: Eliminate PCB contamination.

2.1 TMDL Activities

Reducing human and wildlife exposure of mercury is a priority in Michigan. The Michigan Department of Community Health continues to issue general fish consumption advisories and guidelines for all inland lakes in Michigan, and specific recommendations for Lakes Huron, Michigan, and Superior, and several hundred miles of rivers and streams due to mercury concentrations in fish tissue. Because of the widespread impairment of Michigan's waters due to mercury, a statewide TMDL is being developed for inland waters primarily impacted by atmospheric deposition of mercury. As part of the prioritization commitment, the MDEQ will submit a statewide mercury TMDL to address Outcome 1 of the WRD's Goal 2, which will include needed mercury reductions from air sources and water dischargers to protect and restore inland waters.

In addition, the MDEQ has already submitted a statewide inland water TMDL for PCBs (August 2013) to address Outcome 2 of the WRD's Goal 2, and is awaiting USEPA approval.

2.2 Future Assessment Activities to Address Goal #2

Waters that are found to be nonattaining of Michigan's Water Quality Standards that are not included in the approved statewide PCB and Mercury TMDLs will be added to the next biennial Integrated Report following USEPA approval of the TMDLs. The details of this process will be included in the statewide TMDLs. Fish tissue analysis will continue, as funding allows, through our Fish Contaminant Monitoring Program. This program performs edible portion fish tissue analysis for contaminants including PCB and mercury for the Michigan Department of Community Health's consumption advisory. Contaminants will also be analyzed in caged fish and whole fish to assist in source tracking and temporal trend evaluation. Additionally, mercury in the water column will be monitored each year through the Water Chemistry Monitoring Program (WCMP). The WCMP has facilitated the sampling of 250 randomly-selected sites on a rotating basis (50 sites per year, 4 sampling events per site). The WCMP also included the annual sampling of 2 sites in each of the Great Lakes Connecting Channels (Detroit River, St. Clair River, and St. Marys River), 4 sites in Grand Traverse Bay, and 7 sites in Saginaw Bay. The MDEQ will continue to use the WCMP and Fish Contaminant Monitoring Program results to guide further monitoring and designated use support decisions, as well as detect statewide trends.

3. WRD Goal 3: Protect and Restore Aquatic Ecosystems

To restore and maintain the physical, chemical, and biological integrity of public trust waters, including inland lakes, streams, wetlands, and the Great Lakes. Two of the identified outcomes include:

- Outcome 1: Ensure healthy aquatic biota – Through 2015, ensure that the condition of the state's wadeable streams does not degrade, such that there is no statistically significant increase in the percent of streams rated "nonattaining," and no statistically significant decrease in streams rated "attaining."
- Outcome 3: Meet the total phosphorus goal in Saginaw Bay of 15 micrograms per liter (µg/L) and maintain a neutral trend in total phosphorus in Grand Traverse Bay.

3.1. TMDL Activities

The following TMDLs will be submitted to the USEPA to address the WRD goal to protect and restore aquatic ecosystems.

- **Grand River/Red Cedar River Dissolved Oxygen TMDL.**
- **Ox Creek Sediment/Biota TMDL.**
- **Trap Rock River and Owl Creek Copper TMDLs.**
- **Bad Axe Creek *E. coli* and Phosphorus TMDL (with USEPA contract support).**
- **Statewide and Cass River watershed *E. coli* TMDLs.** (It is expected that work to reduce *E. coli* will also result in reducing levels of nutrients and sediment entering surface waters, since many best management practices designed to mitigate sources of *E. coli* may also remove other pollutants.)

The Trap Rock River and Owl Creek copper TMDLs could be completed only after site-specific copper criteria were developed, which took several years of sampling, analysis, and approval of criteria by the USEPA. Because of the resources already expended on these TMDLs they are a priority for the WRD to complete as part of the 2016 TMDL Vision.

3.2 Future Assessment Activities to Address Goal #3

The WRD will continue to assess statewide designated uses using the current 5-year rotating watershed basin approach. This is no small task; for example, between the years 2008-2012 the WRD surveyed 1,010 sites to aid in determining attainment of the other indigenous aquatic life designated use as part of our statewide status and trend programs and targeted monitoring. Additionally, Michigan's WCMP will analyze for the following parameters; phosphorus, chlorides, metals (including mercury), suspended solids, dissolved organic carbon, hardness, sulfates, and field-measured parameters (e.g., specific conductance, dissolved oxygen). The MDEQ also solicits and fulfills targeted biological and chemical water quality monitoring requests from the general public to fill data gaps, assess designated use attainment, and address public concern. The MDEQ will continue to use the status and trend biological monitoring, WCMP, and targeted monitoring requests to guide further monitoring, designated use support decisions, and to detect statewide trends.

Additional Public Engagement

Michigan has a good track record of timely biennial submittal of the Integrated Report including the Section 303(d) list of impaired waters. The TMDL Vision prioritization framework will be on public notice in the 2016 Draft Integrated Report as an Appendix. As part of the public notice process, the framework will be presented in a Webinar. This will allow the public a chance to view the framework and comment. The 2014 Integrated Report Webinar was attended by 237 stakeholders and received many compliments. Once finalized, the public will be invited to review the prioritization framework every two years for any emerging issues or changes in priority and again, will be included in the Integrated Report public notice process.

In addition to the public engagement that will occur with the development of the TMDLs, the MDEQ is currently taking several steps to engage the public on a regular basis. We are also taking steps to increase our accessibility, which includes Web site redesign, (e.g., TMDL and monitoring Web sites) and creating and posting user-friendly fact sheets for TMDLs and summaries of biological data by watershed. Providing excellent customer service is a number

one priority for the MDEQ and our efforts are leading to better public perception of the Department and better understanding of our work.

Flexibility

Because Division and Departmental priorities sometimes change rapidly, the MDEQ reserves the right to substitute projects of equal size and scope to those listed in this document. The MDEQ also reserves the right to modify approaches presented in the priorities listed in this document as additional information is learned throughout the prioritization process. The MDEQ will continue to work within our staff and budget constraints. Monitoring will occur as resources allow. Alternatives and/or protections strategies in lieu of a TMDL are not currently being considered but the MDEQ recognizes that the TMDL Vision allows for these options in circumstances where they may lead to more efficient and successful restoration of designated uses.

Summary

The MDEQ believes that the prioritization approach presented above aligns closely with the TMDL Vision and WRD Measures of Success. By including the above described TMDLs and priorities, Michigan will be addressing 6 of the top 9 causes of impairment of Michigan's waters (Table 1). We believe the TMDL process will become better integrated with WRD programs since we will focus on the Section 303(d) program supporting overall water quality objectives rather than annual TMDL production targets. We intend to make better strides toward improving water quality for recreation, fishing, drinking, and aquatic health by focusing implementation on prioritized watersheds in a more rapid fashion.

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Citations:

Goodwin, K., S. Noffke, and J. Smith. 2014. Water Quality and Pollution Control in Michigan: 2014 Sections 303(d), 305(b), and 314 Integrated Report. MDEQ Report #MI/DEQ/WRD-14/001. <https://www.michigan.gov/egle/about/Organization/Water-Resources/assessment-michigan-waters/integrated-report>

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(The link provided was broken and has been removed).

USEPA. 2015. "Question and Answers" on the Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program. Accessed April 15, 2015.

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