Division of Surface Water
Responsiveness Summary

Project: Maumee Watershed Nutrient Draft Total Maximum Daily Load (TMDL) Report
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Ohio Environmental Protection Agency (Ohio EPA) held a comment period from December 30, 2022, to March 8, 2023, on the Maumee Watershed Nutrient Draft TMDL Report. Ohio EPA reviewed and considered all comments and questions received during the public comment period, and this document summarizes those along with our responses. In an effort to streamline this document, it is drafted as a responsiveness summary and is broken into several major themes.

By law, TMDLs do not affect policy or existing agency authorities. Comments that extend beyond the scope of existing agency authority and policies were not directly addressed in this responsiveness summary. Ohio EPA acknowledges that water quality impairments and restoration efforts affect communities in different ways and appreciate the concerns shared by commenters.

Ohio EPA values the comments provided by the following organizations: Maumee Watershed Coalition, Lake Erie Foundation, Alliance for the Great Lakes, Ohio Environmental Council, Lake Erie Waterkeeper, Environmental Law and Policy Center, Ohio Agri-Business Association, Ohio Farm Bureau Federation, Ohio Livestock and Poultry Associations, Toledo Metropolitan Council of Governments, Board of Lucas County Commissioners, Association of Ohio Metropolitan Wastewater Agencies, City of Toledo, Cleveland Cliffs, Lima Refinery, Ohio Manufactures' Association, PCS Nitrogen, Village of Swanton, Village of Elida, and Michigan Department of Great Lakes and Energy.

Ohio EPA also appreciates the feedback of the many individuals who have provided comments, including: Vickie Askins, Kim Axe, Teresa Betts-Cobau, John Blaufuss, Jim Bradley, David Peloquin, Mary Igoe Meyers, Alvin and Mary Compaan, Peggy Daly-Masternak, Robert Masters, David Neuendorff, Daniel Dawley, Richard Dittes, Marian A. Grems, Peter Hess, David Housholder, Cecilia Johnson, Peggy Kneen, Charles Kotz, Ruth Mahler, Libby Marsh, Nancy Ambers Massar, Dj Mears, Jackie Miller, Marjorie Mulcahy, Tom Names, Karen Porter, Jeff Reutter, James Rose, Dr. Lindsay Samuelson, Marc Schaller, Don Schurr, Jill Schurr, Tony Szilagye, Lane Tahree, Michael Vanderhorst, and Katherine Wall.

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General Comments about the Maumee River Watershed

Several commenters shared information that could be added to the watershed characterization.

Ohio EPA appreciated the additional information that was shared. Based on these comments, information was added about the 2014 Toledo "do not drink" order to Section 2.1, and more detailed information on historical land use in the Maumee River Watershed was added to Section 2.2. Information was added about harmful algal bloom (HAB)-related drinking water treatment costs and disadvantaged communities to Section 2.3.5.

Comments on TMDL Targets

Several commenters expressed concern that the TMDL does not used dissolved reactive phosphorus (DRP) targets.

The importance of reducing the DRP portion of total phosphorus is stressed throughout the TMDL report. The start of Section 4.1 explains that the rise in DRP pollution entering the Maumee River is what primarily led to the now-regular seasonal HABs occurring in the Western Basin of Lake Erie. The source assessment continues to comprehensively document the scientific inquiry on what led to increased DRP. That increase is considered when examining each of the different sources of DRP.

Ohio EPA evaluated options for developing DRP allocations and found several challenges. Section 3.5.1 discusses these challenges, including the chemically nonconservative nature of DRP and the state of the science for existing DRP models. Additional language was included in Section 3.5.1 to clarify these management decisions and explain how new data could be used to revise the TMDL in the future.

Further, new science is emerging about the DRP chemical cycling processes that are not included in any existing models. This would provide a good reason to challenge the modeling approach used for a DRP TMDL. Section 4.1.1.4 and Appendix 1 of the TMDL report discuss the research spurring this new science.

Weighing these factors, Ohio EPA made the management decision to develop the TMDL using total phosphorus allocations while focusing the project's attention on the DRP portion of total phosphorus, where possible. Section 3.5.1 notes three specific places special attention is given to the DRP portion of total phosphorus: prioritizing management actions based on the impact to DRP in the implementation strategy, evaluating ongoing research as part of the monitoring strategy, and including DRP in the water quality monitoring strategy.

The TMDL report's implementation plan explains how pollution reduction measures target the DRP portion of total phosphorus. Section 7.3.3.1 describes how the best management practices (BMPs) that are promoted in water quality planning efforts interact with the phosphorus sources in Section 4. Many BMPs do not singularly address one source; for example, variable rate phosphorus applications can reduce the total amount of phosphorus applied while helping the drawdown of soil phosphorus in areas with excess.

Evaluating progress includes both large- and small-scale monitoring. Small-scale monitoring focuses at the site level, such as on the edge of agricultural fields and at the outlet of structural practices (e.g., wetlands). Scaling up, Section 4.2.5 of the TMDL report explains the extensive tributary monitoring network throughout the Maumee watershed, which includes the Waterville station near the mouth of

the Maumee River. Finally, Ohio EPA and other state, federal, and academic partners regularly monitor Maumee Bay and the Western Basin of Lake Erie. It is important to note that these monitoring efforts include analyzing the DRP parameter with every sample. These data are available to inform adaptive management and ensure that actions result in the needed environmental changes.

Section 7.5 discusses the ongoing evaluation of active research, much of which focuses on improving DRP management. Relevant studies are also discussed in Section 4.1.1.1 and Appendix 1. These studies are expected to improve the knowledge of the BMPs that can inform watershed planning efforts and specific BMPs that are prioritized for funding. They may also improve the state of the science regarding DRP movement and modeling. As the state of the science improves, it will reduce uncertainty in modeling and provide new data for making management decisions. If needed, the TMDL can be revised based on that new information, which may include additional consideration for DRP in the TMDL allocations.

Several commenters suggested using annual TMDL load targets rather than just targeting the spring loading season.

Text in Section 5.7.2 has been updated to clarify the TMDL's critical, as well as when HABs cause beneficial use impacts in Lake Erie. Loading targets apply to the spring March 1 through July 31 period. Lake Erie modeling evaluated by the Annex 4 Targets and Objectives Task Team identified the phosphorus loadings delivered to Lake Erie from the Maumee River during this time as the "overwhelmingly dominate source of phosphorus causing cyanobacteria blooms in the Western Basin." This conclusion recognized that the actual HABs persist into the summer and often the fall—well after the spring loading period is over. When the wasteload allocations (WLAs) and load allocation (LA) are met for the spring period, the HABs will not be absent but will meet the goals of the Clean Water Act, as described in Section 3.4.

Management actions to meet the springtime WLA and load allocation require year-round implementation of BMPs and other pollutant-reduction efforts. Consider the following examples where the seasonal nature of the WLA either requires off-season management through BMPs or can specifically inform BMPs so they have a greater impact:

1) When an agricultural producer develops a nutrient management plan, all nutrient applications are considered—not just those made during springtime. Therefore, whether using commercial fertilizer or manure, phosphorus applications are considered for a management plan regardless of whether they occur in the springtime or another period.
2) Many agricultural water-retention practices are still in the research stages of development, but future applications should emphasize springtime water retention. This will affect HAB growth more than water retained later in the summer.
3) When wastewater treatment facilities improve technology using biological nutrient removal or multipoint chemical addition, they will use that technology year-round. Therefore, benefits are realized in the late summer through winter period even though those months are not the focus of the TMDL, and the WLA does not apply.

One commentor provided requested additional information about how the boundary condition was calculated and another identified an error that needed corrected.

Additional details were added to the TMDL report about how the boundary conditions were tabulated in Section 5.3.7. The Michigan and Indiana boundary conditions were flipped in Table 26 in the draft report; this has been corrected.

Several commenters suggested a greater than 40 percent load reduction from the baseline conditions is needed.

The loading target has been described as an approximately 40 percent reduction from the 2008 baseline year, and many of the allocations are set by reducing loads from that baseline. However, it is important to understand that the TMDL sets a maximum allowable load. It does not set a required proportion of reduction. Several recent spring season loads have exceeded the 2008 baseline; however, that fact was not used to justify changes to the target load used for the TMDL. Were one to compare this TMDL's requirements to a recent year that exceeded the 2008 baseline, then a reduction greater than 40 percent could be expressed for that year. However, the targets also recognize that extremely wet years will likely exceed the loading target. Therefore, the targets are described as needing to be met 90 percent of the time.

The TMDL follows the recommended total phosphorus load target determined by the Great Lakes Water Quality Agreement's Nutrients Annex 4. If the subcommittee adopts new target recommendations, that new information may require revisions to the TMDL. Another scenario that could lead to the revision of the TMDL is if the total phosphorus load target is met (with an implementation focus on DRP reductions), but the Lake Erie HAB does not meet the goals.

Comments on Concentrated Animal Feeding Operations (CAFOs) and Manure

Based on the comments below and the responses provided, the following updates were made to the Maumee Watershed Nutrient TMDL report:

1) Language added to Section 5.3.4 to describe CAFO/confined animal feeding facility (CAFF) WLAs.
2) Additional discussion documenting the management decision to use manure phosphorus data from the Ohio Department of Agriculture (ODA) Division of Livestock Environmental Permitting (DLEP) and Grand Lake St. Marys in Appendix 3.

Some comments questioned aspects of livestock and CAFOs that extended beyond the considerations for managing phosphorus. Ohio EPA recognizes that these impacts are felt by individuals and communities that live near livestock facilities. The noted impacts included road damage, odors, animal welfare, and zoning considerations. Ohio EPA does not have jurisdiction over these concerns and encourages commenters to engage with the appropriate local and state officials with the authority to manage these impacts.

Many individuals and several organizations shared concerns about CAFOs and, more broadly, how manure was accounted for in the draft TMDL.

TMDLs are informational tools that identify the pollutant sources and quantify the amount of a pollutant that can enter a waterbody so that the waterbody will attain and maintain the appropriate water quality standards. TMDLs cannot change existing regulations, nor are they self-implementing. TMDLs use existing definitions and approaches currently available in the Clean Water Act and associated regulations. As such, CAFOs are included in the TMDL consistent with existing regulations and definitions.

Several commenters shared a perspective that manure is a sustainable source of phosphorus that can promote soil health more than commercial fertilizer products.

Section 4.1.1.1 of the draft TMDL describes the role of manure and commercial fertilizer for fertilizing crops in the Maumee Watershed. The literature reviewed in this section suggests that using manure or commercial fertilizer at appropriate rates has similar effects on the phosphorus loss at the edge-of-field. The information evaluated suggests that manure and commercial fertilizer have effects proportional to their contribution to the total phosphorus applied. This information suggests that farmers who use manure for fertility and to promote soil health can do so while posing a comparable environmental risk to commercial fertilizer products.

Several commenters asserted that Ohio's existing permits for CAFOs/CAFFs are inconsistent with the Clean Water Act.

Both Ohio EPA and ODA issue permits for CAFOs. The table below (also in the Preliminary Modeling Results [PMR] comment response) details which agency will issue permits to different types of facilities. While ODA issues permits to all large CAFOs (and a smaller subset of medium and small operations), Ohio EPA has retained the authority to issue National Pollutant Discharge Elimination System (NPDES) permits where required. Therefore, there is no gap in the legal authority for Ohio to administer the CAFO/CAFF permitting programs. The U.S. Environmental Protection Agency Region 5, hereafter referred to as U.S. EPA, recently evaluated many of these concerns in a decision document on a 2011 petition to withdraw Ohio EPA's approved NPDES program for CAFOs (U.S. EPA, 2020[1]). CAFO permits issued by the state of Ohio are consistent with all state and federal rules and regulations.

[1] U.S. EPA, Region 5. (2020). U.S. EPA Findings and Conclusion in Response to the Petition for Withdrawal of Ohio's National Pollutant Discharge Elimination System Concentrated Animal Feeding Operation Program and Ohio's CAFO Permit to Install and Operate Program. ordspub.epa.gov/ords/wps/f?p=144:5:7643978309511::NO::P5_PETITION_ID:75.

Type of Operation	Permits Required	Agency
Large CAFO/CAFF	NPDES*	Ohio EPA
	Permit-to-Install (PTI) Permit-to-Operate (PTO)	ODA
Medium animal feeding operation (AFO), discharges to surface water	NPDES	Ohio EPA
Medium or small AFO with history of noncompliance with ODA- Division of Soil and Water Conservation (DSWC) rules and standards	PTO, PTI (if facility modification is required)	ODA
Small AFO adding significant pollutants to surface water (Designated CAFO)	NPDES	Ohio EPA
If one or more acres will be disturbed during construction of a livestock operation	NPDES Construction Stormwater General Permit	Ohio EPA

Source: Table adapted from Ohio Livestock Coalition's Guidelines for Livestock Operations.
*Large CAFOs that do not discharge to surface waters are not compelled to apply for coverage under an NPDES permit.

Section 5.3.4 of the draft TMDL identifies no CAFOs in the Maumee Watershed that discharge to surface waters and have NPDES permit coverage. However, 73 CAFOs in the watershed have PTIs and PTOs through ODA-DLEP.

The requirements for these facilities to obtain NPDES permits have changed with time. The obligations for CAFOs to obtain NPDES permit coverage are primarily defined by two federal court rulings. These two decisions followed the 2003 CAFO regulations that expanded the number of operations covered by the CAFO regulations by an estimated 15,500 facilities nationwide.[2] Following the implementation of that rule, in Waterkeeper Alliance, Inc. v. U.S. EPA, 399 F.3d 486, 506 (2d Cir. 2005), the Court held that "we believe that the Clean Water Act, on its face, prevents the [U.S.] EPA from imposing, upon CAFOs, the obligation to seek an NPDES permit or otherwise demonstrate that they have no potential to discharge." In other words, while they were a point source by definition, that does not itself trigger the obligation to get a permit. CAFOs must discharge pollutants to trigger the obligation of a permit.

Following that ruling, U.S. EPA revised the rule in 2008 to say CAFOs must get a permit if they discharge or "propose" to discharge. The rule defined "proposed" to mean that CAFOs were designed, constructed, operated, and maintained in a manner such that the CAFO will discharge." This rule was again challenged in the case of National Pork Producers Council v. U.S. EPA, 635 F.3d 738 (5th Cir. 2011); the Court explained:

> "The [U.S.] EPA's definition of a CAFO that 'proposes' to discharge is a CAFO designed, constructed, operated, and maintained in a manner such that the CAFO will discharge. Pursuant to this definition, CAFOs propose to discharge regardless of whether the operator wants to discharge or is presently discharging. This definition thus requires CAFO operators whose facilities are not discharging to apply for a permit and, as such, runs afoul of Waterkeeper. . ."
>
> Id. at 750.

[2] www3.epa.gov/npdes/pubs/summary_court_decision.pdf

The Court invalidated the 2008 CAFO rule, stating:

"These cases leave no doubt that there must be an actual discharge into navigable waters to trigger the [Clean Water Act's] requirements and the [U.S.] EPA's authority. Accordingly, the [U.S.] EPA's authority is limited to the regulation of CAFOs that discharge. Any attempt to do otherwise exceeds the [U.S.] EPA's statutory authority. Accordingly, we conclude that the [U.S.] EPA's requirement that CAFOs that "propose" to discharge apply for an NPDES permit is ultra vires and cannot be upheld."

Id. at 751.

Ohio EPA's implementation of the CAFO NPDES permit program is consistent with the federal Clean Water Act and subsequent judicial interpretations. Ohio EPA will continue to work with U.S. EPA to ensure the CAFO NPDES program remains consistent with the Clean Water Act. ODA will continue to issue CAFF PTOs/PTIs regardless of a facility's obligation to have NPDES permit coverage. These permits are required by state law, regardless of the obligation, to have permit coverage under the federal Clean Water Act.

Several commenters asserted that CAFOs should receive a WLA as point sources in the TMDL. Reasons to include a WLA included the following:

1) **Actual discharges have occurred.**

Ohio EPA acknowledges that these actual discharges occur and has included specific discussion about them in the TMDL report. See also the response to comment 1.4 and 2.2 in the PMR response to comments: epa.ohio.gov/static/Portals/35/tmdl/MaumeeNutrient/MWN_TMDL_PMR%20RtoC.pdf.

These discharges are clearly prohibited under the federal Clean Water Act and through ODA's permits. Due to these discharges being prohibited (similar to Sanitary Sewer Overflows and other prohibited discharges) they will not receive a WLA in the TMDL (this is interpreted as WLA = 0). In instances where actual discharges occur from a CAFO, the facility is only required to seek permit coverage if remedial action cannot eliminate the discharge and prevent it from happening again. Thus, while not excusing the violation, it becomes an enforcement response as opposed to a permitting response.

2) **Point source discharges occur due to the application of liquid manure where there are tiled fields.**

Discharges through field tile that are not the result of precipitation are prohibited discharges under ODA-DLEP rules governing the land application of manure (Ohio Administrative Code [OAC] 901:10-2-14). OAC 901:10-2-14(C)(3) requires that all land applications of manure comply with restrictions in Appendix A of the rule. The appendix (codes.ohio.gov/assets/laws/administrative-code/pdfs/901/10/2/901$10-2-14_PH_FF_A_APP1_20210203_0904.pdf) has the following criteria for applying liquid manure to tiled fields except when there is a growing crop:

(a) Applications must be less than 0.5" or 13,576 gallons per acre.

(b) Use a tool that can disrupt/close (using horizontal fracturing) the preferential flow paths in the soil, or till the surface of the soil 3–5" deep to a seedbed condition to soak up the liquid manure and keep it out of preferential flow channels.

(c) If injection is used, it should only be deep enough to cover the manure with soil. Till the soil at least 3" below the depth of injection prior to application. Tillage prior to application will be considered incorporation of the manure.

(d) The outlets must be monitored before, during, and after application, AND provisions must be planned to plug the tile or capture the tile flow if liquid manure reaches the tile outlets. If no-till or pastures are used for applications, tiles must be plugged.

3) A system that relies on self-reporting of manure discharges and spills will result in unreported discharges.

Self-monitoring, record keeping, and reporting, which can include, but is not limited to, sampling surface water and/or groundwater, is required by permits and is a common regulatory framework that relies on oversight by a regulatory agency through agency inspections and review. In general, all facilities permitted by ODA-DLEP submit required information through an annual report. Permittees are also inspected on a routine basis (at least once per year), and any issues noted during an inspection may require further follow-up in the form of a notice of violation. If any requirements have not been met or are incomplete during any of these reviews, staff will work with the permittee to resolve any compliance issues. Intentional falsification of information is taken very seriously, and these offenses are subject to civil and criminal penalties. The potential penalties associated with enforcement provide strong incentives for permittees to report data accurately.

Further, Ohio EPA encourages the public to contact Ohio EPA's 24-hour spill hotline (1-800-282-9378) if manure or other pollutants are observed being discharged to surface water.

4) Overapplication occurs when manure applications are made when soil test phosphorus is elevated.

While Ohio's nutrient management standard (NRCS 590) does not immediately prohibit application when soil phosphorus is elevated, it does require that new manure applications are used to fulfill the agronomic need of a growing crop. The TMDL report notes that applications in this category are not widespread and represent a fraction of the fields where manure is utilized. When manure is applied in these situations, additional management actions may be required. These actions can include limiting phosphorus application rates to promote drawdown of soil phosphorus, implementing field-specific conservation practices, increasing manure application setback distances, etc.

Ohio's state agencies recognize that limiting manure applications on fields tested with higher soil phosphorus is an opportunity to reduce the total mass of nutrients applied in the watershed without sacrificing crop yield. Through the implementation of H2Ohio, ODA is working to develop new or emphasize existing relationships between livestock producers and neighboring farmers who have crop fields with lower soil test phosphorus levels.

Several commenters asserted that the TMDL does not adequately account for the role of manure in phosphorus loads. These assertions focused on:

1) Manure is not all managed with the oversight of Ohio's regulatory agencies.

Developing a TMDL cannot change the authority of Ohio's regulatory agencies to regulate manure in instances that extend beyond existing authorities. Section 4.1.1.1 within the TMDL report provides an

overview of where Ohio's state agencies have regulatory oversight of manure. While not all livestock operations have permits with manure management plans and direct oversight, they are still subject to ODA-DSWC regulations and prohibitions in ORC 6111.04.

2) The difference between dry and liquid manure.

In the draft TMDL report, several distinctions are made for liquid manure. Section 4.1.1.1 recognizes the increased risk of loss due to preferential flow pathways. While liquid manure can pose increased risk, the pathways exist for all nutrient sources. Ohio's nutrient management standard NRCS 590 and administrative rules governing manure utilization include management actions specific to using liquid manure to mitigate the risk of discharges.

3) Increasing livestock populations.

The TMDL evaluated livestock populations, including increases that have been observed. Figure 13 in the TMDL report details the livestock industry growth by sector since 2002. Figure 14 shows that the early 2000s represented a minimum population of cattle and hogs in the watershed. In the PMR response to comments, the information from Figure 13 was overlaid on the trend of increasing DRP (see image below). That figure shows that most of the post-2002 livestock population growth occurred after concentrations of DRP stabilized.

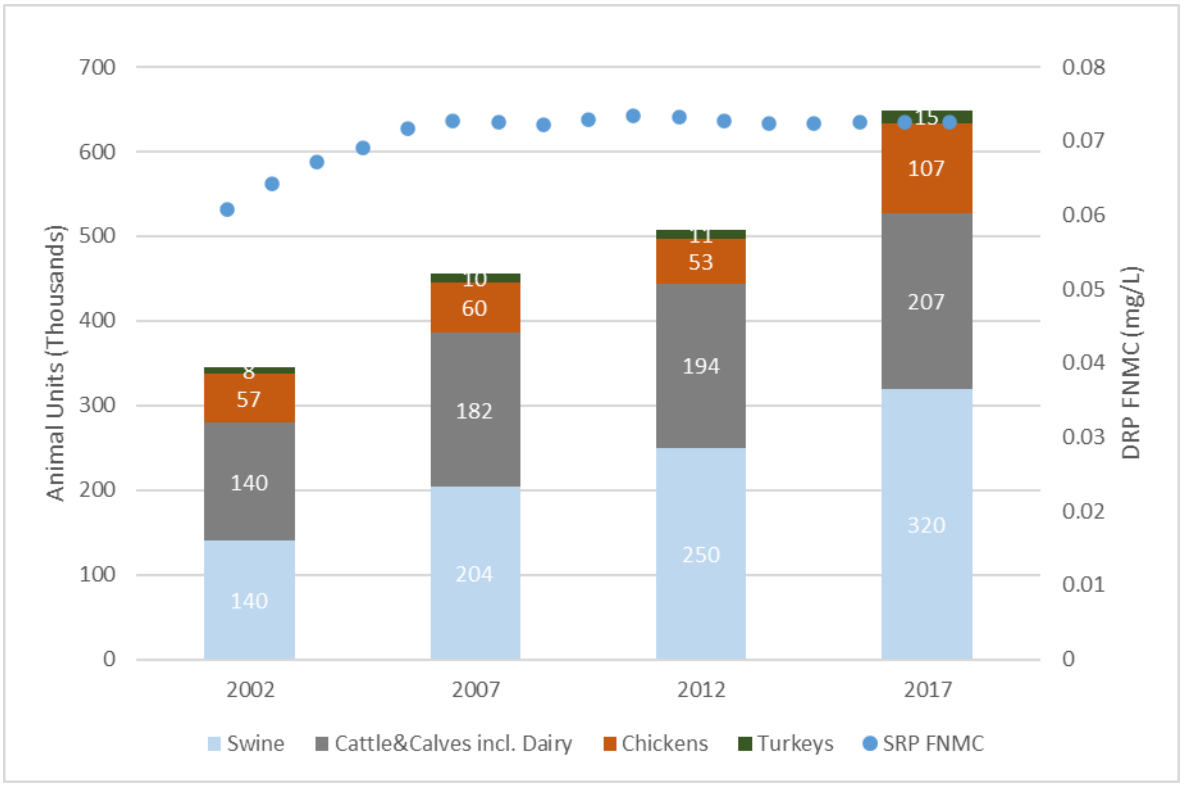

Figure 17 combines manure production estimates with commercial fertilizer sales and crop production. Estimates tied to the most recent agricultural census show that most applied nutrients in the Maumee Watershed in Ohio are from commercial fertilizer sources. Literature evaluated in Section 4.1.1.1 shows that manure and commercial fertilizer have similar impacts on edge-of-field and watershed loads. It also

shows that sufficient agronomic demand exists to assimilate more manure in the watershed by displacing imported commercial fertilizer.

4) Animal units are underestimated because growth has occurred since 2017.

Ohio EPA worked with ODA to develop livestock population estimates using the most reliable data available from the U.S. Department of Agriculture's 2017 Census of Agriculture. Other data sources, such as the National Agricultural Statistics Service annual report, were considered; however, the livestock numbers were unavailable at the county level. The agencies also shared data with the Environmental Working Group that helped develop estimates using aerial imagery; however, this work effort yielded similar results to the estimates using the Census data and will not be routinely completed in the future.

The evaluation in Section 4.1.1.1 of the TMDL report indicated that the livestock in the Maumee watershed did not generate manure phosphorus exceeding what would be used by crops. Growth since 2017 is expected but not predictable based on historical trends. For example, the construction of one large facility for egg-laying contributed to most of the growth in chickens between 2012 and 2017. No comparable facility has been constructed since then. Ohio EPA will continue to work with ODA to track these trends as the TMDL is implemented.

5) Manure phosphorus is underestimated by using ODA-DLEP and Grand Lake St. Marys data.

Different options for estimating manure phosphorus contributions were considered. Ultimately, the data from actual manure samples from ODA-DLEP and Grand Lake St. Marys were used for the estimates. The Midwest Plan Service and Ruddy information are both developed from assumed manure phosphorus based on theoretical animal diets. This was because actual animal diets have changed since these estimates were developed. This has been especially prevalent in the swine industry, which represents approximately half of the animal units in the Maumee watershed. Swine diets can be modified to reduce phosphorus using formulations that better match requirements, highly digestible feeds, phytase, selected enzymes, growth promotants, and phased feeding (NRCS, 2020[3]). Using actual data allows the estimates to best reflect these trends without relying on assumptions about animal diets.

A commenter asked for clarification about Figure 17 – Harvest-removed phosphorus pentoxide (P_2O_5) combined P_2O_5 from commercial fertilizers and manure for 2007, 2012, and 2017.

Figure 17 is presented in metric tons of P_2O_5. Appendix Table A3.5 shows the calculated phosphorus produced by Maumee Watershed manure, which presents values in metric tons of phosphorus (i.e., as P). That table has been updated to also present the metric tons of P_2O_5.

A commenter suggested that a 'functional equivalency' test should be used to determine if a CAFO/CAFF production or land application area results in a discharge.

The detailed comment refers to the Supreme Court of the United States opinion in County of Maui, Hawaii v. Hawaii Wildlife Fund,[4] which addressed instances in which discharges to groundwater subsequently discharged to a water of the United States and could be subject to the NPDES permitting program. This opinion was delivered on April 23, 2020, and U.S. EPA subsequently issued guidance in

[3] directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=45705.wba
[4] supremecourt.gov/opinions/19pdf/18-260_jifl.pdf

January 2021, which was then rescinded in September 2021.[5] To date, U.S. EPA has not developed specific guidance that proposes a different approach to evaluating permitting requirements for CAFOs in light of the opinion in County of Maui, Hawaii v. Hawaii Wildlife Fund.

If future evaluations of CAFOs identify a scenario where a 'functional equivalent' of a point source discharge occurs through groundwater under the rigors required by the court in the Maui decision, that new information may require revisions to the TMDL. However, those instances may also be addressed by revising the BMPs required for CAFOs to eliminate the functionally equivalent discharges. Consider an example where a field tile is discharging pollutants from a leaking lagoon, and a determination was made that this discharge was functionally equivalent to a direct discharge. In this case, a BMP that eliminates the field tile or improves the lagoons liner could eliminate the discharge; thus, the TMDL would not need to be modified. In other cases, TMDL revisions would be necessary. For example, consider a scenario where a functional equivalency determination found that all or part of the discharge from a land application area was a point source and not exempt agricultural stormwater. If BMPs were not identified that could eliminate the discharge, then the TMDL's WLAs would need to be modified to reflect a shift in loading from the load allocation to the WLA. These facilities would then be obligated to obtain NPDES permit coverage.

Comments Related to Allocations

Several commenters shared information that reflected the need to update WLAs or add clarifying language. Based on this information, several updates were made to the WLAs from the draft allocations.

1) The village of Swanton was included in the GP2 group (facilities ≥1.0 million gallons per day [MGD] but <10.0 MGD). This determination was based on a design flow of 2.5 MGD. This value reflected the wet weather flow for the facility rather than the average daily design flow of 0.92 MGD. The TMDL's assumptions were based on average daily design flows rather than wet weather conditions. The facility's individual WLA was updated to reflect the average daily design flow. This amount of design flow meets the expectations for GP3 (facilities ≥0.5 MGD but <1.0 MGD), which therefore shifts Swanton into the GP3 group. That group's WLAs are calculated based on meeting a long-term average concentration of 0.73 milligrams per liter (mg/L) at the facilities' average daily design flow.
2) The city of Wapakoneta is undergoing a facility expansion that was authorized in 2022. This upgrade was not reflected in the individual WLA for the TMDL. Based on this expansion, the average daily design flow used to calculate the Wapakoneta wastewater treatment plant's (WWTP's) WLA was updated from 4.0 to 6.0 MGD. The facility remains in the GP2 group.
3) The Allen County Shawnee #2 WWTP was authorized to increase the average daily design flow from 2.0 to 3.0 MGD. This increase in design flow was used to update the facility's individual WLA. The facility remains in the GP2 group.

[5] epa.gov/system/files/documents/2021-09/maui-rescission-memo_final-09.15.2021.pdf

4) The Elida WWTP was authorized to increase the average daily design flow from 0.5 to 0.8 MGD. This increase in design flow was used to update this facility's individual WLA. The facility remains in the GP3 group.

5) The Lima Refining Company shared comments on the description of the existing discharge and requested that the not-daily nature of the discharge be reflected in the expression of the daily mass loading limits. Additional language/clarification was added to Section 5.3.1.1, and a footnote was added to Table A4.1. This update did not affect the facility's WLA.

The cumulative result of these changes is that the calculated total phosphorus concentration that applies to the GP2 group WLA is slightly reduced. The concentration used for the allocations in the draft TMDL report was 0.44 mg/L, which is the target concentration necessary to regularly comply with a monthly average limit of 0.60 mg/L. These changes reduce the GP2 WLA concentration to 0.43 mg/L, which is the target concentration necessary to regularly comply with a monthly average limit of 0.59 mg/L. The loads for GP2 were reallocated instead of the calculated allowance for future growth being reduced.

Several commenters requested that the individual allocations for industrial stormwater be grouped with the general permit allocation.

Ohio EPA acknowledges that some facilities are granted individual permit coverage instead of multisector general permit coverage not because they were ineligible but to realize administrative efficiencies when they also have individual permits for nonstormwater discharges. The individual permits contain the same requirements as the general permit, and the assumptions associated with the baseline and allocated condition are equivalent. Because of the common assumptions, the individual allocations for industrial stormwater were combined with the bulk allocation for the multisector general permit.

A commenter shared concerns about regulated stormwater in municipal separate storm sewer system (MS4) areas. Questions focused on the methodology used to develop baseline loads and apply a 20 percent reduction for the WLA.

The assumptions associated with the baseline conditions for stormwater and how those loads integrate with other sources are described in Section 5.2 of the TMDL report. After reviewing the literature, the section concludes that stormwater from developed areas yields half as much phosphorus as agricultural lands. The general emphasis of research has not been on stormwater in the region. Ohio EPA has limited regional data on which to base these assumptions. The data were collected within a broader region with a similar climate instead of the Maumee watershed and the study durations were typically shorter than long-term edge-of-field monitoring. These limitations provide some uncertainty in the baseline estimates and, subsequently, the WLA. When evaluating the reductions from the baseline for the MS4 WLA, Ohio EPA recognized other factors:

1) Although stormwater played a limited role in the overall load, each management decision to not require additional reductions from the 2008 baseline condition shifts the need to implement additional reductions from the WLA to the load allocation. The TMDL solidifies the commitment to seek most reductions from the load allocation and identifies opportunities to also make progress with Clean Water Act-regulated sources.

2) Local water quality and flooding-related challenges mean that many communities already engage in actions that provide opportunities to improve phosphorus management. The TMDL implementation plan (Section 7.3.1.1) identified 21 of 34 permittees under the MS4 general permit that were already required to implement additional phosphorus control practices to comply with that permit's conditions based on TMDLs for local waterbodies.

Ohio EPA determined that additional management of phosphorus by regulated stormwater communities is needed. However, because investments have targeted nonpoint source management and nonpoint sources make up most of the load, it was reasonable that the overall 40 percent reduction goal was not evenly applied across all sources. Ohio EPA determined that a 20 percent reduction from the baseline was appropriate when weighing these factors. Ohio EPA assumes that implementing the strategy in the existing MS4 permit will meet the allocations in the TMDL. The permit requires implementing BMPs rather than using numeric limits. Ohio EPA's approach emphasizes progress on phosphorus management (i.e., BMP implementation) instead of spending money on quantification and modeling. It ensures that regulated stormwater communities in the Maumee Watershed consider phosphorus management in their stormwater management plan. The MS4 permit includes several BMP options to provide flexibility to communities so that projects can complement other community needs.

In future permit cycles, Ohio EPA will engage with stakeholders to improve this strategy. Identifying BMPs that are more likely to improve DRP and not just sediment-bound phosphorus would be an adaptive management strategy for future permit cycles. If monitoring data or community-specific modeling becomes available, this would be new information that could be evaluated to determine if updates are needed for the TMDL.

A commenter asked questions about how the nonpoint source load allocation was calculated.

The nonpoint source load allocation is calculated as the remainder of TMDL loading capacity after the WLAs (which include some allowance for future growth) and the margin of safety loads are assigned. The nonpoint source load allocation is not calculated as the remainder of the *existing* loads after reserving the aforementioned allocations. The TMDL loading capacity uses the Annex 4 total phosphorus loading season target. That value roughly equates to a 40 percent reduction in load from the 2008 baseline. If the magnitude of all sources was assumed not to have changed since 2008, the margin of safety alone means that this allocation method requires the nonpoint source loads to reduce by more than 40 percent. Also, given the management decisions to allocate the different sources, the nonpoint source load allocation requires the greatest proportion of reduction of all the existing sources. This reflects that the greatest need and opportunity for phosphorus reduction is from nonpoint sources.

Several commenters proposed further subdividing the nonpoint source of the load allocation.

Ohio EPA made the management decision not to subdivide nonpoint source load allocations for several reasons. The primary reason for this decision is the uncertainty that would result from calculating the load contributions from the various nonpoint sources. In the case of the mass-balance model, uncertainty for suballocations is driven by inputs that do not differentiate these sources. Other modeling efforts considered for developing the TMDL would not fully overcome the barriers. These would introduce other types of uncertainty (see Section 3.5.2 for more discussion on model selection). These barriers are lessened when planning work occurs at the small watershed (12-digit hydrologic unit code, or HUC12 subwatersheds) and field scales. Here information improves at each step relative to the

source of phosphorus (commercial versus manure versus none), tillage system, crop rotation, tile age/intensity, and more.

Section 4 of the TMDL summarizes the various phosphorus sources by reviewing the robust body of literature. While the most significant sources are clearly known, the myriad models and studies vary greatly in the detailed accounting of these sources. This results in different proportions of the various sources, further supporting the need for flexibility moving forward. That section also documents how these sources have shifted over time and even within given years, most often due to local weather.

Allocating the nonpoint load as a single category also provides more flexibility; it allows for land use changes to occur that might shift the proportion of various nonpoint sources. More detailed allocations could easily assign too much load to some categories and not enough to others. Regardless of whether land use changes occur, the overall goal of a single nonpoint source load allocation supports the substantial need for reductions in the phosphorus load from all these nonpoint sources.

Beyond further categorization of the load allocation, a commenter also suggested the source assessment (Section 4) should not consider the transport mechanisms because it confounds an allocation to sources.

Nonpoint source phosphorus loads are an amalgamation of both phosphorus sources and associated transport mechanisms. This complex relationship between source management and transport is an important consideration for nonpoint source management. Many BMPs used to improve nonpoint source management do not seek to reduce the source but rather disrupt the transport mechanism. While there are opportunities for fertilizer source reductions where existing soils have adequate phosphorus for optimal crop growth, most agricultural soils require ongoing phosphorus applications. Here, the primary way to reduce phosphorus exports to streams is to disrupt transport mechanisms.

The most appropriate BMPs are best determined at the field scale. These considerations would evaluate available phosphorus sources (manure versus commercial) and site-specific risk factors (e.g., soil cracking potential and tillage system). The TMDL's source assessment found that many factors contribute to the current nonpoint source loads. Those include phosphorus already in agricultural soils (especially where values are high), changes in precipitation patterns, and changing tillage/conservation practices. This information helps explain what BMPs will work broadly at the watershed scale and the overall magnitude of implementation. These watershed scale analyses do not translate to prescriptions for sources at a smaller scale. Instead, they provide a vision that is implemented at smaller scales through other mechanisms, whether nine-element nonpoint source implementation strategies (NPS-IS) or field-scale planning by an agricultural producer.

Some commenters argued that more-explicit margin of safety (MOS) should be reserved. Others proposed that a less-explicit MOS is appropriate due to the conservative assumptions associated with the TMDL.

Section 5.5 documents the various options considered for the TMDL's MOS. It explains that many assumptions used by this project are considered implicit MOS. Implicit MOS factors do not outright reserve load. Rather, they are reasoned to have reduced uncertainty and/or nudged the calculations in a conservative/protective direction. The section then explains that, in addition to the implicit MOS factors, some explicit MOS was necessary. Various uncertainties, including some quantified in a model verification exercise, demonstrated that some explicit MOS was still needed. The explicit margin of

safety builds on the implicit assumptions to ensure that achieving the WLA and load allocation of the TMDL will lead to restoration of the recreation, drinking water, and aquatic life uses in the western basin of Lake Erie.

Several commenters proposed additional MOS to account for the uncertainty associated with only allocating total phosphorus and not the portion that is DRP.

Section 3.5.1 explains the considerations that led Ohio EPA to develop allocations specifically for total phosphorus. This does not diminish the importance of the dissolved reactive portion of total phosphorus, and it was considered throughout the report (as described in Section 2, above). DRP is monitored throughout the watershed. Additional implicit MOS is provided through measuring and tracking DRP in concert with implementation actions taken to meet the WLA and load allocation. Section 5.5 of the TMDL report was updated to reflect this component of the implicit MOS.

Several commenters suggested that an <u>allowance for future growth</u> for new or expanding livestock feeding operations was needed.

Section 5.6 explains that no current WLAs are given for CAFO/CAFF discharges, and no future discharges are expected from these operations consistent with the existing definitions and regulations. There is no allowance for future growth reserved to authorize discharges from CAFOs under NPDES permits.

Section 5.6 continues to explain that these facilities and all livestock contribute loads captured under the load allocation. Increases in CAFO/CAFF or other livestock operations could increase this sources' proportional contribution to the load allocation. Section 4.1.1.1 discusses increases in livestock populations in the Maumee Watershed since 2002. These increases occurred alongside other trends, including decreasing manure phosphorus concentrations (largely due to swine diet modifications), increasing crop yields, and declining commercial fertilizer sales. Soil and Water Assessment Tool (SWAT) modeling and the edge-of-field research reviewed in Section 4.1.1.1 has also shown that manure and commercial fertilizers have similar effects on phosphorus loads exported to streams from agricultural land. Figure 17 in the TMDL report shows that the combination of these factors has led to less phosphorus supplied by commercial phosphorus and manure than was removed by crops in 2012 and 2017. Further increases in CAFO/CAFF or other livestock operations is expected to increase the proportional role of manure fertilizer as a nonpoint source assuming that fertilizer continues to be applied at rates for optimal crop growth. Clarifying language has been added to Section 5.6 explaining the proportional role of livestock in the watershed and how growth is captured within the load allocation.

Existing management of both types of phosphorus fertilizer sources (manure and commercial) needs to be improved to meet the load allocation. Section 7.3.3.1 describes BMPs that are currently being targeted to manage nonpoint source phosphorus loads. Those BMPs target reductions for both commercial fertilizer and manure. Management may differ, but the goals for reducing the export of phosphorus loads do not. Therefore, the TMDL does not reserve loading to account for future increases in livestock populations. Section 7.3.5 explains how the agricultural phosphorus mass balance will be tracked as part of the plan to evaluate the progress of TMDL implementation. This information will be available to inform adaptive management as the implementation progresses.

Model Verification

A commenter evaluated the model verification developed in the TMDL report and suggested that the errors associated with upstream monitoring stations result in greater uncertainty in the load allocations and WLAs.

The nature of a mass-balance model limits the ability to carry out a traditional model verification exercise that tests the predictive ability. In the case of the empirical mass balance model used for this TMDL, the observed load is directly indexed to the point that would typically be used to evaluate the quality of a predictive model. This key point is the Waterville monitoring station. However, the relationship to the load and the upstream landscape is used to predict a small portion of the watershed loading that is downstream of Waterville. Because an abundance of monitoring data are collected at additional monitoring stations throughout the Maumee watershed, the loads from those locations can be used to evaluate the potential error in using the model to predict loads downstream of Waterville. Therefore, the overall goal of the model verification exercise in the TMDL report is to:

1) Understand error associated with using the mass-balance methods to estimate loads in the portions of the Maumee downstream of Waterville where load is not directly monitored.
2) Evaluate whether this TMDL's mass balance model, which accounts for variation in discharge and land use, improved those estimates compared to a less-sophisticated method of assuming equal contributions by area.

This verification also helps explain how the point and nonpoint source proportions of total phosphorus are accounted throughout the whole watershed. For example, watersheds like those of the Ottawa and Blanchard rivers have large point sources but have errors comparable to other monitoring locations without large point sources. The presence of higher point source loads did not increase the observed error in the model verification.

The model verification showed that accounting for land use and stream discharge variability improved the model estimates over the simpler drainage area weighting. It was also clear that while this improved the model estimates, there were still instances of under- and over-predictions of monitored loads. Several factors could be driving the remaining error associated with model predictions, including:

1) The verification was tabulated over a five-year period (2017–2022), but the stream discharge was indexed to a longer-term average (2002–2016). The shorter averaging period increases the impact of single, high-discharge years that were not evenly distributed across the watershed.
2) Other watershed characteristics are influencing watershed loadings. These include soil types, drainage practices, nutrient sources, and dominant agricultural practices.

While these factors drive error in model predictive ability, this does not describe error at the Waterville pour point where loads from all upstream watersheds are directly monitored. The model verification in the TMDL report explains that the averaged error that does exist justifies that some explicit MOS is needed to address the small area downstream of Waterville. Because there is no stream load monitoring in this portion of the watershed, the loadings used to base allocations are less certain.

The mass-balance error from the verification exercise is greater, both in the positive and negative directions, in some subwatersheds. The mass-balance method overpredicted the loads in the St. Joseph and Tiffin rivers and underpredicted the loads in the St. Marys and Auglaize rivers. This loading difference supports the findings presented in Section 4.2.5 regarding critical source areas. The northern subwatersheds appear to contribute relatively less phosphorus than the southern ones. The information from the verification and the various studies involving critical source areas is useful for targeting priority areas for pollution-reduction implementation practices. These areas have been a focal point for localized nonpoint source planning efforts. For example, Figure 54 in the report shows a high proportion of nine-element NPS-ISs in place in the St. Mary's watershed.

Implementation

Several commenters suggested implementation efforts that extended beyond the existing authority of Ohio's state agencies.

TMDLs cannot change existing regulations, nor are they self-implementing. Therefore, the TMDL implementation plan uses the existing approaches currently available in the Clean Water Act and associated regulations. Implementation efforts that extend beyond Ohio EPA's authority delegated under the Clean Water Act or other state agencies cannot be developed without enabling legislation. The implementation plan was developed to provide flexibility to implement changes through adaptive management if authorities change.

Several commenters asserted that voluntary actions for nonpoint sources included in the implementation plan have proven ineffective and will be insufficient to meet the goals of the TMDL.

The Clean Water Act specifically exempts agricultural stormwater and other nonpoint sources from regulation. However, state programs give state agencies the authority to regulate and manage nonpoint sources. Examples of policies that have expanded Ohio's state agencies' authority over nonpoint sources are discussed in Section 7.3.3.2 of the TMDL report and include:

1) ODA-DLEP oversight of CAFOs/CAFFs that do not require Clean Water Act permits
2) Certified Livestock Manager program
3) Agricultural fertilizer applicator certification
4) Restricting applications on frozen or snow-covered ground

While voluntary actions are the core of the nonpoint source implementation strategy, not all management actions are voluntary. Further, if changes to state agency authority happen in the future, they will be discussed in biennial reports and adapted into the implementation strategy.

A commenter shared concerns over the strategy to use wetlands to meet the goals of the TMDL and potential unintended consequences.

Additional discussion has been added to Section 2.2 of the TMDL report to discuss the historical landscape in the Maumee watershed. European settlement brought a dramatic transition to the watershed with the draining of the Great Black Swamp and the establishment of today's agriculture-dominated landscape. Today, this area is among the state's most productive agricultural regions. These products are important for society and the state's overall economy.

The drainage practices that converted the Maumee watershed for agriculture short-circuited many of the natural processes that slow the water flow and accumulate nutrients on the landscape. Restoring these functions can help mitigate phosphorus loads exported from the landscape. Identifying the key areas to restore these landscape functions has become an integral part of the restoration strategy for Lake Erie. These restoration efforts bring added benefits to area wildlife and hold water to help mitigate downstream flooding. Additional green spaces are also valued by communities and create new recreational opportunities.

Restoring wetlands to develop nutrient sinks and provide other benefits is the primary focal point for the Ohio Department of Natural Resources (ODNR) efforts in the H2Ohio program. From the outset, ODNR recognized that there might be unintended consequences associated with wetland restoration. To address this concern, ODNR partnered with the Lake Erie Aquatic Research Network (LEARN). LEARN scientists study H2Ohio wetland sites to evaluate nutrient removal efficacy and potential unintended consequences. ODNR will leverage this research to refine restoration techniques and improve the program moving forward.

A commenter asserted that Ohio EPA needs additional resources to help local water quality planners develop nine-element plans that have far-field targets.

Ohio EPA has approved several examples nine-element NPS-ISs with far-field targets. As these were established, Ohio EPA worked with local developers (or contractors) on how to do so. While these efforts did not yield a template, they serve as strong examples. Please consider the following:

1) Eightmile Creek (04100004 02 02) – This plan was developed by the Mercer County Soil and Water Conservation District: epa.ohio.gov/static/Portals/35/nps/EightmileCreek-StMarysRiver_Ver1.0_2-10-2022.pdf

2) Brush Creek (04100006 05 02) – This plan was prepared for the Fulton County Soil and Water Conservation District by Civil and Environmental Consultants, Inc., and include outputs from the Agricultural Conservation Framework to develop critical areas: epa.ohio.gov/static/Portals/35/nps/Approved%209-Element%20Plans/BrushCreek_FultonCo_Ver1.1_1-19-2021.pdf

Ohio EPA takes other steps to initiate local plan development, including seeking funding for local groups to use contractor support to develop plans. Section 7.2 describes the funding secured to develop or revise 26 nine-element NPS-ISs over the next two years. Ohio EPA will continue to seek opportunities to bring technical support to local organizations that want to facilitate local planning efforts. For local organizations interested in developing nine-element NPS-ISs, please see this page for useful tools: epa.ohio.gov/divisions-and-offices/surface-water/guides-manuals/9-element-nps-is-tools. For questions or additional information, refer to Nonpoint Source Program staff contact information on Ohio EPA's website: epa.ohio.gov/divisions-and-offices/surface-water/about/dsw-contacts.

Several commenters suggested that milestones included in the report needed to be more specific. The milestones proposed in the draft TMDL report were developed consistent with Ohio's state agencies' authority and the resources available. Because TMDLs cannot change existing regulations and are not self-implementing, Ohio EPA must work within these constraints to develop the milestones. A commenter noted that the milestones depend heavily on funds available through H2Ohio, which does not currently have long-term funding. This funding uncertainty is recognized in the milestones by having

only an interim goal for the first biennial report in 2024. The current biennium (2022–2023) represented the second time the state budget included the H2Ohio program. During this time, the agricultural community has shown remarkable interest in the program; nearly 1 million acres are enrolled in the Maumee Watershed project area, and nearly 600,000 additional acres are enrolled in the remaining Western Lake Erie Basin counties. As the biennium comes to a close, data will be available to evaluate the program's footprint and progress made. The first biennial report will provide this information.

At the time the draft report was issued, the proposed budget for the 2024–2025 biennium was not yet released. While Ohio's legislature has not yet approved that budget, the proposed budget continues funding for the H2Ohio program. ODA plans to maintain priorities for the Maumee Watershed and the western basin of Lake Erie through the next biennium. Future efforts with the program will be contingent on the final approved budget. With the current budget proposal in mind, ODA has identified an aspirational goal to increase the footprint of the H2Ohio program—and similar federally funded programs—from approximately one-third of row crop acres to one-half of Maumee watershed acres. This aspirational goal was added to Section 7.2 of the TMDL report as a milestone associated with the 2026 biennial report.

The TMDL report also provides an aspirational goal to complete planning efforts and increase the footprint of agricultural BMPs to levels needed to meet the goals of the TMDL by 2032. This goal gives Ohio's state agencies a planning frame to evaluate resource needs for programs. Initial enrollment in H2Ohio and ODA's goal to increase that footprint over the next biennium shows that tools like the H2Ohio program are following that trajectory. Other local, state, and federal initiatives are also making progress toward those goals. Addressing the HABs that are impairing the uses of the western basin of Lake Erie will require a sustained commitment. The milestones in the TMDL report track progress toward the goals while recognizing the existing authorities and timeframes associated with existing programs. As additional biennial reports are developed, short-term milestones will continue to be identified as programs and/or policies evolve.

Several commenters and organizations shared general support for the proposal to develop a general permit to implement the WLA for the largest point source treatment facilities in the watershed. There were several comments that were critical of certain aspects of the proposed point source implementation strategy. These comments are captured below:

1) **Several commenters suggested that it was not necessary to target point source reductions <u>at this time</u>.**

   Ohio EPA generally agrees with this comment, as the point source community as a whole is performing at a higher level than their individual NPDES permits currently require. The strategy laid out in the TMDL does not target reductions at this time. However, it does propose a strategy to manage load from wastewater treatment facilities at the level under which they currently operate (the 2008 loading that was used for the WLA has not been exceeded in the last five years). The use of a general permit will allow for added flexibility to meet the WLA. However, Ohio EPA maintains that actions are needed to ensure that this level of loading is sustained. The TMDL implementation plan includes a strategy to improve technology as wastewater treatment facilities are undergoing capital investments—at a time when infrastructure upgrades can be done at a marginal cost compared to an unplanned capital upgrade.

2) **Several commenters suggested that the concept of new, expanding, or upgrading biological treatment facilities with an average daily design flow equal to or greater than 1 MGD receiving a monthly average concentration limit of 0.5 mg/L in their individual NPDES permit should either be eliminated or considered on a case-by-case basis.**

Improving technology at the right time serves two important roles for the long-term success of TMDL implementation. First, it will ensure that as communities make investments, they use technology that will meet individual WLAs. This will ensure the community is not subject to future noncompliance if the grouped WLA is exceeded in the proposed general permit. Second, for communities that have an individual WLA greater than the equivalent of 0.37 mg/L concentration (the target concentration necessary to regularly comply with a monthly average limit of 0.5 mg/L), the lower concentration will allow for additional load for future growth.

As proposed, Ohio EPA believes there is substantial capacity to make case-by-case considerations before a facility gets lower monthly average concentration limits included in their individual permit. This could consist of added permitting flexibilities such as integrated planning and water quality trading. Evaluating individual circumstances as facilities plan for the future would yield as many different plans as there are individual facilities, as nearly every facility has some unique challenges and/or opportunities. Additional details have been added to the report to reflect those opportunities for flexibility. The first detail added is a consideration of circumstances around a facility upgrade that would trigger the need to use technology that can meet a 0.5 mg/L monthly average effluent limit in individual permits. Ohio EPA understands that the baseline for each facility will require unique and site-specific considerations. With that in mind, a few theoretical cases are presented to provide additional information describing the intent of this portion of the implementation strategy.

New and expanding facilities: These facilities will add more load to the system, which will need to be justified against a limited allowance for future growth. As these facilities are built or retrofitted, additional technology will be required. The facilities will need to incorporate all secondary and potentially tertiary treatment capabilities needed to meet individual monthly limits of 0.5 mg/L.

An existing facility replaces equipment and/or control systems in existing secondary tankage: Ohio EPA would not view this as an "upgrade" that would change the expectations of the secondary treatment process for nutrient removal.

An existing facility is replaced on an existing site: In this circumstance, Ohio EPA would expect the new design to incorporate secondary treatment capabilities consistent with achieving a 0.5 mg/L limit.

Additional considerations for tertiary filtration: In addition to the considerations above, Ohio EPA will consider site-specific flexibilities where designs require secondary treatment upgrades and tertiary filters.

Tetra Tech's cost analysis (Appendix 6) shows that more than 50% of the capital and annual operation and maintenance (O&M) costs associated with the technology in the evaluation are related to the addition of cloth media filtration. The evaluation also recognizes this is a conservative assumption because cloth media filtration is not always necessary to meet a

monthly average limit of 0.5 mg/L. Also, some facilities already include a tertiary filtration process (e.g., a facility with hard-to-settle solids may use tertiary filtration to meet suspended solids limits). This indicates two situations where the marginal cost that was included in the evaluation may not be realized.

Ohio EPA will also consider flexibility for investments made for implementing tertiary filters if they are initially identified as necessary for a design. Because many facilities can meet the limits without the tertiary filters, future evaluations could be performed to determine if the additional investment is necessary. Timing for the implementation of tertiary filtration would require consideration of ongoing compliance with the proposed general permit and whether the facility is meeting its individual WLA if the grouped WLA is violated.

The need for tertiary filtration will require facility-specific consideration that will include detailed engineering analysis. Ohio EPA will work with facilities to ensure these investments are necessary, identify funding opportunities, and maximize flexibility to minimize the impact on ratepayers.

Additional consideration for facilities with tiered discharge rates to accommodate wet weather flows: A commenter shared an example of how the Tetra Tech cost evaluation would be inaccurate because it didn't consider the flow that must be treated to meet obligations under long-term control plans. Different technologies considered by Tetra Tech in Appendix E would be affected by this scenario in different ways. For example, if a facility chose to use a second point of chemical addition, the O&M costs are the larger portion of the overall annualized costs. The higher O&M is due to the costs of purchasing the chemical. This cost would follow an actual annual O&M cost that reflects the actual discharge, which is closer to the average daily flow than higher wet weather flows. In another example, a facility might consider using biological removal technologies with a higher capital cost but lower long-term O&M costs. The capital costs reflect increased tankage and pumping needs and may be more impacted by higher flows caused by wet weather. The cost evaluation does not specify that a particular technology should be used. The challenge highlighted by the commenter identifies a circumstance that would weigh into evaluating what technology is most appropriate for their situation. Also, please see the above discussion on other considerations for tertiary filtration. There is also a potential scenario that tertiary filters may not need to be constructed to handle the full range of flows seen by treatment units designed solely to handle wet-weather-induced flows. That is, the tertiary treatment may only be required to treat the average daily design flow rates.

3) **Several commenters suggested that a water quality trading program should be developed by Ohio EPA.**

Ohio EPA already has water quality trading program rules (OAC 3745-5). However, these rules are currently written so that Ohio EPA must receive an application from an outside party for us to review and approve a program. The agency's main role is providing guidance and regulatory oversight and approvals. Ohio EPA remains open to the concept of a water quality trading program being developed specifically for the Maumee River Watershed, as it could provide additional flexibility to point sources. The advantages of such a program could be two-fold. First, it could provide an alternative pathway to compliance with individual WLAs (if needed). Second, it could provide additional capacity for growth for new or expanding facilities.

4) **Several commenters suggested that Ohio EPA should consider using integrated planning to provide flexibility when investments in phosphorus removal technology are made.**

   Integrated planning is a tool available to communities that allows them to address their highest-priority water quality needs first. It requires a detailed evaluation of the community itself and identification of any Clean Water Act requirements it may face. Compliance with TMDLs is one of those requirements and could be considered in an integrated plan developed by a community. If a community is interested in integrated planning, early engagement and extensive collaboration with regulating agencies is encouraged.

Tracking Progress and Biennial Reports

Several commenters suggested data or metrics that should be included in the biennial report.

Ohio EPA appreciates the feedback on information that can be included in the biennial reports. This feedback will be considered as the agency develops the inaugural report and evaluates available data and metrics that can be used. These reports will not be static, and new ways to evaluate information will be considered for each iteration. This information is considered in the following discussion on the content and scope of the biennial report.

Several commenters asked for more detail about the content of biennial reports.

Ohio EPA will evaluate data and potential metrics that can be used to measure progress at different levels, represented in Figure 56 in the draft TMDL report. More information was added to Section 7.5 of the report based on the feedback and specific metrics that will measure key indicators of progress.

Several commenters asked if there would be an opportunity for public input/comment on biennial reports.

The commitment to develop biennial reports is an extra measure being taken by Ohio EPA to provide additional information as the Maumee watershed Nutrient TMDL is implemented. This proposed biennial progress report itself does not constitute a regulatory action of the agency. Thus, Ohio EPA does not plan to collect and respond formally to comments when biennial reports are published. The agency will continue to meet and discuss options for the reports as it has during the development of the TMDL. The agency will use this feedback to improve the reports and include new information as it is identified. Specific outreach events or meetings are an option if there is sufficient interest. The agency will seek opportunities to do so, especially where stakeholders are already engaging in other efforts. At this time, the following efforts have been identified:

1) The Ohio Lake Erie Commission is revising the state's Domestic Action Plan (DAP) for Nutrients in Lake Erie in 2023. Ohio EPA's director is a commission member, and the agency contributes to the DAP. Developing and implementing the TMDL are priorities of the DAP, and the two efforts share common goals. The planning and reporting forums for the DAP bring together many of the key stakeholders for implementing the Maumee watershed Nutrient TMDL. Ohio EPA will continue to use its role with the commission to engage with stakeholders in these forums.

2) Following the passing of House Bill 7 (HB 7) in 2020, the ODA hired watershed managers for seven regions in Ohio. The Maumee watershed is within this program's Region 1. As the watershed managers develop plans, they are actively engaging regional stakeholders. As an active stakeholder in developing these plans, Ohio EPA will use this venue to communicate TMDL priorities for the watershed plans.

3) Ohio EPA facilitates the development of nine-element nonpoint source implementation strategies for HUC12 subwatersheds. Developing these plans is a priority for TMDL implementation. The plans serve as a vehicle to link smaller watershed areas to the larger TMDL area and address other local water quality challenges. Developing these plans involves local stakeholders and outreach and provides another opportunity to use the biennial reports and receive feedback.

In summary, Ohio EPA's outreach focus for the biennial reports will be to work with the many endeavors that serve to implement the TMDL. These and other venues offer opportunities to hear from stakeholders, identify new information, and evaluate new opportunities to advance the goals of the Maumee Watershed Nutrient TMDL. These efforts also serve as opportunities to use the information from the biennial reports to adapt implementation strategies.

Although a formal comment period is not proposed on the biennial reports, Ohio EPA will reevaluate its TMDL priorities in Ohio's Integrated Report. This report has a comment period, and Ohio EPA responds to those comments before submitting the draft to U.S. EPA. If changes to the TMDL are required, Ohio EPA will include those in the Integrated Report.

A commenter asserted that there were additional needs for monitoring at mouth of Maumee/in the Maumee Bay.

Assessment to measure attainment of water quality goals is explained in Section 3.3 of the TMDL report and completely documented in the biannual Ohio Integrated Water Quality Monitoring and Assessment Report.[6] These references explain that lake monitoring ultimately defines the success of the three beneficial uses this TMDL project addresses (e.g., satellite data of Lake Erie are used to assess the recreation beneficial use due to algae impacts). The nutrient/water quality monitoring of the Maumee River at the Waterville station, or anywhere else on the Maumee River, is not used to determine the attainment of Lake Erie's uses.

The Waterville station directly measures nutrient loads from approximately 95 percent of the watershed. The Annex 4 targets were developed to be applied at the Waterville station. Ohio's TMDL extrapolated those targets downstream to the mouth of the Maumee River, where it flows into the Maumee Bay, to include that small portion of the watershed.

Several technical challenges exist for monitoring nutrient loads in the Maumee River downstream of the Waterville station. This area experiences lake backwater conditions, including regular flow reversals. Traditional streamflow monitoring with regular water samples collected will not work in this section of the river. Technology exists that would facilitate monitoring for loads in this zone; however, variable

[6] https://epa.ohio.gov/divisions-and-offices/surface-water/reports-data/ohio-integrated-water-quality-monitoring-and-assessment-report

mixing with the bay waters has been observed[7] that would complicate the monitoring. These factors would introduce a substantial degree of uncertainty to the results. For these reasons, Ohio does not support monitoring to calculate loads downstream of the Waterville station in the Maumee River.

Maumee River monitoring at the Waterville station helps inform how the lake's ecological systems will respond by demonstrating how much and when pollutants are being delivered. The Waterville station also provides a useful point to target needed nutrient reductions. While phosphorus loads are not directly measured downstream of Waterville, data are available to track progress for this portion of the watershed, including monitoring from permitted discharges (e.g., WWTPs, combined sewer overflows [CSOs] and permitted stormwater), tracking implementation actions, and assessing Maumee River tributaries in this zone.

Further, Ohio EPA and other parties regularly collect ambient nutrient concentrations in the lake-impacted zone of the Maumee River and in the Maumee Bay. These monitoring data are regularly used for bay/lake assessments, models, and other special studies. To the extent this information was available at the time, it was used to develop the Annex 4 load targets recommendations.

A similar sentiment in the last paragraph applies to the subject of the prohibition of open-water disposal of lakebed dredge material. Dredge management and an understanding of internal phosphorus loading were factors considered when the Annex 4 team evaluated the necessary reductions to manage HABs in the western basin of Lake Erie. The nutrient reduction emphasis was placed on watershed loads from the Maumee River. Additional improvements through better dredge management were not used to offset loading reductions needed for the watershed. Because this additional action is expected to improve phosphorus management in Lake Erie, it provides a level of conservatism to the TMDL. If this lake management change were to prompt Annex 4 to change or update its recommendations to address HABs, it would cause Ohio EPA to make changes to this TMDL.

Reasonable Assurances

Commenters noted that the Reasonable Assurances chapter summarizes past and ongoing efforts to reduce phosphorus in the basin but expressed concern that these efforts may not reach the goal. Several commenters also asserted that the nonpoint source implementation plan is just a continuation of the same efforts that have been unsuccessful to date.

While the TMDL itself does not bring new resources, implementation activities are accelerating. State legislation has also brought additional state resources to address HABs in the western basin of Lake Erie. These include funding more staff for local soil and water conservation districts (State Bill 299), regional planning efforts (HB 7), and significant funding for the H2Ohio Program.

[7] Baker, D.B., Ewing, D.E., Johnson, L.T., Kramer, J.W., Merryfield B.J, Confesor, R., Richards, R.P., Roerdink, A.A. 2014. *Lagrangian Analysis of the Transport and Processing of Agricultural Runoff in the Lower Maumee River and Maumee Bay*. J. Great Lakes Res. 40: 479-495 (2014).

While targeted efforts have been underway for some time, efforts have been amplified in the last several years. It will take time to see stream water quality and HABs respond to past and ongoing endeavors. It will also take time to facilitate change across 2.3 million acres of agricultural land in Ohio's portion of the Maumee watershed.

Commenters noted that reasonable assurance needs to be demonstrated for both point and nonpoint sources. Additionally, commenters suggested adding information on existing regulatory controls and procedures applicable to CAFFs.

Ohio EPA appreciated the comments and included some suggested revisions to Section 8. Language was added to specify that point sources are included, and a subsection (8.4.7) was added to detail existing permitting actions for regulated sources and enforcement mechanisms for prohibited discharges. Ohio EPA notes that a list of permitted CAFFs in Ohio's portion of the Maumee watershed is included in the TMDL report in Appendix 3. Reference to this information was added in Section 8.4.7.

Commenters requested more details on tracking implementation activities to demonstrate that load allocations will be achieved and documented.

Ohio EPA provided additional details in Section 7.5 of the Maumee Watershed Nutrient TMDL report to evaluate progress, and this information was summarized and referenced in Chapter 8 (Reasonable Assurances). Moreover, Ohio EPA enlisted a contractor to evaluate information on tracking implementation activities from various programs (see Appendix 8).

Other Comments

U.S. EPA provided a detailed review of the TMDL document while it was on public notice. They provided many comments and suggested language that Ohio EPA considered when revisions to the TMDL report.

Ohio EPA appreciates U.S. EPA's guidance and comments shared throughout Ohio's TMDL development process. U.S. EPA's detailed comments highlighted very specific instances in the draft report that needed additional explanation or other revisions. Many of these changes were made in the final report. A summary of the revisions follows:

1) U.S. EPA recommended adding more details to explain how the impairments were determined, especially aquatic life. U.S. EPA recommended using language based on Ohio's integrated report. Following the review of the comment and suggested language, Ohio EPA has added language to sections 3.3.1 and 3.3.3 of the TMDL report.
2) U.S. EPA recommended that further explanation/clarification be added to the report about how the TMDL for loads from the Maumee watershed will allow the western basin of Lake Erie to meet water quality standards and how contributions for other tributaries were considered. Considering U.S. EPA's suggestions, and after further discussion with U.S. EPA staff, Ohio EPA amended Section 3.4 to give more explanation/clarification.
3) U.S. EPA recommended adding clarifying language about how the recreation use targets would result in attaining water quality standards for the public water supply. Clarifying language was added to Section 3.4.2.

4) U.S. EPA recommended further describing atmospheric deposition considerations and provided some suggested language/resources. Following a review of the comment and suggested language, Ohio EPA added language to Section 4.1.1.6. of the TMDL report.

5) U.S. EPA recommended additional language considering the potential impacts of climate change. Following a review of the comment and suggested language, Ohio EPA added language to Section 4.1.1.7 of the TMDL report.

6) U.S. EPA commented on areas where WLAs were not assigned to certain sources. Ohio EPA used this type of language in two instances. The first instance was when estimating a specific load for a source that was expected to be orders of magnitude smaller than the sources that are accounted for explicitly and included in the implementation strategy. Here limited data were available to calculate loading from these sources, and those estimates would have been functionally zero compared to other sources. Ohio EPA understands that, in practice, this is interpreted as WLA = 0 by U.S. EPA. If new information becomes available for these sources or other implementation actions are needed, Ohio EPA would need to update the TMDL following all appropriate state and federal procedures. The other instance is the case for prohibited discharges like sanitary sewer overflows and nonagricultural stormwater discharges from CAFOs. A WLA is not assigned in this case because the implementation strategy requires actions that eliminate the discharge. To improve clarity, references to sources that do or do not receive WLAs were removed from Section 4. Section 4's primary purpose was to explain the different sources of phosphorus in the watershed, not articulate the allocation strategy. Ohio EPA added clarifying language in Section 5 to articulate the meaning of a source not receiving a WLA.

7) U.S. EPA recommended that Ohio EPA update information in Section 4.2.3 from the 2020 Nutrient Mass Balance study because the 2022 study was published after the draft report was developed. The information presented in Section 4.2.3 is from a special analysis included in Ohio EPA's 2020 Nutrient Mass Balance Report. That analysis was not repeated in the 2022 edition of Ohio's Nutrient Mass Balance report; therefore, no updates are needed in the TMDL report. Ohio EPA did not repeat that analysis in the updated Nutrient Mass Balance report because of the more detailed analysis developed for this TMDL report, presented in Section 4.2.5. The newer analysis includes the same monitoring stations' data that were used for the 2020 Nutrient Mass Balance, with new stations added. The TMDL's analysis does not differentiate the discharging point sources from nonpoint sources of total phosphorus like the 2020 Nutrient Mass Balance effort did. However, the overall proportions of these source groups are not expected to have changed. The TMDL's analysis includes a discussion of WWTPs influencing some tributary monitoring stations' total phosphorus and DRP concentrations.

8) U.S. EPA recommended that the allowance for future growth in tables A4.1 and A4.2 be added to tables 26 and 27 of the draft TMDL report. When reviewing these comments Ohio EPA added the allowance for future growth to Table 26 which expresses the overall allocations and removed it from other instances in Appendix 4.

9) U.S. EPA recommended adding a footnote to Table 23 indicating which facilities have WLAs in TMDLs approved by the U.S. EPA. This footnote was added; it includes a reference to Appendix 5, which summarizes previously approved TMDLs.

10) U.S. EPA recommended greater discussion of long-term control plans, the CSO Control Policy, and suggested new language explaining that CSOs are overseen through another mechanism. Language was added to the report to describe these mechanisms and how they informed the TMDL's allocations.

11) U.S. EPA noted that in Section 7.2.1, Ohio EPA used the term "compliance" relative to the plan to develop a permit consistent with the WLA and assumptions in the TMDL. The note explains that compliance is a term specific to permitting in the context of the Clean Water Act. The language has been updated to read "consistent with" to clarify this distinction.