Fact Sheet: Maumee Watershed Nutrient Total Maximum Daily Load Report

The Ohio Environmental Protection Agency (Ohio EPA) developed a Total Maximum Daily Load (TMDL) report for the Maumee Watershed to address shoreline and open water impairments in the Western Basin of Lake Erie caused by cyanobacteria harmful algal blooms. The TMDL calls for phosphorus load reductions in the Maumee watershed to address these impairments.

What is the TMDL report?

The TMDL report identifies the links between the waterbody use impairment, sources of impairment, and the pollutant load reductions needed to meet applicable water quality standards. To fulfill the requirements of a TMDL, the following sections were included in the report:

- Watershed Characterization
- Identifying Water Quality Impairments and Actions
- Phosphorus in the Maumee Watershed
- Analysis Methods
- Results
- Implementation Plan
- Reasonable Assurances
- Public Outreach

Figure 1 — Map of Ohio's Western Basin of Lake Erie assessment units and the Maumee River watershed.

Watershed Characterization

This section includes a description of the waterbody (western basin of Lake Erie) and the watershed involved (Maumee). Figure 1 depicts the Lake Erie assessment units included in this project and shows the Maumee Watershed.

Identify Water Quality Impairments and Actions

This section includes an explanation of Ohio's water quality standards, evaluates beneficial uses, identify impairments, develops targets, and proposed actions to develop a TMDL. The TMDL report proposes total phosphorus TMDL allocations for the Maumee watershed to address impairments to recreation use (due to algae), public drinking water supply use (due to algae), and aquatic life use impairments (due to nutrients), seen in Table 1.

Table 1: Summary of Impairments addressed by the Maumee Watershed Nutrient TMDL

Lake Erie assessment unit (OHLE)	Narrative description	Causes of impairment (Beneficial use in parentheses)
041202000201	Lake Erie Western Shoreline (≤3 meters depth)	Algae (Recreation use)
		Algae: Cyanotoxins (Public drinking water use)
		Nutrients (Aquatic life use)
041202000301	Lake Erie Western Basin Open Water (>3 meters depth)	Algae (Recreation use)
		Algae: Cyanotoxins (Public drinking water use)
041202000101	Lake Erie Islands Shoreline (≤3 meters depth)	Algae (Recreation use)
		Algae: Cyanotoxins (Public drinking water use)
		Nutrients (Aquatic life use)

Phosphorus in the Maumee Watershed

This section provides an in-depth discussion of the sources of phosphorus in the Maumee watershed. The source assessment leverages an extensive amount of water quality observations and studies that have taken place in the Maumee watershed. It is intended to be a robust examination that provides a strong basis for pollutant reduction implementation recommendations. While the project allocations are for total phosphorus, the source assessment includes additional emphasis on the most bioavailable portion of total phosphorus, characterized by the parameter dissolved reactive phosphorus (DRP).

Analysis Methods and Results

The TMDL report describes the methods for evaluating existing loads and allocations using an empirical mass balance method. There is also an evaluation of the method's ability to account for heterogeneity in the Maumee watershed. The methods detail the information considered for allocating load to different sources, the margin of safety, and the allowance for future growth. The results present the wasteload and load allocations needed to achieve the TMDL.

Implementation Plan

The implementation plan in the TMDL report provides a framework for how Ohio EPA will implement wasteload allocations and achieve nonpoint source load reductions. For developing and implementing this TMDL, an adaptive management approach will be used, allowing for new science to be incorporated as time progresses. The implementation plan highlights the following steps for TMDL implementation (Figure 2):

- Develop the strategy: The initial plan is developed as part of the TMDL process and considers where and how implementation activities are targeted.
- Establish milestones: A timeline with specific milestones and dates for biennial progress reports was developed. A description of the first three biennial progress reports and the milestones that will be examined within these reports are included in the TMDL report.
- Implement the strategy: Details about specific actions proposed to meet the TMDL wasteload and load allocations.
- Monitor environmental outcomes: Monitoring will track implementation actions and environmental responses.

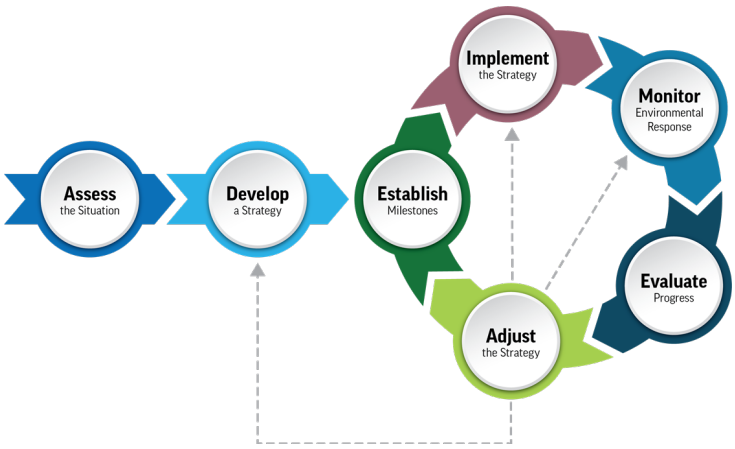

Figure 2 — Conceptualization of TMDL implementation with adaptive management.

- Evaluate progress: Specific metrics were identified that will allow the monitoring data to be evaluated objectively for progress.
- Adjust the strategy: Explains how the implementation strategy can be adjusted as new information becomes available.

Reasonable Assurances

The TMDL report demonstrates that there is reasonable assurance that the nonpoint source reductions to meet water quality standards are feasible. Reasonable assurances are demonstrated by detailing the commitments, planned and ongoing activities, and programmatic support to realize the phosphorus reductions. The reasonable assurances are supported by progress evaluations that provide a framework for accountability.

Public Outreach

The TMDL report demonstrates full and meaningful public participation in the TMDL process, per federal and Ohio requirements. Public and stakeholder participation included holding public comment periods for the Loading Analysis Plan, Preliminary Methods Results report, and the draft TMDL report, as well as providing notice to stakeholders of these public comment periods. The report summarizes additional outreach that included project updates and outreach webinars. Most outreach events and webinars were recorded and are available on the project website linked below.

Overview of comments received for the Draft TMDL Report

Ohio EPA received nearly 400 pages of comments for the Draft TMDL report from a diverse group of stakeholders including citizens, environmental groups, community organizations, agricultural organizations, and point source facilities. U.S. EPA also offered comments on the draft report for the Agency's consideration. An additional 19 commentors provided testimony at the Public Hearing held on February 23, 2023. Ohio EPA would like to thank the commentors for their time to develop these

thoughtful comments which have provided valuable insight and additional information for the Agency to consider for the Maumee Watershed Nutrient TMDL. To address the comments, a responsiveness summary and revised version of the report were developed.

Where can I learn more?

- ***Maumee Watershed Nutrient TMDL Report***
  - ***Appendix 1 – Dissolved Reactive Phosphorus***
  - ***Appendix 2 – Maumee Watershed SWAT Model Reviews***
  - ***Appendix 3 – Methods for Manure, Fertilizer, and Crop Removal Calculations***
  - ***Appendix 4 – Individual NPDES Wasteload Allocations***
  - ***Appendix 5 – Near-Field TMDL Reports in the Maumee Watershed***
  - ***Appendix 6 – Cost Evaluation for Phosphorus Removal at Wastewater Treatment Facilities***
  - ***Appendix 7 – Additional Considerations***
  - ***Appendix 8 – Implementation Tracking***
  - ***Appendix 9 – Works Cited***
  - ***Responsiveness Summary***
- ***Informational Webinar***
- ***Maumee Watershed Nutrient TMDL Project webpage***