

State of Ohio's DRAFT

Domestic Action Plan



In accordance with the Great Lakes Water Quality Agreement



Cover Photo: 2016 Life on Lake Erie Photo Contest

Rich McBride: Driftwood

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Introduction

Ohio's Domestic Action Plan (DAP) will advance efforts toward the proposed 40% nutrient reduction target put forth in the Great Lakes Water Quality Agreement of 2012 (GLWQA). On June 13, 2015, the governors of Ohio and Michigan, and the premier of Ontario committed to a goal of reducing phosphorus loadings to Lake Erie by 40 percent through the signing of the Western Basin of Lake Erie Collaborative Agreement (Collaborative). The Collaborative was intended to serve as the precursor to Ohio's DAP. Ohio's DAP will expand on the Collaborative implementation initiatives and will also include the Central Basin as well as the Western Basin of Lake Erie.

Goals of the Ohio Domestic Action Plan

- Achieve a 40 percent total spring load reduction in the amount of total and dissolved reactive phosphorus entering Lake Erie's western basin by the year 2025 with an aspirational goal of a 20 percent reduction by 2020¹. This goal applies to priority tributary watersheds to the Western Basin of Lake Erie in Ohio as identified by the Objectives and Targets Task Team of the Annex 4 Subcommittee under the GLWQA, which include the Maumee, Toussaint, and Portage Rivers. Ohio EPA will continue to develop a process to identify and recommend additional priorities within these watersheds at the HUC 12 level, with a focus on the Maumee River watershed.
- Achieve a 40 percent total annual load reduction in the amount of total phosphorus entering Lake Erie's central basin by the year 2025 with an aspirational goal of a 20 percent reduction by 2020. This goal applies to priority tributary watersheds to the Central Basins of Lake Erie in Ohio as identified by the Objectives and Targets Task Team of the Annex 4 Subcommittee under the GLWQA, which include the Sandusky, Huron, Vermilion, Cuyahoga, and Grand Rivers².
- To use 2008 as the base year from which progress will be measured.

The Domestic Action Plan is based on the following guiding principles:

- **Implementation** of point and nonpoint nutrient reduction practices.
- **Verification** of targeted practice implementation and effectiveness.
- **Documentation** of water quality changes resulting through the implementation of nutrient reduction practices.
- **Adaptability** to allow for the modification of programs, practices and policy as new information is obtained and changes occur.
- **Accountability** to ensure clear areas of responsibilities and that the commitment is made and kept toward achieving the goals.

The Domestic Action Plan was developed with input through meetings and conversations with various stakeholder groups and state agencies. The initial draft was then made available for additional interest group and public comment.

¹ Achieving a spring (March – July) Flow-Weighted Mean Concentration (FWMC) of .23 mg/l TP and .05 mg/l DRP and a target of 860 MT total phosphorus and 189 MT Dissolved Reactive Phosphorus in the Maumee River will achieve a 40 percent reduction from the base year of 2008.

² The spring load targets for the Maumee, Toussaint, and Portage Rivers will also serve to reduce phosphorus to the Central Basin of Lake Erie.

Central to the implementation of the Domestic Action Plan is the adaptive management process. This means the Domestic Action Plan is intended to convey an understanding that there will be changes in data, programs, and policy that will need to be reflected in the Domestic Action Plan going forward.

While the focus the Domestic Action Plan is to achieve nutrient reductions from the base year of 2008, at the same time we need to consider the potential impact of new sources of phosphorus coming into in the watershed and their relationship to the over-all net reduction of nutrients in relationship to the established goals.

How does the Domestic Action Plan fit in the context of Ohio's over-all efforts to address Harmful Algal Blooms in Lake Erie?

Ohio's long history of problems and solutions for nutrient enrichment and nuisance and/or harmful algal blooms in Lake Erie is laid out extensively in the Ohio Lake Erie Phosphorus Task Force I and II reports. To summarize, after a lengthy but successful fight to reduce previously high nutrient levels in Lake Erie, algal blooms had abated in the 1980s. However, in the mid-1990s, toxin-producing blue-green algal blooms began to appear in the western basin of Lake Erie. A particularly massive bloom occurred in 2003, and blooms of varying intensity have recurred most years since then.

The State of Ohio has been in the forefront of developing a response to the problems impacting Lake Erie. The Ohio Lake Erie Phosphorus Task Force I convened in January, 2007, in response to the increased harmful algal blooms in the early 2000s. Led by the Ohio Environmental Protection Agency (Ohio EPA), Ohio Department of Agriculture (ODA), Ohio Lake Erie Commission (OLEC) and Ohio Department of Natural Resources (ODNR), the Task Force included representatives from state and federal agencies, Lake Erie researchers, soil scientists, agricultural program representatives and wastewater treatment plant personnel and drew on the expertise of many other experts in a variety of disciplines.

The Task Force developed a variety of recommendations to address nutrient reductions, particularly to the western basin of Lake Erie. Recommendations were made for all the sources examined with a major focus on upland measures that influence agricultural practices. The report included a research agenda, which has served as a basis for directing millions of dollars of state and federal research funds.

In response to the findings of the Task Force, the State of Ohio directors of ODA, ODNR and Ohio EPA convened the Directors' Agricultural Nutrients and Water Quality Working Group on Aug. 25, 2011. The purpose of this group was to identify and implement, at the state level, those agricultural practice initiatives which would ultimately result in the reduction of harmful algal blooms developing in Ohio's inland lakes and Lake Erie, while at the same time continuing to assure that the region's agricultural base was not impaired by unintended consequences. As a guiding principle, the final report encouraged farmers to adopt nutrient application guidelines known as 4R Nutrient Stewardship (4R). The 4R concept promotes using the right fertilizer source, at the right rate, at the right time, with the right placement. It was believed that this approach would be in part effective in reducing phosphorus and nitrogen from impacting waterways across the state.

Starting in 2012, Ohio EPA, coordinating with ODA and ODNR, developed Ohio's Nutrient Reduction Strategy. This comprehensive framework to manage point and nonpoint sources of nutrients and reduce their impact on Ohio's surface waters was an outgrowth of Ohio's participation on the Mississippi River/Gulf of Mexico Watershed Nutrient (Hypoxia) Task Force. The strategy recommends regulatory initiatives and voluntary practices that can reduce point and nonpoint sources of nutrients throughout the state.

The Point Source and Urban Runoff work group of the Hypoxia Task Force recommended that Ohio develop a statewide nutrient mass balance that examines both point and nonpoint sources of nutrients to Ohio's watersheds. This is necessary to determine appropriate reductions for all sources and to enable cost-benefit assessments to determine the most environmentally effective and economically feasible mechanism for the state to reduce nutrient loading to watersheds. This effort is currently underway with watersheds in the Lake Erie watershed receiving a high priority for analysis. Results from the mass balance study will be integrated into the DAP.

Simultaneously with those efforts, Ohio EPA, OLEC, ODA and ODNR reconvened the Ohio Lake Erie Phosphorus Task Force as a Phase II effort. The Task Force II final report (2013) includes a detailed review of state and federal efforts, including research results from some of the initial studies recommended by the Task Force I. After hearing from numerous experts at several meetings, the Task Force II worked to develop a phosphorus target for Lake Erie's Western Basin.

Based on a comparison of discharge, total phosphorus loads and dissolved reactive phosphorus loads for the Maumee River for water year and spring (March-June) totals for 2000 through 2012, the Task Force II recommended an annual loading reduction of approximately 40 percent to significantly reduce or eliminate HABs in the Western Basin. The Task Force II also recommended an adaptive management approach that would allow annual reviews of progress and evaluation/modification of loading targets.

As the Task Force II was completing its final report, the GLWQA Nutrients Annex Subcommittee was beginning the process of revising the prior GLWQA nutrient loading goal for Lake Erie. Modeling showed that spring loading of phosphorus from the Maumee River is the determining factor. The Subcommittee determined that there should be a reduction of 40 percent in spring loads of both total and dissolved phosphorus from the Maumee River. A 40 percent reduction to the Maumee equates to a target spring load of 860 metric tons per year of total phosphorus and 186 metric tons per year of soluble reactive phosphorus under high spring discharge conditions. This goal is intended to limit the formation of harmful algal blooms in nine years out of 10, which allows for an occasional very wet year in which the goal would not be achievable. The proposed goal, drafted in February 2015, has been finalized with the development of state and province Domestic Action Plans due by 2018.

This recommended loading goal tracked very closely to the recommended value from the Task Force II. Therefore, the state decided to move forward with accepting the proposed goal in the Domestic Action Plan.

Major Sources of Phosphorus in Ohio

In 2016, the State of Ohio, Environmental Protection Agency conducted a nutrient mass balance study³ to evaluate major sources of phosphorus in select watersheds across the state, including the most significant four of the Annex 4 priority watersheds in Ohio (Maumee, Portage, Sandusky, and Cuyahoga).

The next edition of this study, required by state law to be completed by the end of 2018, will add the Huron watershed, which is also an Annex 4 priority watershed. The two remaining Annex 4 priority watersheds are the Vermilion River and the Grand River. These two tributaries have very small contributing loads (an order of magnitude less than the Maumee River load) and need further study to determine whether significant load reductions are feasible.

³ The following source discussion is extracted in part from the Nutrient Mass Balance Study. For more details and a complete set of figures, see document at http://epa.ohio.gov/Portals/35/documents/Final%20Nutrient%20Mass%20Balance%20Report_12_30_16pdf.pdf.

Sources of Phosphorus in the Maumee River Watershed

The Maumee River drains 6,568 sq. mi. in northwestern Ohio, southeastern Michigan and northeastern Indiana. Agricultural production dominates the watershed, which includes the fertile drained lands of the Great Black Swamp. There is a notable shift in land use as the river enters the Toledo metropolitan area downstream of Waterville. Downstream of this point, the proportion of agricultural production reduces from 79 percent to 49 percent whereas both high/low intensity development and natural lands increase in proportion.

Total P loads from the Maumee River were 2,295 metric tons per year (mta) in water year 2013 (October-September) and 2,062 mta for water year 2014. See Figure below for source breakdown by percentage. For more details and data for water year 2014, see the Nutrient Mass Balance Study document.

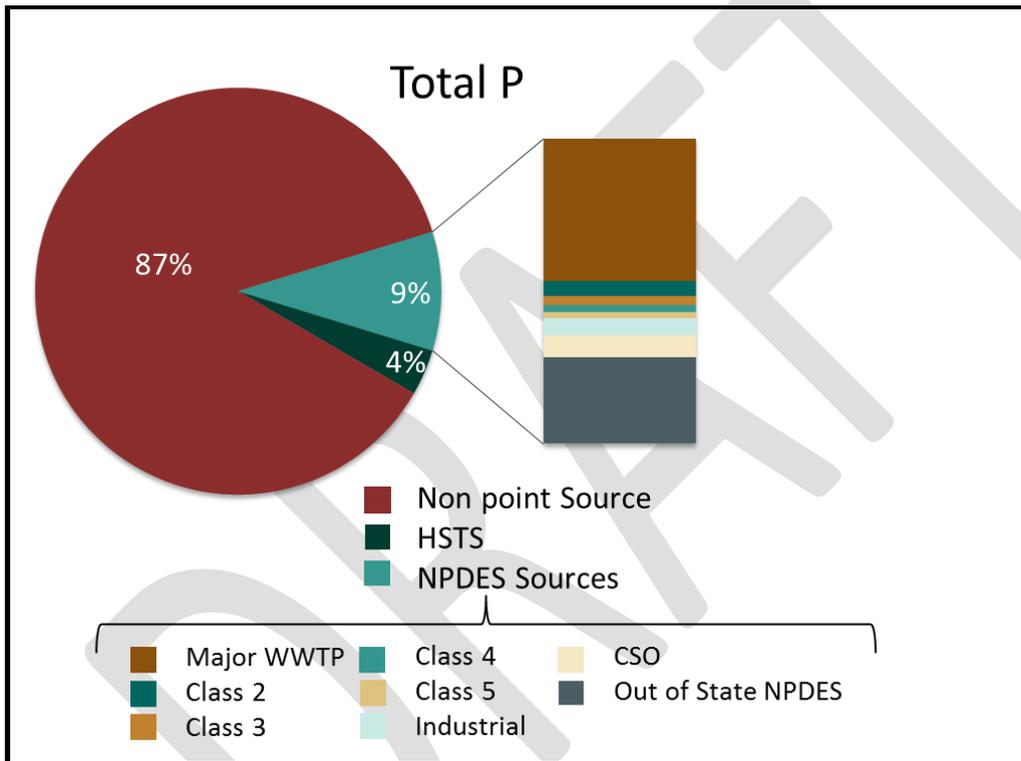


Figure: Total phosphorus source breakdown for Maumee River, water year 2013. From Nutrient Mass Balance Study 2016. See report for more details.

The nonpoint source is the largest proportion of the load in the Maumee River at 87 percent for total P. The permitted point sources (NPDES) comprised 9 percent of the total P. These sources are further broken down into source categories corresponding to plant type and size. The majority of the NPDES load (total P – 47 percent) is from major WWTPs. The second largest NPDES contribution is from out of state sources at 28 percent of the NPDES total P load. Home sewage treatment systems are the remaining 4 percent of the annual total phosphorus load.

Sources of Phosphorus in the Portage River Watershed

The Portage River drains 585 sq. mi. in northwest Ohio. Agricultural production dominates the landscape, with 81 percent of the total land area being dedicated to agricultural production. Natural

areas and low intensity development were similar to each other at 8.4 percent and 8.7 percent respectively.

Total P loads from the Portage River were 168 metric tons per year (mta) in water year 2013 and 219 mta for water year 2014.

The nonpoint source is the largest proportion of the load in the Portage River at 84 percent for total P. The permitted point sources (NPDES) comprised 11 percent of the total P. The single largest permitted point source load contributor is major WWTPs (total P – 34 percent). CSOs and class 2 WWTPs (0.5 – 1.0 mgd) are also large total P load contributors contributing 22 and 27 percent of the total NPDES loads, respectively. Home sewage treatment systems are the remaining 6 percent of the annual total P load.

Sources of Phosphorus in the Sandusky River Watershed

The Sandusky River drains 1,420 sq. mi. in north central Ohio. Agricultural production dominates, with 80 percent of the total land area. Natural areas are the second leading land use at 11 percent and the remainder are developed lands. The watershed is home to 220,000 people (120 people per square mile), making it the least densely populated of Ohio's major watersheds.

Total P loads from the Sandusky River were 711 metric tons per year (mta) in wy13 and 615 mta for wy14. The nonpoint source is the largest proportion of the load in the Sandusky River at 94 percent for total P. The NPDES sources comprised 4 percent of the total P loads. The single largest NPDES load contributor is from CSOs for total P, comprising 42 percent of the NPDES total P load. The major WWTPs contributed a similar amount of total P as the Class 2 facilities (0.5 – 1.0 mgd) for total P at 28 and 23 percent, respectively. Discharge limits for phosphorus are the reason that the major WWTPs are not the leading NPDES source. HSTS are the remaining 2 percent of the annual total P load.

Sources of Phosphorus in the Cuyahoga River Watershed

The Cuyahoga River drains 808 sq. mi. in northeast Ohio. Natural areas and low intensity development dominate the land use of the Cuyahoga watershed at 38 percent and 36 percent, respectively. Closer to the lake shore, there is a notable shift in land use with a reduction of natural and agricultural areas to largely low and high intensity development, 56 percent and 36 percent, respectively.

Total P loads from the Cuyahoga River were 327 metric tons per year (mta) in wy13 and 402 mta for wy14. The nonpoint source is the largest proportion of the total P load in the Cuyahoga River at 60 percent. The NPDES sources comprised 29 percent of the total P load. The single largest NPDES load contributor is from major WWTPs for total P comprising 56 percent of the total P load. CSOs were the second leading NPDES contributor at 40 percent of the NPDES total P load. HSTS are the remaining 11 percent of the annual total P load.

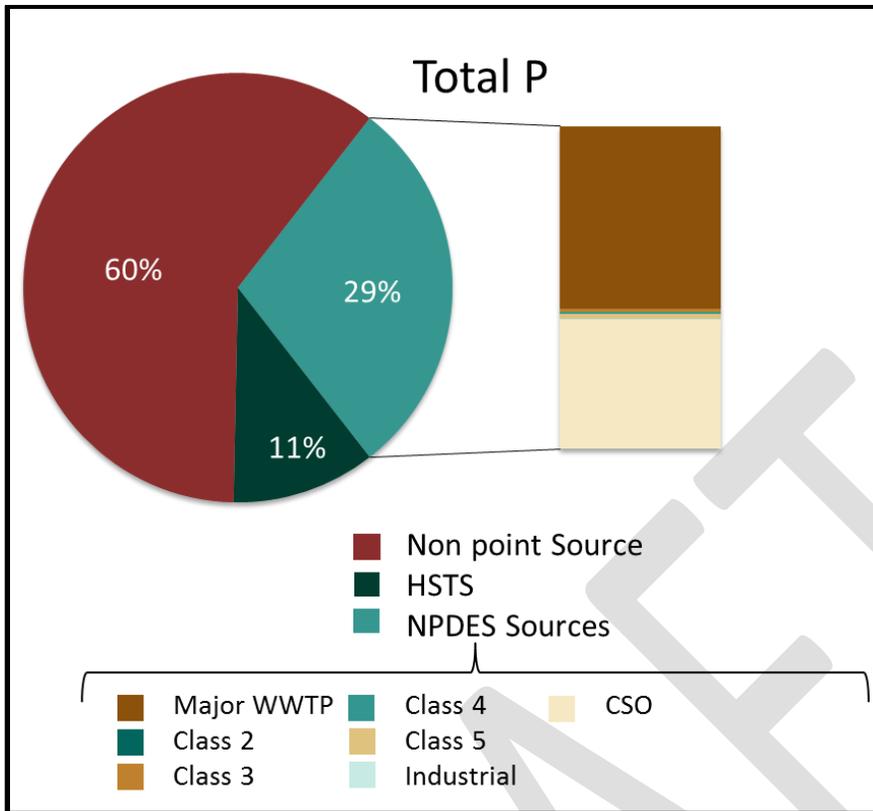


Figure: Total phosphorus source breakdown for Cuyahoga River, water year 2013. From Nutrient Mass Balance Study 2016. See report for more details.

State Agencies, Partners, and Related Areas of Responsibility

The Ohio Lake Erie Commission will serve as the coordinating entity working in conjunction with the various state agencies, federal agencies, and other partners to achieve the Domestic Action Plan goals. The Ohio Lake Erie Commission (OLEC) is comprised of the directors for six state agencies most directly involved in implementing this Domestic Action Plan and five public members. Through the Lake Erie Protection and Restoration Strategy, OLEC has identified Nutrient Reduction as a Priority Area for 2017. The Ohio Revised Code 1506.21 which was amended through Senate Bill 2 in 2017 provides the Commission authority to ensure the coordination of state and local policies and programs pertaining to Lake Erie with a priority on those identified in the Lake Erie Protection and Restoration Strategy.

The responsibility and accountability for ensuring implementation of programs and progress toward the agreed to goals will be with the various state agencies. Generally, the Ohio Department of Agriculture (ODA) has responsibility for agricultural nonpoint sources; Ohio EPA (OEPA) has responsibility for point source and water quality monitoring; Ohio Department of Natural Resources (ODNR) has responsibility for Coastal program coordination, habitat, and fisheries, and the Ohio Department of Health (ODH) has responsibility for household and small flow sewage treatment systems. Specific areas of responsibility and involvement are listed below for the primary state agencies and partners engaged in this initiative. This list may not be a total reflection of responsibilities and involvement and they may change over time.

In addition to coordinating agencies listed below, the Commission will coordinate with other parties from time-to-time on specific issues, such as monitoring and research. These parties may include other

universities, non-profit organizations, Indiana and Michigan state agencies, and international agencies such as Environment and Climate Change Canada, the Ontario Ministry of the Environment and Climate Change, and Ontario Ministry of Agriculture, Food, and Rural Affairs.

Ohio Department of Agriculture (ODA)

- Agricultural nonpoint program implementation
- Agriculture Fertilizer Applicator Certification Program
- CAFO permitting and regulatory oversight
- Certified Livestock Manager training and inspections
- Manure and Fertilizer Application (SB 1) enforcement
- Fertilizer sales records
- Watershed coordinator program administration
- Agricultural nonpoint BMP technical assistance and oversight
- Agricultural Pollution Abatement Program
- Ohio Runoff Risk Forecast website
- Conservation Reserve Enhancement Program implementation

Ohio Environmental Protection Agency (Ohio EPA)

- National Pollutant Discharge Elimination System (NPDES) permit approval and oversight
- Wastewater treatment technical and feasibility studies
- Storm water management program administration
- Water quality monitoring (watershed and Lake Erie)
- Combined Sewer Overflow permitting and oversight
- Environmental Infrastructure funding (wastewater, drinking water)
- 319 Grant, Surface Water Improvement Fund (SWIF), GLRI Fund administration
- Areas of Concern program administration
- Harmful Algal Bloom program administration
- Total Maximum Daily Load (TMDL) studies (See Appendix A for further discussion of TMDLs)
- Administer and enforce a program for the regulation of sewage sludge management

Ohio Department of Health (ODH)

- Establish Sewage Treatment System standards and oversight (local health districts)
- Bathing beach advisories and sample results posted on BeachGuard website
- Bathing Beach monitoring for Lake Erie beaches

Ohio Department of Natural Resources (ODNR)

- Private lands wildlife habitat management
- Posting of bathing beach advisories on state park beaches and boat ramps

- Lake Erie fisheries
- In-water beneficial reuse of dredge material
- In-water coastal wetland for habitat restoration and nutrient reduction

Ohio Lake Erie Commission (OLEC)

- Domestic Action Plan coordination
- Lake Erie Protection and Restoration Strategy coordination
- Issues grants from the Lake Erie Protection Fund

Natural Resource Conservation Service (NRCS)

- Farm Bill program financial and technical assistance for conservation planning and practice implementation.
- GLRI grants
- Co-Chair the WLEB Partnership with the U.S. Army Corps of Engineers
- Maintain Ohio Field Office Technical Guide conservation practices and standards

Farm Service Agency (FSA)

- Conservation Reserve Program administration
- Conservation Reserve Enhancement Program administration
- Farmable wetlands program administration

U.S. Environmental Protection Agency (U.S. EPA)

- Great Lakes Water Quality Agreement administration
- Total Maximum Daily Load review
- NPDES permit review
- Nine Element Watershed Plan oversight
- 319 funding and GRLI funding administration

US Geological Survey (USGS)

- Stream gauge operation and water quality monitoring

National Ocean and Atmospheric Agency (NOAA)

- Ohio Sea Grant
- Satellite imaging
- Coastal Resource Management

Heidelberg University National Center for Water Quality Research (NCWQR)

- Water quality monitoring and data analysis

Ohio Department of Higher Education

- Harmful Algal Bloom Research Initiative

The Ohio State University (OSU – Stone Lab)

- Water quality monitoring
- Data analysis
- Research coordination and summaries

The Ohio State University College of Food, Agriculture and Environmental Sciences

- Research on agricultural and production processes, practices and nutrient best management practices
- Educational programs and producer certification training through OSU Extension

University of Toledo (UT)

- Lake Erie water quality monitoring

Bowling Green State University

- Sandusky Bay water quality monitoring

Great Lakes Commission

- Eriestat

Stakeholder Groups providing input for the Domestic Action Plan

- Ohio Corn Growers
- Ohio Soybean Association
- Ohio Cattleman’s Association
- Ohio Pork Producers
- Ohio Agri-business Association
- Ohio Federation of Soil and Water Conservation Districts
- Ohio Association of Soil and Water Conservation District Employees
- Ohio Farm Bureau Federation
- The Nature Conservancy
- National Wildlife Federation
- Environmental Defense Fund
- Ohio Environmental Council
- Black Swamp Land Conservancy
- Alliance for the Great Lakes
- Pheasants Forever
- Ducks Unlimited
- Great Lakes – St. Lawrence Cities Initiative
- Toledo Metropolitan Area Council of Governments

- Ohio Charter Boat Captains Association
- County Commissioner Association of Ohio
- Lake Erie Foundation
- Stone Lab/Sea Grant
- The Ohio State University College of Agriculture, Food and Environment
- The Ohio State University – Stone Lab
- Ohio Sea Grant Program

Domestic Action Plan Actions

Action items are broken down into four categories. Agricultural Land Management includes actions to reduce nutrient export from nonpoint sources in lands used for agriculture. Community-Based Nutrient Reduction includes actions to reduce nutrients from urban and rural communities and publicly or privately owned permitted point sources. Restoration and Support of Ecosystem Services includes actions to protect and restore natural lands. Monitoring, Tracking, and Support includes other actions necessary to implement the Domestic Action Plan and track progress toward the GLWQA targets.

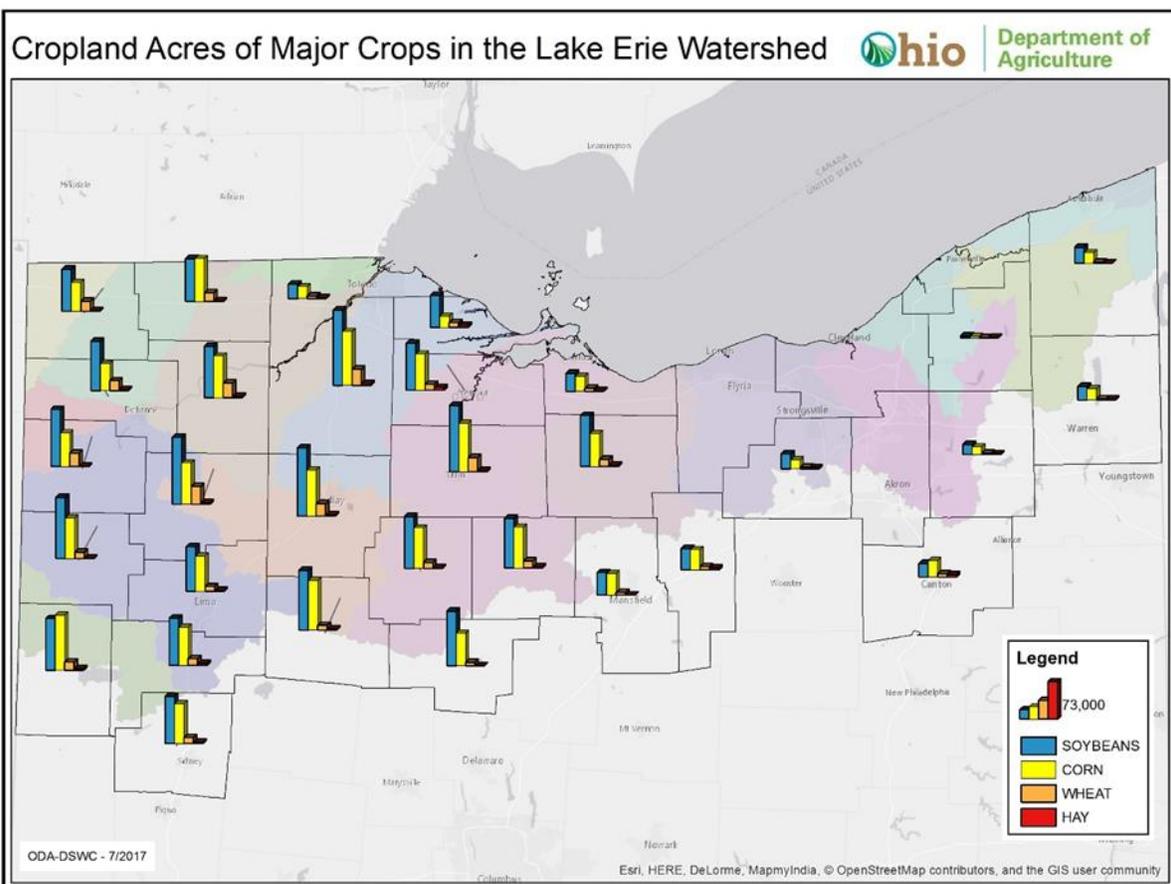
Agencies will evaluate these lists of action items to identify a priority order or significance hierarchy of actions in each area.

Additional actions to reduce nutrient loads may have been identified in specific areas served by Total Maximum Daily Load Implementation Plans. For discussion about this, see Appendix A.

Agricultural Land Management

Agriculture is the dominant land use in Ohio's portion of the Lake Erie basin. As described above, runoff from agricultural land is a major nonpoint source of nutrients to Lake Erie. In the Northwest Ohio HUC-8 watersheds (Auglaize, Blanchard, Cedar-Portage, Lower Maumee, Raisin, Sandusky, St. Joseph, St. Marys, Tiffin, Upper Maumee), row crop agriculture accounts for 65-80% of the land use (NASS, 2012). These watersheds were once the Great Black Swamp, and drainage is necessary for agricultural production. The intensity of row crop agriculture decreases from west to east across the northern part of Ohio. In Northeast Ohio, developed and forested land dominate the landscape. Within these watersheds (Ashtabula-Chagrin, Black-Rocky, Chautauqua-Conneaut, Cuyahoga, Grand, and Huron-Vermillion) agriculture only accounts for 11-57% of the land use (NASS, 2012).

Based on the 2012 NASS Agricultural Census there are approximately 20,700 farms within the Lake Erie basin, with over 14,000 located in the Western Lake Erie Basin (WLEB) watershed. Soybeans, corn, wheat and hay are the four dominant crops within the Lake Erie watershed. Soybeans and corn make up approximately 90 percent of the production, with over 50 and 39 percent of the acreage respectively. Wheat acres make up about 8 percent of the WLEB watershed, and hay accounts for another 2 percent (NASS, 2012). Comparatively, corn in the Cedar-Portage, Maumee, and Sandusky watershed counties cover approximately 1.55 million acres of the 1.85 million acres of corn grown in the whole Lake Erie watershed within Ohio.



There are sixty-five concentrated animal feeding facilities permitted within the Lake Erie watershed in Ohio. These operations are permitted through the Ohio Department of Agriculture - Division of Livestock Environmental Permitting (DLEP). Similar to the row crop agricultural production, permitted livestock facilities are concentrated in Northwest Ohio. Fifty-six of the concentrated animal feeding operations are in the western basin drainage. These permitted facilities must follow manure management plans and DLEP reviews manure application rates and records.

Because of the predominance of agricultural activity, especially in Ohio's portion of the watershed of the Western Basin of Lake Erie, actions to manage agricultural lands to reduce the export of phosphorus as both total and dissolved forms is of critical importance in meeting the targets set by Annex 4. Ohio's proposed actions for management of agricultural land include:

Ohio Department of Agriculture (ODA)

- 1) ODA will be engaged in the process with the USDA Agricultural Research Service, NRCS, and OSU to finalize and present results from edge-of-field monitoring and research, and to establish next steps in the continuation of this research.
- 2) ODA will be engaged in the progress of OSU and other state and federal agencies to complete potential revisions to the Tri-State Fertility Guide and the Phosphorus Index. This includes a

timeline for making recommendations to adjust the Index, such as variations to the Index pertaining to commercial fertilizer and manure.

- 3) ODA will continue the Ohio Clean Lake Initiative - Impaired Watershed Restoration Program through the Division of Soil and Water Conservation. This program aims to reduce phosphorus loading, including dissolved phosphorus loading, from agricultural landscapes to waters of western Lake Erie, the Maumee River and its tributaries. Specifically, this project will target four of the most impaired Watershed Assessment Units (WAU) in the Western Lake Erie Basin Watershed. A "systems approach" using a combination of management practices (soil testing, cover crops, drainage water management, fertilizer placement technology and manure storage structures and/or roofed feedlots) known to reduce nutrient loading will be targeted within portions of 10 counties in Ohio, of select sub-basins of the Maumee and Sandusky Rivers.
- 4) ODA will work with NRCS to establish a Western Lake Erie Basin Technical Advisory committee as a subcommittee to the State Technical Committee to provide technical assistance specific to nutrient management issues and agricultural practices in the basin.
- 5) ODA will coordinate with the United States Department of Agriculture Commodity Credit Corporation to strengthen and stimulate the Ohio Lake Erie Conservation Reserve Enhancement Program (LE-CREP) to achieve its 2004 goal of voluntarily establishing 67,000 acres of filter strips, riparian buffers, hardwood tree plantings, wildlife habitat and field windbreaks. Incentives will be prioritized based on targeted watersheds and on optimal placement and effectiveness of the riparian practices.
- 6) ODA will collaborate with the USDA – NRCS, the Ohio Federation of Soil and Water Conservation Districts, and other partners to identify a suite of agriculture nonpoint BMPs (for example, drainage water management, nutrient placement, soil testing and livestock waste management) to be promoted basin-wide but with a priority for placement in targeted watersheds. Additional funds will be sought to provide cost incentives for implementing these BMPs, and BMP implementation will be tracked at the HUC 12 level.
- 7) ODA will educate producers on the importance of following the fertilizer and manure application restrictions and fertilizer certification requirements in the WLEB. Implementation and enforcement of these restrictions will be a top priority for ODA and Ohio's SWCDs.
- 8) ODA will develop a Farm Stewardship Certification for farmers who protect farmland and natural resources by voluntarily implementing best management practices (BMPs) on their farms. Farmers that fully implement the 4Rs, including nutrient placement or nutrient application onto a living crop, will be eligible to receive this newly created certification. A farm level nutrient management plan (NMP) will provide verification that appropriate BMPs have been implemented and all aspects of the 4Rs are being utilized. Ohio's SWCDs will assist with the review and verification components of the NMP and will recommend farms deserving of the stewardship certification. Acres included in the NMPs and enrolled in the certification program will be tracked at the HUC 12 level.
- 9) ODA will identify existing programs and consider development of new programs to install practices that reduce or eliminate water quality impacts from agricultural drainage. This will include programs for the installation of drainage control structures and developing incentives for water detention/retention structures in the agricultural landscape.
- 10) ODA will work with NRCS to encourage the establishment of stream-line processes, sign-up periods, and application requirements for various federal and state funding and technical

assistance programs. This may include developing a “carve-out” of Farm Bill programs and processes specific to the multistate Lake Erie basin for a specified period.

- 11) ODA will work with NRCS and encourage an assessment of the scoring criteria for Farm Bill program eligibility to ensure that those farmers in most need of technical and financial assistance are receiving higher consideration for assistance.
- 12) ODA will establish a pilot program with Wood and Henry County SWCDs that will enable producers to voluntarily provide information on BMPs being implemented in select watersheds.
- 13) ODA has established and will maintain the Ohio Applicator Forecast website⁴. The Forecast is designed to help nutrient applicators identify times when the weather-risk for applying is low. The risk forecast is created by the National Weather Service and takes snow accumulation and melt, soil moisture content, and forecast precipitation and temperatures into account. The chances of surface runoff in the next 24 hours are displayed on the overview map of the state.

Ohio Environmental Protection Agency (Ohio EPA)

- 1) The Ohio Environmental Protection Agency, Ohio Department of Agriculture, and the Ohio Federation of Soil and Water Conservation Districts are developing a program jointly recognizing individuals and organizations that support sustainable agriculture and environmental stewardship by preventing nutrient loss and protecting water quality through the Stewardship Credit Recognition Program. Organizations could purchase credits from any participating water quality trading program.
- 2) Ohio EPA will continue to work with the Great Lakes Commission to determine the feasibility for the establishment of a cross boundary nutrient trading program for portions of the Lake Erie watershed.
- 3) Ohio EPA will continue work on establishing rules within the water quality standards rule 3745-01-04 that address the public health nuisance associated with the presence of manure in waters of the state.

Community-Based Nutrient Reduction

There are eight counties along the coast: Lucas, Ottawa, Sandusky, Erie, Lorain, Cuyahoga, Lake, and Ashtabula. According to the U.S. Census Bureau (2016 estimate), the combined population of Ohio’s coastal counties (Wood County included) was 2,490,123 people, amounting to nearly one-quarter of the state’s total population. There are 332 cities or villages and 403 townships in Ohio’s part of the watershed, with four prominent urban areas. From west to east, such populated areas include greater Toledo, the expansive Cleveland metropolitan region, greater Akron, and Youngstown. In addition to these major population centers, there are numerous county seat population centers. For example, in the southwestern portion of the watershed, Norwalk (Huron County), Fremont (Sandusky County), Tiffin (Seneca County) and Findlay (Hancock County).

Community-based sources of phosphorus include major wastewater treatment plants (WWTPs), industrial facilities, or minor publicly-owned treatment works (POTWs). There are a combined total of 913 permitted facility outfalls in the Annex 4 priority watersheds in Ohio, which discharged a combined

⁴ <http://www.agri.ohio.gov/divs/plant/OhioApplicatorForecast/oaf.aspx>

annual total of 304.8 metric tons for water year 2016 (Oct. 2015-Sept. 2016). The outfalls are distributed as indicated in the following table.

Table: Number of NPDES individual facility permits by Annex 4 Priority Watershed, with water year 2016 total phosphorus annual load from all permitted outfalls. This includes all facilities, public or private, that report discharge of total phosphorus. A detailed list of facilities is presented in Appendix C.

Watershed		Number of Permitted Outfalls	Total Phosphorus Load (MTA)
Annex 4 Priority Watersheds (State of Ohio)	Maumee	342	134.5
	Sandusky	104	11.1
	Portage	97	14.0
	Huron	44	2.65
	Vermillion	24	1.74
	Cuyahoga	200	135.4
	Grand	102	5.47
Annex 4 Priority Total		913	304.8
All others		584	172.0
Total		2410	476.8

In addition, some communities have storm water outfalls that are regulated, which include Combined Sewer Outfalls (CSOs) and individual or general storm water permits. Combined sewer overflows (CSOs) from urban storm water are the primary source of untreated sewage discharges to Lake Erie. In the Lake Erie basin, 62 communities have CSOs. Ohio EPA estimates that the six communities with the largest CSO volumes discharged an annual average CSO volume of approximately 10,600 million gallons per year (based on 2014-16 values). Because the amount and timing of storm water discharge varies tremendously from year to year and the phosphorus concentrations also vary, please see the Ohio EPA Nutrient Mass Balance Study, Appendix B for estimates of CSO loadings in selected Lake Erie tributaries for water years 2013 and 2014.

There are numerous communities with storm water permits in the Lake Erie watershed⁵. [\(more\)](#)

Estimates of the number, capacity, and failure/discharge rates of home sewage treatment systems were developed for the watersheds in the Nutrient Mass Balance Study. [\(more\)](#)

Every community in Ohio's Lake Erie watershed has a role to play in reducing nutrient loads. These actions outline opportunities for communities to participate in nutrient reduction that will improve conditions in local receiving streams as well as in Lake Erie downstream.

Ohio Environmental Protection Agency (Ohio EPA)

- 1) Ohio EPA has identified those top facilities in each of the Annex 4 priority watersheds in Ohio with an NPDES permit that report discharging phosphorus (Appendix C). Ohio EPA will evaluate those facilities that currently do not have a permit limit for total phosphorus to determine options on a facility by facility basis for reducing the phosphorus discharge level.

⁵Interactive map of permitted storm water communities is available at <http://oepa.maps.arcgis.com/apps/webappviewer/index.html?id=b680bd65d1874023ae6ec2f911acb841>

- 2) Ohio EPA has implemented the requirement of SB1 that all facilities discharging more than 1 MGD will include monitoring of both total phosphorus and ortho-phosphorus by Dec. 1, 2016 if this requirement does not currently exist. Data for ortho-phosphorus will be available at the end of water year 2017 (October). Five additional facilities will have new total phosphorus limits in their renewed permits (noted in the tables in Appendix C).
- 3) Ohio EPA will continue to refine the arrangement with Battelle and possibly other institutes to conduct an evaluation of processes, and product effectiveness for addressing nutrient and/or microcystin management, treatment and control with a focus on drinking and wastewater treatment.⁶
- 4) Ohio EPA in coordination with ODA has compared the various components of the Biosolid Land Application and Management Plan rules with those of the nutrient and manure management plans to ensure more consistency.⁷ Rule development is underway and is expected to be complete around the end of 2017.
- 5) Ohio EPA and ODA will coordinate with local entities in the development of Watershed Implementation Plans (WIPs)⁸ with a focus on priority watersheds that are not already covered by a WIP. The WIP ideally will meet the nine element watershed plan criteria established by U.S. EPA to meet expectations for providing reasonable assurance that nutrient reductions will be achieved and maintained and eliminate nutrient impairment for a particular stream. A WIP meeting the nine-element standard will also enable the county and others to apply for 319 grants and other state and federal funding even if an approved TMDL is not in place. Cost share from the state for the WIP will be sought through a re-allocation of existing dollars or new funding.
- 6) Ohio EPA will continue to focus State Revolving Loan Fund dollars and coordinate with other infrastructure funding programs to direct funding at Division of Surface Water priority CSO separation projects, wastewater treatment plant upgrades, storm water management and home sewage treatment systems.
- 7) Ohio EPA will propose legislation that will limit all treatment works discharging waste water containing phosphorus to achieve at least a monthly average effluent concentration of 1 mg/L phosphorus unless alternative limits or conditions are deemed appropriate by the Director.
- 8) Ohio EPA's stormwater management program working with ODA, local SWCDs and watershed groups will investigate opportunities to utilize storm water management in addressing hydrologic factors that influence nutrient loading into Lake Erie. Revisions to the Rain Water Manual⁹ may include increasing upland, channel or storm water storage, floodplain reconnection, and nutrient treatment. Implementation would be in conjunction with landowners and watershed managers on both headwater and larger watersheds basis.
- 9) Ohio EPA will continue to work with USEPA on establishing a recreational use standard and advisory protocol for microcystin for the open waters of Lake Erie.

⁶ The evaluation procedure is detailed at <http://epa.ohio.gov/Portals/35/hab/WQRiskSurvey.pdf>.

⁷ See

OAC Chapter 3745-40 Sewage Sludge Rules at http://epa.ohio.gov/dsw/rules/3745_40.aspx.

⁸ <http://www.epa.state.oh.us/dsw/nps/index.aspx#120845160-9-element-nps-is>

⁹ http://epa.ohio.gov/Portals/35/storm/technical_assistance/RLD_11-6-14All.pdf

- 10) Ohio EPA will evaluate the existing long term control plans for CSOs and the impacts on nutrient loading.
- 11) Ohio EPA will track the installation of point source nutrient reduction BMPs since 2008. Tracking will include all major NPDES permits with discharge limits, those required to complete a technical and feasibility study (SB1), CSO outfalls, and state or federal funded storm water management practices.

Ohio Department of Health (ODH)

- 1) ODH will continue to work with local health districts to ensure implementation of their Operation and Maintenance Tracking programs for sewage treatment systems as required in the Ohio Administrative Code, and provide options and resources for implementing operations and maintenance tracking including identification of failing sewage treatment systems within targeted watersheds¹⁰.
- 2) Upon identification of a failing system, local health districts will establish specific action plans and timeframes for correction of the nuisance conditions which may include repair, alteration or replacement of the sewage treatment system, or connection to public sewers, where available.
- 3) Local health districts will continue to work with state and local government agencies and local public sewage treatment providers to facilitate extension of sewers to areas of concentrated failing HSTS.

Restoration and Support of Ecosystem Services

Ecosystem services are the benefits people obtain from ecosystems. Protection and restoration of the natural ecosystems of the Lake Erie watershed provides low cost mechanisms for nutrient reduction among other benefits. Examples of key ecosystems include inland, stream side, and coastal wetlands.

Wetlands are areas that are wet at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas inland, along streams, and along the coast. Wetlands are an integral part of the Great Lakes ecosystem because they store water and act as reservoirs, reducing the risk of flooding. They also help to improve the quality of water by filtering sediment and nutrients.

Wetlands have not always been valued for these functions. The last couple of centuries have brought about a great decrease in the number and acreage of wetlands in Ohio. This loss has been caused by agricultural and urban development, water level fluctuations, shoreline stabilization, and changes in drainage patterns. In the 2006-2007 National Wetland Inventory, there were 47,323 individual wetlands identified in Ohio's Lake Erie watershed, totaling 289,447 acres. For comparison, the total acreage of the Lake Erie watershed is 7,455,360 acres.

Increasing the number and quality of wetlands in Ohio, with particular attention to the type and location, is part of the overall strategy for nutrient reduction and also provides other benefits such as wildlife habitat and beneficial reuse of dredged material.

¹⁰ <http://www.odh.ohio.gov/odhprograms/eh/sewage/STSpages/OMTrackingProg.aspx>

Ohio Department of Natural Resources (ODNR)

- 1) ODNR, in cooperation with Ohio EPA and OLEC, will continue to fund and complete engineering and design work for potential in-water coastal wetland restoration projects in the western basin that beneficially use dredged material and can help assimilate in-lake nutrients. Specifically, in-water coastal wetland restoration projects in the mouth of the Maumee River and Phase 1 projects as identified in the Sandusky Bay Initiative (see detailed project listing, timeline, and milestones in Appendix D).
- 2) ODNR and Ohio EPA will coordinate with the USACE and other Federal agencies to identify opportunities to restore coastal wetlands and natural shorelines that beneficially reuse dredge material along the entire Ohio Lake Erie coastline. This includes the identification of potential local partners and public-private partnerships to leverage state and federal resources.
- 3) ODNR will continue to coordinate with and assist the USFWS/NOAA Upper Midwest and Great Lakes Landscape Conservation Cooperative (LCC) Coastal Conservation Workgroup to develop and implement tools to identify potentially restorable wetlands for the western basin that incorporates Landscape Conservation Design (LCD) principles and goals, with a focus on restoring and conserving functional coastal wetlands that maximize coastal habitat, water retention, sediment trapping and nutrient processing/reduction benefits.
- 4) ODNR shall administer and implement two coastal wetland pilot demonstration projects recommended for GLRI funding by the LCC Coastal Conservation Workgroup that will reconnect existing degraded tributary and diked wetlands with Sandusky Bay resulting in restored nutrient processing functions and enhancing habitat connectivity with the Bay.
- 5) ODNR, in cooperation with Ohio Sea Grant, shall jointly fund projects to investigate and quantify nutrient processing and reduction benefits of coastal wetlands at Old Woman Creek NERR and as part of the Sandusky Bay Initiative.
- 6) ODNR through the Division of Wildlife will evaluate opportunities through their Private Lands program and joint state-federal programs to develop projects in the Lake Erie basin that provide a combination of long-term wildlife habitat along with water quality benefits such as riparian buffers and wetlands.

Ohio Lake Erie Commission (OLEC)

- 1) OLEC, in conjunction with the Department of Taxation, will evaluate the establishment of a pilot Statewide Conservation Land Tax which would serve as an incentive to landowners to place land which would also provide water quality benefits into long-term conservation programs. As part of this initiative, OLEC could fund through the Lake Erie Protection Fund a study to evaluate tax revenue implications to local governments and school districts, possible models such as the State Homestead Exemption program and acceptance by landowners and other stakeholders.
- 2) OLEC, Ohio EPA, ODA and ODNR will meet with the Maumee Conservancy District to evaluate their role related to the design, construction, funding and management of storm water management including water retention/detention options. More effectively managing surface and subsurface water would help to minimize “flashiness” of streams often resulting in short-term but higher nutrient loads. The conservancy district model may be a structure worth

evaluating as a way for implementation and funding large-scale water management issues in the WLEB.

Monitoring, Tracking, and Support

Monitoring Water Quality and Tracking Progress

Ohio Environmental Protection Agency (Ohio EPA)

- 1) Ohio EPA has established a comprehensive water quality monitoring network specific to tracking progress toward meeting the requirements of the Ohio's Domestic Action Plan and Annex 4 (Appendix E). Monitoring locations have been established at key subwatersheds and at the most practical location near the mouth of the direct primary tributaries to Lake Erie as specified in Appendix E. Ohio will coordinate these monitoring activities with other jurisdictions, particularly for the shared Maumee River watershed with Michigan and Indiana.
- 2) Ohio EPA, in cooperation with Heidelberg University's National Center for Water Quality Research and USGS, will continue to develop and implement a program to monitor and track water quality improvements resulting from nutrient reduction practices and BMPs. These correlations will be developed at the finest scale practical, whether it is edge of field, HUC12, or HUC10 level.
- 3) Ohio EPA will publish a Water Quality Target for each Annex 4 priority watershed and major western Lake Erie basin HUC 8 Maumee River subwatershed once the methodology is available. These targets will be used in assessing nutrient reduction progress toward the Domestic Action Plan targets. Work on an appropriate methodology, and the development of numeric spring load targets for the Tiffin River and St. Joseph River HUC 8 sub-basins of the Maumee River, is underway through a grant by USEPA to an outside contractor and is expected to be complete in April, 2018.
- 4) Ohio EPA will take a leadership role with member entities on the Annex 4 Monitoring Work Group (Ohio, Indiana, Michigan, and Ontario) to ensure a consistent sampling and lab testing protocol is in place and being followed. It is recommended that one common platform, such as the Great Lakes Commission's ErieStat program, be used to collect, share, and report on progress toward and verification of achieving the Great Lakes Water Quality Agreement and Domestic Action Plan goals.
- 5) Ohio EPA along with federal and university-based research partners will establish a western Lake Erie open water monitoring system to monitor the presence and amount of harmful algae and microcystin. This information will be used to track progress towards the Annex 4 Lake Ecosystem Objectives for Lake Erie, including reducing the size and toxicity of algal blooms in the lake to no larger than the 2008 bloom. This open water monitoring system will also provide a science based methodology for assessing use attainment for the open waters of Lake Erie.
- 6) Ohio EPA in conjunction with ODH will work with researchers to establish a methodology for identifying the potential source of nutrients that may be resulting from manure or human waste through DNA analysis.
- 7) Ohio EPA will coordinate with local authorities to conduct monitoring of nutrient discharge levels from priority combined sewer overflows. The purpose will be to evaluate the total nutrient load resulting from these periodic discharges to improve estimates for future versions of the Nutrient Mass Balance Study.

Ohio Lake Erie Commission (OLEC)

- 1) OLEC and member agencies will provide an annual update to the Ohio House and Senate Agriculture, Agriculture and Rural Development, Energy & Natural Resources committee as well as the Lake Erie Caucus on the state of the water quality in the Lake Erie watershed. These updates and status reports will be made available to the public on the OLEC website.

Tracking Funding and Practices

Ohio Lake Erie Commission (OLEC)

- 1) OLEC will coordinate with the member agencies and federal partners on the establishment of a nutrient reduction fiscal operations plan. This plan will serve as guide for identifying short-term and long-term funding needs and potential long-term funding sources including re-allocation as well as new local, state, and federal funding opportunities for nutrient reduction. Priority should be given to a consistent and possibly a dedicated funding source for water quality monitoring.
- 2) Significant dollars and other resources are made available annually from various federal, state, local and private sources to address the issues of Lake Erie. These funds include the Great Lakes Restoration Initiative Funds (GLRI), 319 Grants and other federal funding programs through United States Department of Agriculture (USDA), U.S. EPA, NOAA, United States Army Corps of Engineers (USACE), United States Fish and Wildlife Service (USFWS) and USGS. Several state agencies, ODNR, Ohio EPA, and ODA also have provided significant funding over the years to help address Lake Erie issues. While the combination of funds is significant and it is often easy to point to the resulting projects, there continues to be the need to ensure dollars are being directed to projects and programs that truly address coordinated or stated priority issues. OLEC will seek cooperation, request coordination and may review funding requests made to federal or state agencies from state agencies, government subdivisions, and organizations for funding related to Lake Erie or Lake Erie Basin projects. OLEC does not have the authority to approve or disapprove an application but will evaluate the funding request to confirm if the project is helping to achieve state or federal priorities related to the Lake Erie basin.
- 3) OLEC will establish methods for tracking the amount of all public funds, and when possible, private sources such as foundations that are expended in Ohio for nutrient reduction. It is recommended that fiscal tracking programs be utilized by all levels of government and by those entities receiving public funds, including Soil and Water Conservation Districts, Sewer and Water Districts, and Watershed Programs that can track dollars received and expended on nutrient reduction and to help document the potential need for funding to achieve the desired program objectives. This would not include identifying the individuals or private business entities receiving cost-share dollars through Farm Bill programs, or other programs where confidentiality of the recipient is protected by law.

Ohio Environmental Protection Agency (Ohio EPA)

- 1) Ohio EPA will continue to revisit and revise as necessary the Maumee sub-basin priority watersheds at the HUC 12 level (Appendix B). The establishment of these priority watersheds does not mean that nutrient reduction practices for both point source and non-point should not nor will not continue to be implemented throughout the western Lake Erie basin. Establishing Maumee sub-basin priority watersheds at the HUC12 level is intended to indicate those areas where it is believed that the most effective use of resources would potentially result in the

quickest reduction in nutrient impacts to water quality and be verified as a result of targeted water quality monitoring. Priority watersheds are initially based on the results of a recent report examining six water quality models (Scavia, 2016), nutrient monitoring data collected as part of the Ohio EPA Watershed Assessment Program, and agency staff best professional judgment specific knowledge of each watershed. These priority watersheds can be placed in groups based on characteristics that will affect specific nutrient sources and nutrient management practices. These groups are:

- a. The proportion of hydrologic soil group D (intense tillage and drainage)
- b. Soil slope (erosion)
- c. Livestock presence (nutrient source and timing)
- d. Various landscape characteristics

Further, within these priority watersheds other known nutrient sources exist. These would include NPDES permitted point sources (focus on those without total phosphorus limits) Biosolid Land Application Management Plans, and known unsewered communities with failing household sewage treatment systems. If these sources exist within a priority watershed they will be identified. Groundtruthing of various nutrient sources, updates to the maps produced by the multi-model research group (currently being led by OSU), implemented BMP's, and resulting water quality improvements will be used to confirm and if necessary adjust these Maumee sub-basin HUC12 priority watersheds as part of the adaptive management process.

Programmatic Support

Ohio Lake Erie Commission (OLEC)

- 1) OLEC will take the lead to ensure there is annual coordination between state and federal agencies for identifying priority programs, priority areas, and timelines related to Lake Erie and the Lake Erie Basin. Each OLEC members' state agency will coordinate with the OLEC staff to maximize opportunities for the coordination of state and federal priorities.
- 2) OLEC will establish the DAP Advisory Committee in late 2017 involving similar stakeholders as those involved in the Phosphorus Task Force initiatives which will meet once or twice per year. This Committee would provide input and evaluation to the Commission on the progress of implementation toward achieving the stated nutrient reduction goals.
- 3) OLEC will coordinate inter-agency engagement and recommendations for the up-coming Farm Bill as they relate to Lake Erie in addition to coordinating state recommendations to be submitted to the Great Lakes Commission for the development Farm Bill recommendation with a Great Lakes basin focus.
- 4) OLEC with its member agencies will coordinate the development of an Adaptive Management Process "trigger mechanism" which would cause a change of program, practice or policy if the goals are not reached or if no measurable progress is observed toward achieving the goals. Any trigger will be based on the best available science and engagement of interested parties and state agencies.

Major Benchmarks

Major benchmarks are the loading and concentration targets pinned to specific times.

Targets to Address HABs

Priority Tributary	Spring (March 1-July 31) Values				
	2008 Baseline			Targets under 40% Reduction by 2025	
	Discharge (km ³)	Load metric tons	FWMC mg/L	Load Metric tons	FWMC mg/L
Maumee River	3.76	1,414 TP 302 DRP	0.38 TP 0.08 DRP	860 TP 186 DRP	0.23 TP 0.05 DRP
Portage River	NA	NA	NA	TBD	TBD
Sandusky River	(TBD)*	(TBD)* (TBD)*	0.40 TP 0.07 DRP	230 TP 43 DRP	0.23 TP 0.05 DRP

* To be determined - data available, but the calculations for the seasonal values are not yet complete.

Baseline data are not available for the Portage River in 2008 due to gaps in the data set. The development of a spring loading and concentration target for the Portage River will be completed once the methodology to develop the Maumee River HUC 8 sub-basin targets is completed.

Targets to Address Hypoxia (Metric Tons Annually, MTA)

Priority Tributary	2008 Annual Load*	40% Reduction Amount	Target Load by 2025
Maumee River	3,812	1,525	2,287
Portage River	359	144	215
Sandusky River	1,100	440	660
Cuyahoga River	452	181	271

*Annual load estimates based on Maccoux, 2106 values.

The remaining three Annex 4 Priority Watersheds, the Toussaint, Vermilion, and Grand Rivers, are not included in this table because of their relatively small annual load totals (less than 150 MTA each). This represents less than 100 MTA of total reduction. Hence these watersheds, while important, are a lower priority for Ohio and will be considered for specific actions and load reductions at a later date.

How Progress Will Be Measured

It is the goal of the overall water quality monitoring strategy in Ohio to include monitoring data from edge of field, sub-watershed, Annex 4 priority watersheds, and Lake Erie in order to provide a total picture of nutrient sources and the nutrient delivery system. The primary indicator of progress will be

water quality monitoring and associated load calculations at the key downstream station on each of the Annex 4 priority watersheds in Ohio.

The State of Ohio is committed to working with the Annex 4 Subcommittee's Objectives and Targets Task Team as they develop further the Lake Erie Tributary Monitoring Strategy that will inform progress on the GLWQA Annex 4 targets.

Ohio is committed to working with USEPA to coordinate at the federal and state level to provide progress tracking information in a consistent, timely manner. That may include participation in the ErieStat online platform, annual webinars or other public forums, further publications of Ohio's Water Monitoring Fact Sheets, or other mutually agreed upon mechanisms.

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Appendix A

The Role of Maumee River Subwatershed TMDLs in meeting the Goals of the Domestic Action Plan

The Total Maximum Daily Load (TMDL) program, established under Section 303(d) of the Clean Water Act, focuses on identifying and restoring polluted rivers, streams, lakes and other surface waterbodies. TMDLs are prepared for waters identified as impaired on the 303(d) list in the Integrated Report which is provided by Ohio EPA to the U.S. EPA as a requirement of the Clean Water Act.

A TMDL is a written, quantitative assessment of water quality problems in a waterbody and contributing sources of pollution. It specifies the amount a pollutant needs to be reduced to meet water quality standards, allocates pollutant load reductions, and provides the basis for taking actions needed to restore a waterbody. Each TMDL report includes an implementation plan that lists these actions.

Watersheds are assessed on a rotating basis. The current schedule for reassessing each subwatershed of the Maumee is given in the most recent Integrated Report (also see table). The oldest assessment and approved TMDL is the one for the Upper Auglaize River, which was completed in 2004. This subwatershed is scheduled for an updated assessment in 2018.

There are six completed TMDLs for subwatersheds of the Maumee River and three in preparation. All the TMDLs contain phosphorus load allocations for some or all parts of the respective subwatershed, based on local impairments due to nutrient loading. As of the current publication of the Domestic Action Plan, these TMDLs have not factored in phosphorus load allocations based on proposed phosphorus targets for Lake Erie. However, the actions recommended to address local nutrient impairments will also aid in reducing the loading to the lake.

Ohio EPA is working with USEPA, their contractor (Tetrattech), Indiana and Michigan in the development of a methodology which describes the protocols for developing total phosphorus (TP) and soluble reactive phosphorus (SRP) load and concentration targets which meet the criteria and goals of Annex 4 lake targets for the St. Joseph and Tiffin river watersheds. The protocols described in the methodology will be flexible so that the methodology can be replicated in other subwatersheds of the Maumee River basin. After finalizing the methodology, the contractor is expected to use the procedures to calculate TP and SRP load and concentration targets for the St. Joseph and Tiffin river watersheds that do address the far field targets for Lake Erie.

In addition to actions recommended in the Domestic Action Plan, we incorporate the implementation plans from each TMDL for the Maumee, Portage, Toussaint, and Sandusky Rivers by reference (see list).

List of Maumee Basin TMDL documents

Total Maximum Daily Loads for the Upper Auglaize River Watershed Final Report. Ohio EPA Division of Surface Water. August 16, 2004.

Total Maximum Daily Loads for the Blanchard River Watershed Final Report. Ohio EPA Division of Surface Water. May 22, 2009.

Total Maximum Daily Loads for the Maumee River (lower) Tributaries and Lake Erie Tributaries Watershed Final Report. July 5, 2012. Tetra Tech Inc.

Total Maximum Daily Loads for the Ottawa River (Lima Area) Watershed Final Report. Ohio EPA Division of Surface Water. November 6, 2013.

Total Maximum Daily Loads for the Powell Creek Watershed Final Report. Ohio EPA Division of Surface Water. April 7, 2009.

Total Maximum Daily Loads for the Swan Creek Watershed Final Report. Ohio EPA Division of Surface Water. October 9, 2009.

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