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STATE OF MICHIGAN  
DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY  
LANSING



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VIA EMAIL

TO: Senate Appropriations Subcommittee on Natural Resources and  
Environment, Great Lakes, and Energy Members  
House Appropriations Subcommittee on Environment, Great Lakes,  
and Energy Members  
Kathryn Summers, Director, Senate Fiscal Agency  
Mary Ann Cleary, Director, House Fiscal Agency

FROM: Aaron B. Keatley, Chief Deputy Director 

DATE: November 9, 2022

SUBJECT: Report on the Status of the Implementation Plan for the Western Lake Erie Basin  
Collaborative Agreement for Fiscal Year 2022

In accordance with Section 410 of Article 4, Part 2, of 2022 PA 166, attached is the Department of Environment, Great Lakes, and Energy's (EGLE) report on the Status of the Implementation Plan for the Western Lake Erie Basin Collaborative Agreement for fiscal year 2022.

If you need further information, please contact Phil Argiroff, Assistant Director, Water Resources Division, at 517-290-3039 or ArgiroffP@Michigan.gov; or you may contact me at 517-512-5992.

Attachment

cc/att: Christopher M. Harkins, Director, State Budget Office  
Joe Fedewa, Legislative Affairs, Governor's Office  
Marc Rehmann, Policy Director, Governor's Office  
Chris Semrinec, Senate Fiscal Agency  
Austin Scott, House Fiscal Agency  
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MICHIGAN DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY

## Legislative Report

# STATUS OF THE IMPLEMENTATION PLAN FOR THE WESTERN LAKE ERIE BASIN COLLABORATIVE AGREEMENT

Report Period:  
Fiscal Year 2022

Authority:  
Section 410 of Article 4, Part 2, of 2022 PA 166

## Western Lake Erie Basin Collaborative Agreement Update

Lake Erie has nuisance and harmful algal blooms (HAB) in the western basin and dissolved oxygen depletion in the central basin. In June 2015 Governor Rick Snyder signed the Western Basin of Lake Erie Collaborative Agreement (Agreement) with the Premier of Ontario and the Lieutenant Governor of Ohio. The Agreement with Ohio and Ontario calls for a 40 percent reduction in phosphorus loading to the Western Lake Erie Basin (WLEB) by 2025. Each party was to develop an implementation plan to accomplish this. Michigan published its final implementation plan in January 2016 after considering public comments. The Michigan Departments of Environment, Great Lakes, and Energy (EGLE); Agriculture and Rural Development (MDARD); and Natural Resources (collectively, the Quality of Life [QOL] agencies) are working together, building on the Agreement implementation plans, in part, to develop and implement the Domestic Action Plan (DAP), which was called for under Annex 4 of the Great Lakes Water Quality Agreement. The DAP was finalized and submitted to the United States Environmental Protection Agency (USEPA) in February 2018.

In accordance with Executive Directive 2019-14 and within the framework of the DAP, the QOL agencies developed an Adaptive Management Plan (AMP) that was approved and released on December 17, 2021. The AMP serves as a companion document to the DAP and identifies additional steps needed to ensure that Michigan meets its specific DAP objectives. The AMP outlines a process that will allow managers to determine systematically whether activities are succeeding or failing by integrating structured decision-making into planning and implementation efforts and include enhanced monitoring and assessment initiatives into a deliberative adaptive management process and decision-making feedback loop over time.

Section 410 of Article 4, Part 2, of 2022 PA 166 requires EGLE to compile a report on the status of the implementation plan for the WLEB Agreement. To learn more about the presence and timing of HABs, the report shall contain all the following:

- a) An estimated cost of removal of total phosphorus (TP) per pound at four major wastewater treatment plants (WWTP).

The Great Lakes Water Authority (GLWA) Water Resources Recovery Facility (WRRF) (formerly the Detroit WWTP) estimates an annual expense of approximately \$1 million to reduce TP loads by 400 metric tons. This is equivalent to about \$1.13/pound. The TP reductions are continuing, and the GLWA WRRF typically discharges from its main outfall in the 0.2-0.4 milligram per liter (mg/l) TP concentration range (the new limit is 0.6 mg/l growing season average). The TP reductions at the GLWA WRRF are the primary cause for the TP reductions at the mouth of the Detroit River into the WLEB. EGLE continues to hold bimonthly calls with the GLWA (which now operates the Detroit WWTP) and the Detroit Water and Sewerage Department.

The cost of TP reductions being made at the Monroe Metro WWTP and Downriver WWTP are not yet available. The National Pollutant Discharge Elimination System (NPDES) permit for the Monroe Metro WWTP was issued in May 2016 with more stringent TP limits (0.6 mg/l growing season average) that are consistent with those for the GLWA WRRF and achieved those tighter limits by December 2021. Similarly, EGLE issued the NPDES permit for the Downriver WWTP in 2017 with the more stringent TP limits to be achieved by 2020 that are consistent with those specified in the GLWA WRRF

NPDES permit (i.e., a growing season average of 0.6 mg/l). The Downriver WWTP is required to achieve those tighter limits as well.

TP removal at the Ypsilanti Community Utilities Authority WWTP was implemented for protection of the lower Rouge River and prior to the Lake Erie TP load baseline year of 2008. As a result, costs of these control measures should not be attributed to the load reductions necessary to meet Lake Erie goals.

Starting in fiscal year 2023, EGLE will begin implementing a 0.5 mg/l TP limit in all major municipal NPDES permits in the WLEB Watershed.

b) A description of the grants that have been awarded.

The Delta Service Through Detroit Foundation received a \$308,167 grant from EGLE to implement a Detroit Urban Green Infrastructure project. This project will reduce impervious area and flows to the combined sewer system in the Baby Creek Sewer District (hydrologic unit code [HUC] 040900040407), increasing storm water infiltration and helping to reduce treated combined sewer overflows (CSO). The primary pollutant being addressed by this project is *E. coli* from CSO events with a secondary focus on sediment, nutrients, chlorides, and other nonpoint sources (NPS). The reduction of CSO events will positively impact designated use impairments of total and partial body contact recreation and will also help mitigate impairments to the warmwater fishery and indigenous aquatic life and wildlife designated uses. The minimal projected volume of untreated storm water runoff captured is 135,770 gallons during a 2.34-inch rainfall (2-year, 24-hour event), resulting in a storm water volume reduction of over 15,150 feet due to the removal of a minimum of about 5 acres of impervious pavement, and the implementation of bioretention/rain gardens at commercial/faith-based properties.

The Legacy Land Conservancy received a \$360,233 three-year grant from EGLE in 2019 to protect 4,750 linear feet of critical riparian property along the Upper River Raisin through the purchase of 5 permanent conservation easements. The grantee has committed to providing \$119,943 in local match.

The Lenawee Conservation District received a \$773,522 three-year grant from EGLE in 2019 to implement agricultural best management practices (BMP) to reduce nutrient loads from the River Raisin. The grantee has committed to providing \$542,641 in local match.

The Lenawee Conservation District received a \$936,607 grant from EGLE to address agricultural sources of nutrients in the Bean Creek Watershed. The implementation project will install BMPs on agricultural lands so that phosphorus loads from high-risk sources are significantly reduced. The primary goal is to reduce NPS nutrient loads to levels that achieve the Annex 4 phosphorus targets for the Maumee River and WLEB. A unique feature of this project is using a systems approach by controlling erosion and sedimentation, a nutrient management strategy using 25-50 percent phosphorus fertilizer on critical areas identified in the watershed management plan (WMP) field inventory and treating runoff and tile outlet water at the field edge. The grantee has committed to providing \$623,943 in local match.

EGLE partnered with MDARD and provided \$400,000 toward a grant to Michigan State University to study the effectiveness of drain water management practices in reducing nutrient loads, including dissolved reactive phosphorus (DRP), from tiled fields. The study is focused on quantifying reductions of nutrients, including DRP and TP, from drain water management control structures implemented at farms in the WLEB. The calibration phase of the study ended in 2020 as monitoring was completed at test and control fields with unmanaged drainage. Tile drainage is now being controlled at the test fields, and monitoring is being conducted at the test and control fields. MDARD is proposing to use some of the \$25 million funding appropriated by the Legislature for the WLEB to continue this project for another two years.

Michigan State University received a \$529,248 grant from EGLE to address phosphorus leaving fields through tile lines in the River Raisin Watershed. This project demonstrates novel, compact phosphorus filter CAPTURE system performance for adsorbing DRP from agricultural tile drainage at select farm locations in Bear Creek and the South Branch of the River Raisin Watershed. These efforts target the highest soluble phosphorus loading areas of this watershed discharging into the WLEB. Project activities include site-specific design applications for retrofitting drainage control structures and filter structures to existing tile outlets, deploying and monitoring performance for the system for 21 months. Additionally, system management will be explored, media regeneration for beneficial reuse studied, a techno-economic analysis conducted, and a site-selection criteria decision tool developed. Combined, these products will give confidence in the effectiveness, cost, and transferability of the filter system. The grantee has committed to providing \$230,222 in local match.

Michigan State University Extension received a \$199,836 grant from EGLE to address agricultural sources of nutrients from the Upper St. Joseph River. The Upper St. Joseph River of the Lake Erie watershed is located mainly within southern Hillsdale County but also crosses state lines into Ohio and Indiana. The major pollutant source targeted by this project is phosphorus from agricultural fields; however, nitrogen and sediment will also be affected. The project aims to reduce the phosphorus load by 20 percent. This project will support long-lasting changes in the St. Joseph River Watershed through establishing farmer-led education networks and providing cost-share in behavior-based practices. The grantee has committed to providing \$69,017 in local match.

The River Raisin Institute received a \$286,275 grant from EGLE to address agricultural sources of nutrients from the S.S. Lapointe Drain, a direct discharge to Lake Erie. The three-year grant was awarded in 2019 and will fund implementation of cover crops, filter strips, reduced tillage, drain water management, and nutrient management plans. The grantee has committed to providing \$110,855 in local match.

The River Raisin Watershed Council (RRWC) received a \$100,967 grant from EGLE to develop an Upper Wolf Creek WMP. The RRWC and its partners will develop a WMP that supports primary goals within the larger River Raisin watershed, including the attainment of water quality standards, achieving all designated uses, and protecting source water supply for the cities of Adrian, Blissfield, and Deerfield. The team will identify specific Critical Source Areas that are contributing to elevated *E. coli* bacteria, nutrients, and cyanobacteria blooms within Loch Erin and Lake Adrian via Wolf Creek. This could include, but is not limited to, leaking septic fields, farm runoff, storm water drainage pipes, and tile drains. This will help target future implementation efforts that will

save time and money and allow for better management outcomes. In addition, the team will develop a Geographic Information System story map to highlight the WMP project and assist with community outreach and involvement efforts. The grantee has committed to providing \$33,003 in local match.

The Southeast Michigan Council of Governments (SEMCOG), in partnership with EGLE, is receiving \$1 million from the USEPA to implement another phase of a regional project to address urban green storm water infrastructure. Local and county governments within SEMCOG's seven-county jurisdiction were eligible to apply to fund projects that address nutrient inputs from runoff to local rivers. Six communities were selected by SEMCOG's Regional Review Committee, which is comprised of local elected officials, and were awarded funding to complete projects by December 31, 2024.

The Washtenaw County Conservation District received a \$165,147 grant from EGLE to complete an Ottawa-Stony North WMP project. The Ottawa-Stony North WMP project will result in a nine-element approved WMP for an area of approximately 185,107 acres, most of which is classified as agriculture. This watershed discharges pollutants, such as *E. coli*, sediment, and phosphorus, directly into the WLEB. An agricultural inventory, water quality monitoring, Landscape Level Wetland Functional Assessment, and stakeholder focus groups will be conducted to gather information about current conditions of the project area. The WMP will also outline stakeholder-supported actions, agricultural inventories, and analysis of potential pollutant sources in the watershed. It will analyze the costs associated with reducing the pollutant loads and will outline how to best move forward with managing the watershed. The grantee has committed to providing \$47,296 in local match.

- c) A description of the work that has commenced on the issue of DRP, the expected objectives and outcomes of that work, and a list of the parties involved in that effort.

Developed Partnership Effort to Research DRP: EGLE partnered with MDARD and provided \$400,000 toward a grant to Michigan State University to study the effectiveness of drain water management practices in reducing nutrient loads, including DRP, from tiled fields. The study is focused on quantifying reductions of nutrients, including DRP and TP, from drain water management control structures implemented at farms in the WLEB. The calibration phase of the study ended in 2020 as monitoring was completed at test and control fields with unmanaged drainage. Tile drainage is now being controlled at the test fields, and monitoring is being conducted at the test and control fields. The research has been conducted for three years and is just now beginning to show results through a variety of yearly and seasonal weather patterns. MDARD is proposing to use some of the \$25 million funding appropriated by the Legislature for the WLEB to continue this project for another two years.

- d) A description of the efforts and outcomes aimed at the TP reduction for the River Raisin watershed.

Little to no progress has been achieved in reducing NPS nutrients to the WLEB from the River Raisin since 2008. Initial monitoring results appeared to indicate significant nutrient reduction in the downstream monitoring location of the River Raisin, but recent results have shown an increase in nutrient loading in the last few years. Those initial reductions may have been attributable to conservation practices within the River Raisin that were

removed, or they may have been attributable to lower stream flows and, thus, reduced loadings. EGLE is continuing to work with our federal partners, including the USEPA, United States Geological Survey, and National Oceanic and Atmospheric Administration, to better understand how flow and conservation practices impact nutrient loading from the River Raisin. As EGLE's understanding improves, a more definitive statement will be made regarding trends in loading from the River Raisin. Until that understanding is improved, all we can say is that the nutrient loadings from the River Raisin remain unchanged.

It is EGLE's opinion that the only way to achieve the NPS nutrient reduction goals for the WLEB will be through targeted BMP implementation. EGLE and MDARD will need to work together to develop the needed watershed planning to identify the highest priority locations for BMP implementation. Once these priorities have been identified, we must work with local stakeholders, such as the agricultural community, conservation districts, Michigan Farm Bureau, and environmental groups, to get the needed conservation practices in place. The QOL agencies are planning and implementing Agricultural Inventories for a list of high priority subwatersheds within the River Raisin Watershed and the Maumee River tributaries.

The NPS Agricultural Inventory Process utilizes a modeling component, a desktop analysis component, and a windshield inventory to collect specific data to locate and prioritize sites that have the potential to impact water quality. This data and prioritization of sites is one part of the watershed management planning process for a given watershed.

The Agricultural Conservation Planning Framework (ACPF), the modeling component of the process, is an ArcGIS compatible toolbox that utilizes high resolution LiDAR (light detection and ranging) data to identify slopes within a given farm field, overland flow paths within a watershed, and candidate locations for specific BMPs, such as grassed waterways.

The desktop analysis utilizes aerial photos and includes digitizing the entire HUC 12 watershed, which is necessary to run the ACPF tool and to complete components of the windshield inventory. The final component of the desktop analysis also uses the aerial photos to identify locations within the watershed that have land use activities that are causing visible impact to surface waters.

The final component is the windshield inventory, which includes driving the watershed and utilizing the digitized watershed boundaries to document what land use practices are being used that can be seen from the road. The land use practices documented include the type of crop being grown in fields, whether fall tillage occurs and the type of fall tillage, whether cover crops are planted after harvest, whether manure applications are observed, and the percentage of residue that is left on the field after spring planting. In addition, windshield inventories are used to confirm that BMPs, such as filter strips, that were identified during the desktop analysis are still in place and a visual inspection of livestock operations that were identified as a priority during the desktop analysis.

These inventories will provide a baseline condition and a prioritized list of BMPs that will bring about the best chance for NPS reduction within each priority HUC 12 watershed. The QOL agencies will then use this information to work with local stakeholders as

discussed above for implementation. Implementation will be tracked in a database that will allow the QOL agencies to better evaluate progress over the long-term. These Agricultural Inventories will allow the QOL agencies to establish achievable and trackable nutrient reduction goals for the HUC 12 watersheds in which they are developed.

MDARD has worked with the Erb Foundation to provide funding to the Environmental Working Group to develop the ACPF modeling tools in several HUC 12 watersheds in the WLEB. To date, with the efforts of EGLE, MDARD, and the Erb Foundation, we have completed the Agricultural Inventory in 6 HUC 12 watersheds and 21 more are in various stages of development. The Environmental Working Group just received additional Erb Foundation funds to provide all the geographic information tools needed to develop the ACPF in 30 additional WLEB HUC 12 watersheds. These tools will allow the QOL agencies to develop the watershed planning needed to be successful. EGLE staff is also providing training to MDARD and conservation district staff to effectively use the Agricultural Inventories to target BMP implementation. That said, implementation funding will be a significant hurdle to overcome.