Western Lake Erie Basin May 2025 Update

Projects in the Watershed

Introduction

Lake Erie is a critical resource and natural feature, supporting life, recreation, and commerce for millions of Americans in the Great Lakes region. However, the lake has a long history of suffering from harmful algal blooms (HABs), which continue to this day. HABs are colonies of bacteria that grow in the water during summer months to form vast mats of what is commonly called "blue-green algae." While some algal blooms cause a nuisance for coastal communities (e.g., *Cladophora*), HABs exude toxins that disrupt drinking water supplies and degrade aquatic habitats for one of the nation's most important freshwater fisheries. The warm and shallow Western Lake Erie Basin (WLEB) is especially susceptible to these toxic blooms, and in 2015 under a Collaborative Agreement the states of Michigan and Ohio and the province of Ontario initiated targeted efforts to collaboratively reduce HABs in the WLEB. The jurisdictions have also developed Domestic Action Plans (DAPs) that outline priority actions being taken to address HABs. Michigan's 2025 DAP Update highlights the programs and projects that have been implemented to reduce nutrient losses from farm fields, and improve soil health and water quality conditions to combat HABs in the WLEB.

This document provides an overview of some of the DAP projects that are underway in Michigan's portion of the WLEB.

Algal blooms in the Western Basin of Lake Erie.

Expanded Water Quality Monitoring Program

The Alliance for the Great Lakes (AGL) and partners are implementing an expanded water quality monitoring network in five priority subwatersheds to assist the Michigan Department of Agriculture and Rural Development's (MDARD) ability to track and monitor water quality and enable improved prioritization of conservation and land management practices to meet phosphorus reduction commitments. The project team has deployed 50 higher spatial density monitoring instrumentation with a particular focus on understanding phosphorus trends. The information gleaned from this effort will help MDARD better understand various drivers of nutrient transport and allow for better focusing of conservation efforts to combat nutrient pollution.

The project will run from 2024 to 2029 and cover five of Michigan's priority subwatersheds:

- Lime Creek
- Stony Creek (South Branch River Raisin)
- Headwaters of the Saline River
- Nile Ditch
- S.S. LaPointe Drain

Area hydrology, sediment transport, phosphorus transport, and weather conditions in the subwatersheds will be tracked by the project and publicly available in real-time on the Freeboard Technology dashboard.

Organizations

- Alliance for the Great Lakes (AGL)
- Freeboard Technology
- LimnoTech
- Michigan State University - Institute for Water Research (MSU-IWR)

Contact

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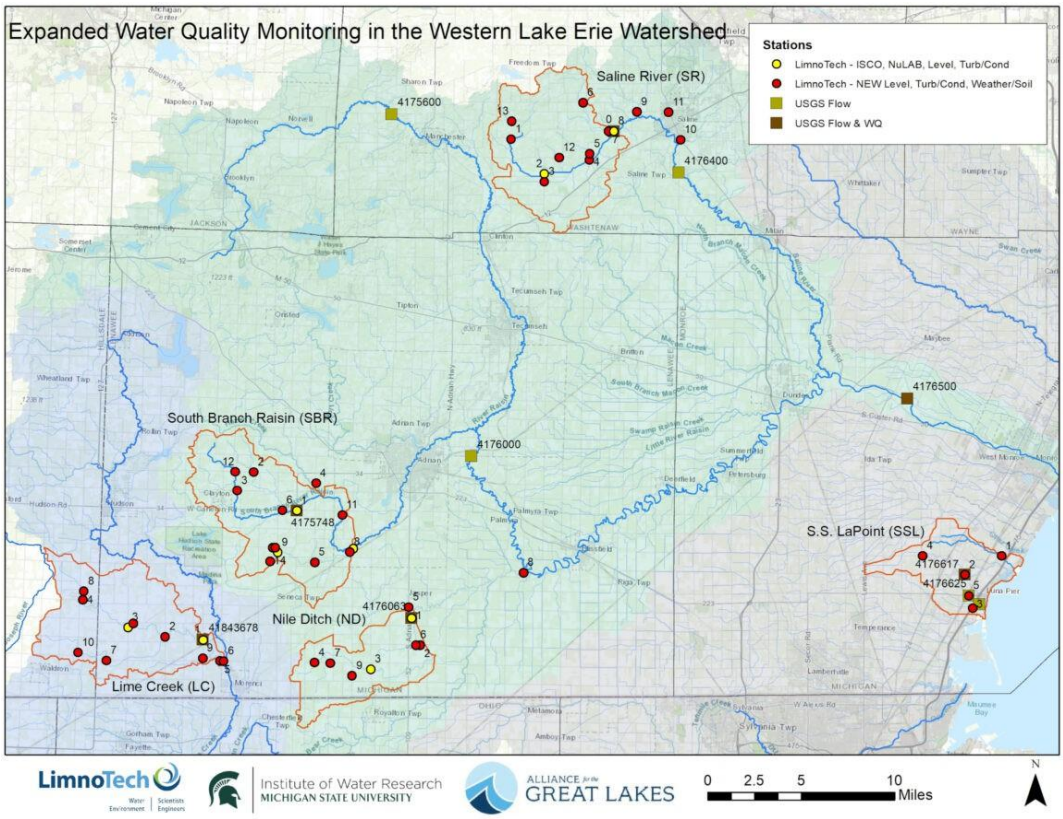
Update

This project was initiated in Fall 2024 and targets five priority watersheds in Michigan's portion of the Western Lake Erie Basin (WLEB). Efforts to build out the project are ongoing, and an update will be described at the 2025 State of the WLEB Conference. The project's operating budget is over $5M, with $4.86M committed by Michigan Department of Agriculture and Rural Development and $600K from the Erb Family Foundation. Formal data collection began in Spring 2025 and will be summarized in annual reports provided to MDARD.

Links

Home Page
Project Summary
Current Management Plan
Feb 2025 Webinar
Oct 2024 Press Release



Monitoring locations: New sampling locations under this project are depicted with red and yellow circles (Sampling-Locations_Nov-2024-1200x928.jpg).

Edge-of-Field Monitoring

This Michigan State University Extension (MSU – Ext) project evaluates the performance of two conservation drainage practices for reducing phosphorus (P) loss. This project is an on-farm experiment in partnership with three producers in the Western Lake Erie Basin (WLEB). The project team is evaluating controlled drainage at two sites and a saturated buffer at one site. The project began with the installation of monitoring instruments in 2018, with monitoring efforts through the present. Final results will be reported in 2026.

The project is funded with $2.6M from the Michigan Department of Agriculture and Rural Development (MDARD) and initial funding provided by Michigan Department of Environment, Great Lakes, and Energy (EGLE) and agricultural trade groups.

Organizations

- Michigan State University (MSU – Ext)
- Lenawee Conservation District
- Michigan Department of Environment, Great Lakes, and Energy (EGLE)
- Michigan Department of Agriculture and Rural Development (MDARD)
- Michigan Soybean Association
- Corn Marketing Program of Michigan
- Michigan Alliance for Animal Agriculture

Contact

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Update

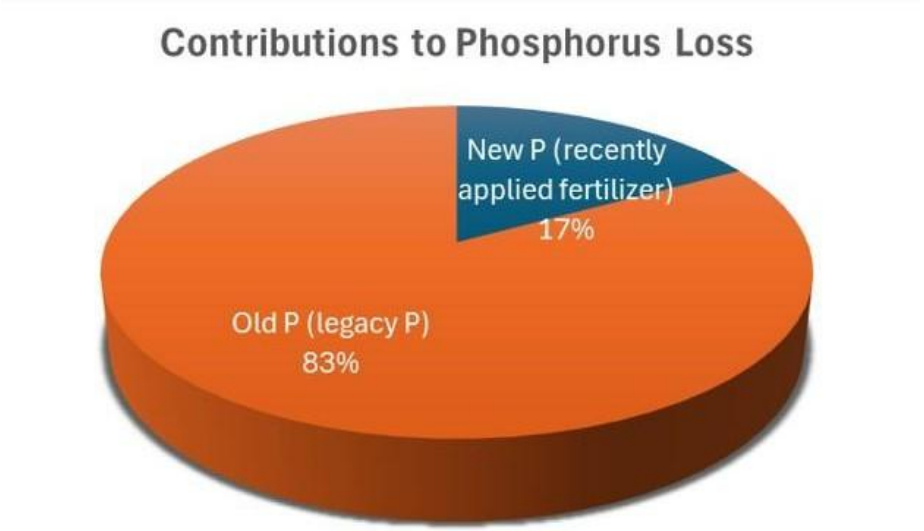
Monitoring work began in 2018 and is ongoing. A 2025 report based on this research highlights the following points:

- Legacy P dominates P loss while new P plays a minor role.
- Soils tested across the U.S. showed that they have enough legacy P to sustain high P loss for decades.
- A drawdown of soil test P (STP) by crop removal can address the legacy P problem, but this takes a very long time.
- Soils with very high STP levels required 16 years to halve their STP concentration without any fertilizer application. The higher the STP, the slower the drawdown, making it vital to avoid additional accumulation of legacy P through careful nutrient management.
- Nutrient management can address the smaller but still important contribution of new P loss over the short term.

- To make a big impact on Lake Erie's water quality, there is a need to address the dominant legacy P in two ways: first, drawdown of the STP to achieve results over the long term, and second, by implementing water management to achieve results over the short term.

Links

Feb 2025 Publication



Legacy phosphorus dominates losses, contributing over 83% of soluble reactive phosphorus in subsurface drainage discharge. Based on the data in Osterholz et al. 2023.

Investigating Cover-Crop Planting Methods for Establishment Success

The Michigan State University Extension (MSU – Ext) project's purpose is to develop recommendations for planting cover crops into a corn crop by UAV (i.e., drones), plane, and field broadcast approaches and to educate producers on the best practices for interseeding cover crops into corn and soybean crops. The improved recommendation and education efforts will lead to increased acres of cover crops in the Western Lake Erie Basin (WLEB).

To achieve this goal, MSU - Ext worked with producers and custom applicators in the WLEB to develop a series of demonstrations and research plots on farms in three WLEB watersheds. These demonstration plots featured cover-crop interseeding into soybean or corn by airplane, highboy, and drone. The project will be completed with outreach, which will share the experiment results through articles, bulletins, and interactive 360° video footage.

Organization

MSU - Extension

Contact

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Michigan Department of Agriculture and Rural Development: Michelle Selzer, SelzerM@michigan.gov

Update

Number of acres planted in cover crops in WLEB counties from 2022 Ag Census data: Hillsdale (16,851 up from 13,829 in 2017), Washtenaw (10,025 up from 4,937 in 2017), Lenawee (24,700 up from 18,596 in 2017).

The trials were seeded in September 2024 and concluded in May 2025. Two of the three sites established successfully, though growth at all three sites was limited due to drought conditions following cover-crop seeding in Fall 2024.

Preliminary results were shared at three farmer meetings in Southeast Michigan as well as at a Midwest Cover Crops Council webinar January-March 2025. Final results will be summarized and published and shared at field days and conferences in the WLEB July-December 2025.

Links

Midwest Cover Crops Council webinar with preliminary results

Cover Crop Poster

(Left) Drone seeding cover crops into standing corn; (right) aerial-seeded cover crops emerging in standing soybeans (photo credit: Madelyn Celovsky).

Healthy Soils, Healthy Waters

The University of Michigan (UM) project will enhance knowledge of soil health and water quality in southeastern Michigan, focusing on regenerative practices in the Western Lake Erie Basin (WLEB). In addition to commonly targeted nutrients like phosphorus and nitrogen, this project also investigates the role of soil carbon in establishing healthy soils and improving nutrient retention and water quality. By linking farm management to soil health, and monitoring edge-of-field water quality, the team aims to improve predictions of management impacts. The project will engage the agricultural community using a co-learning approach and results will inform conservation program design. This effort is funded through April 2029 with over $4M from Michigan Department of Agriculture and Rural Development.

Organizations

- University of Michigan, School for Environment and Sustainability
- University of Michigan, Department of Ecology and Evolutionary Biology
- Michigan State University (MSU), Department of Plant, Soil, and Microbial Sciences
- Michigan State University, Institute of Water Research
- Michigan State University, W.K. Kellogg Biological Station
- Alliance for the Great Lakes
- Michigan Agriculture Advancement
- Michigan Association of Conservation Districts
- Lenawee Conservation District

Contact

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Michigan Department of Agriculture and Rural Development: Michelle Selzer, SelzerM@michigan.gov

Update

In Fall 2024, the research team sampled 81 farm fields in the WLEB and 11 woodlots as reference sites for soil health indicators in the region. About half of the WLEB farms signed up for the study through outreach activities (e.g., promoting the project at field days), and the other half were recruited through the networks of conservation technicians in Lenawee, Hillsdale, Monroe, and Washtenaw counties.

Analysis of soil health properties for the soil samples is underway, and we expect to send reports with initial results to participants in Summer 2025. The team interviewed all participants in Winter 2025 to gather detailed data on farm-scale land use, management history, and information on crop rotation, crop yields, nutrient management, and tillage practices for the fields we sampled.

The project team have recruited 21 participants to continue in the second phase of the study, where the team will monitor changes in soil health after three growing seasons with a new conservation practice, and are currently selecting sites for edge-of-field water quality monitoring, which will also begin in summer 2025.

Link

Sep 2024 Press Release

(Left) Collecting cores to measure soil bulk density;
(right) a cove- crop mixture in the WLEB with high fall biomass.

Soil Health Investment Program

The Michigan Department of Environment, Great Lakes, and Energy's (EGLE) Soil Health Investment Program (SHIP) provides incentive payments to producers in the Western Lake Erie Basin (WLEB) for implementing best management practices which will reduce the nutrient and sediment loading in cropland runoff being transported to surface waters. District technicians will use tools developed by the EGLE and other partners to prioritize outreach and conservation efforts on priority fields which are likely to be vulnerable to sediment and nutrient loss. This program is funded through September 2028 with over $2M from the U.S. Environmental Protection Agency's Great Lakes Restoration Initiative.

Organizations

- Michigan Department of Environment, Great Lakes and Energy (EGLE), Water Resources Division
- Hillsdale Conservation District
- Lenawee Conservation District
- Monroe Conservation District
- Washtenaw Conservation District

Contact

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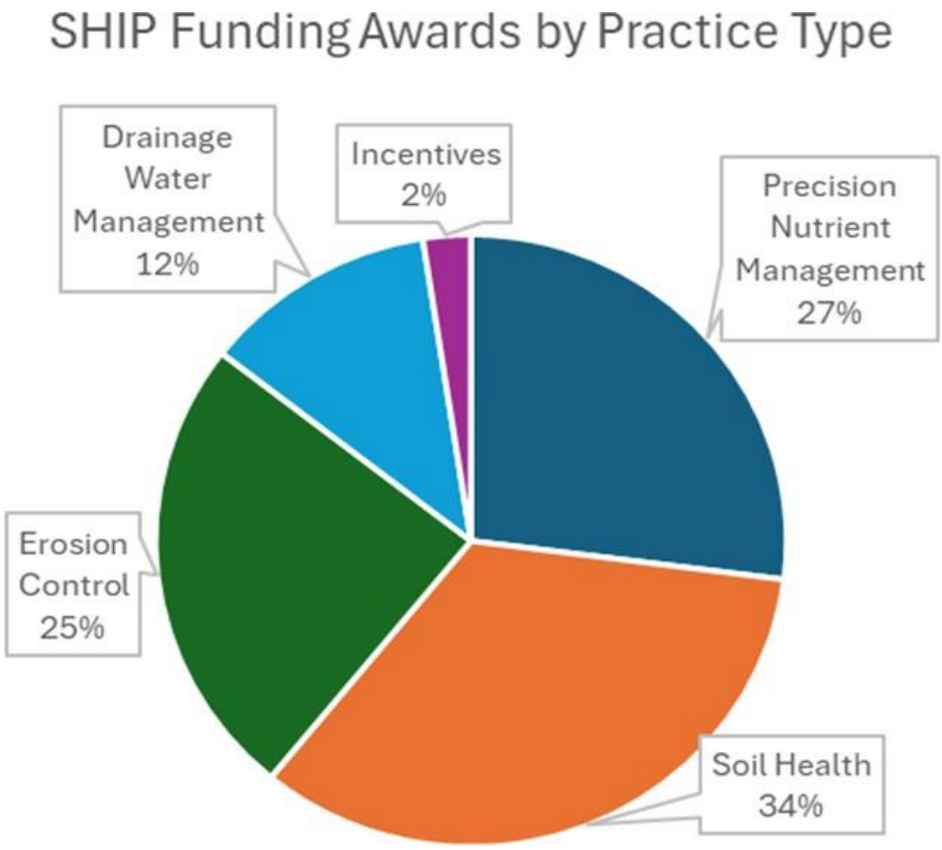
Update

An initial four-week signup period launched in March 2025 resulted in 42 applications submitted, which consisted of $1,018,806 being awarded in total. After evaluation and minor adjustments to program standards, technicians will begin submitting additional applications starting in June 2025 for a continuous enrollment until funds have been completely allocated. The initial sign up was successful in meeting the pilot harvestable buffer practice acreage cap (50 acres).

Link

EGLE WRD webpage



Soil Health Investment Program, initial sign up (March 2025) funding allocation.

Performance-based Conservation Adoption Program

Led by Michigan State University – Institute of Water Research (MSU-IWR), this new performance-based conservation program in the Western Lake Erie Basin (WLEB) will offer new strategies for allocating resources that maximize outcomes by focusing on performance. The program team and partners will enroll producers in conservation practices but, unlike traditional cost-share programs, will compensate producers based on water quality improvements-–primarily reductions in phosphorus.

Combining Soil and Water Assessment Tool (SWAT) and Yield Stability modeling will result in an outreach tool that partners can use to broaden the conversation with producers and increase the opportunity to install more conservation practices in lower producing areas, reduce nutrient losses, and improve ecosystem services (e.g., groundwater recharge, pollinator habitat, and soil health). Specifically, the program will enhance the existing conservation delivery by building a network of supply chain organizations to enroll producers and promote the program among their clientele. The program will generate an expanded conservation outcomes package by adding ecosystem services considerations to the pricing thresholds determined for conservation practices that will lead to the greatest reduction of phosphorus.

All of the benefits resulting from this innovative conservation delivery program will be quantified and tracked via the Great Lakes Watershed Management System (GLWMS) - Nutrient Tracking Dashboard.

The project is funded through 2032 with $12M from the Michigan Department of Agriculture and Rural Development (MDARD).

Organizations

- Michigan State University - Institute of Water Research (MSU-IWR)
- Michigan Department of Agriculture and Rural Development (MDARD)
- MSU - Extension
- MSU - Center for Regenerative Agriculture
- Alliance for the Great Lakes
- Michigan Agri-Business Association
- Lenawee Conservation District

Contact

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Link: Great Lakes Watershed Management System

Western Lake Erie Basin Farmer-Led Conservation Group

The Michigan Association of Conservation Districts (MACD) is supporting farmers helping farmers implement best management practices on their land. The Western Lake Erie Basin Farmer-led Group (WLEB – FLG) has a core group of producers that partner with Conservation Districts to implement grant deliverables in the WLEB, including hosting a website, www.waterqualityfarming.org, which serves as a clearing house of information for producers who might be interested in starting their conservation journey. This effort is duplicated through the WLEB-FLG YouTube Channel, Facebook Page to maximize potential outreach through social media. In addition, WLEB-FLG has coordinated several local in-person networking groups to build relationships, share knowledge, and develop a greater sense of community among producers and certified crop advisors related to conservation practices. This project is funded through 2025 with $550,000 from the Erb Family Foundation.

Organizations

- Michigan Association of Conservation Districts (MACD)
- Washtenaw Conservation District
- Monroe Conservation District
- Lenawee Conservation District
- River Raisin Watershed Council
- Michigan Agri-Business Association

Contact

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Link: Farmer-Led Home Page

Summer 2024 FLG meeting: (Left) a presentation in the pole barn; (right) an agricultural applicator drone on display.

Western Lake Erie Basin Regenerative Agriculture Tour

Western Lake Erie Basin (WLEB) Advisory Group hosted this educational tour in the summer of 2025 providing agriculture professionals and farmers an opportunity to learn about innovative farming practices that improve soil health, protect water quality, and produce nutrient-dense food. Taking place in Michigan's portion of the Upper Maumee Watershed, this field tour highlighted regenerative farming practices on vegetable, grain, and livestock farms through field tours hosted by WLEB producer leaders and a keynote with the renowned soil health expert Ray Archuleta. Participants networked with producers, state agency staff, and conservation professionals who are transforming agricultural practices in the WLEB watershed. This tour showcased regenerative agriculture practices that can improve water quality by reducing nutrient losses.

Organizations

- Western Lake Erie Basin Advisory Group
- University of Michigan Water Center
- Hillsdale Conservation District

Contact

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Update

There were 108 attendees on the tour from a range of backgrounds, including agricultural industry, conservation districts, extension services, farming/production, nonprofit organizations, federal and state government, and academia. Immediately following the tour, 75% of survey respondents (n = 58) reported that they would promote regenerative agricultural practices.

A six-month post survey was conducted to gauge the impact of the tour on attendees' partnerships, projects, and other activities. Of those who responded to the survey, 50% (n = 20) reported they had made new partnerships as a result of the tour, 39% (n = 18) reported they had started new projects as a result of the tour, and 72% (n = 18) reported that they had utilized the insights they had gained from the tour.

Respondents were also asked about especially significant aspects of the field tour. Survey results indicate that the stops with rotational grazing pasture

systems, agroforestry, cover crops, no-till, and drainage water management stood out the most to the attendees, with networking opportunities closely following. Respondents were impressed with the apparent efficacy of selected regenerative agriculture conservation practices, novel methods of animal agriculture, and the “right” way for corporatized agriculture to improve sustainability.

Link

Regenerative Agriculture Tour Event Page

(Left) Ray Archuleta gives a soil health demonstration;
(right) tour participants walk along a field.

Seneca State Game Area Wetland Pilot

Ducks Unlimited (DU) with support from the Michigan Department of Natural Resources (DNR) is leading this project with the primary objective to provide a "proof of concept" to advance wetland restoration as a viable conservation practice to manage nutrients within the Western Lake Erie Basin (WLEB). Project partners aim to purchase marginal agricultural land, restore the land to wetlands, and monitor nutrient reduction There are several milestones for this project. First, the partners aimed to purchase at least 80 acres of restorable wetlands within the WLEB watershed of Michigan and currently have almost 300 acres in ownership. Baseline monitoring at the site began Spring 2024. Next, the project team completed a topographic survey and are working through engineering designs. Finally, the wetland restoration will undergo construction to restore hydrology and native vegetation and be completed by the end of 2026. The site will continue to be monitored for phosphorus reduction during and after construction to measure the actual reduction in nutrient loading.

This project is funded by the DNR Natural Resources Trust Fund, U.S. Environmental Protection Agency Great Lakes Restoration Initiative, and DNR American Rescue Plan Act.

Organizations

- Ducks Unlimited (DU)
- Michigan Department of Natural Resources (DNR)
- Michigan Department of Agriculture, and Rural Development (MDARD)
- Michigan Department of Environment, Great Lakes and Energy (EGLE)
- LimnoTech
- Lenawee County Drain Commissioner

Contact

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DNR: Steve Chadwick, chadwicks@michigan.gov

Previously, the agricultural project site had a history of flooding.