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

GRETCHEN WHITMER
GOVERNOR

LIESL EICHLER CLARK
DIRECTOR

November 21, 2022

VIA EMAIL

David Naftzger
Executive Director, Great Lakes St. Lawrence River Basin Water Resources Council
Secretary, Great Lakes St. Lawrence River Water Resources Regional Body
Conference of Great Lakes St. Lawrence Governors and Premiers
20 North Wacker Drive, Suite 2700
Chicago, Illinois 60606

Dear David Naftzger:

SUBJECT: 2022 Water Conservation and Efficiency Program Annual Assessment Submitted on behalf of the State of Michigan

On behalf of the State of Michigan, enclosed is the 2022 Water Conservation and Efficiency Program Annual Assessment being sent pursuant to and in satisfaction of the obligations included in Section 4.2 of the Great Lakes St. Lawrence River Basin Water Resources Compact. Please note that these reports are subject to revision and update during the Compact Council and Regional Body program review process.

If you have any questions, please do not hesitate to contact me.

Sincerely,

James Clift
Deputy Director

Enclosure
cc: Peter Johnson, Conference of Great Lakes St. Lawrence Governors and Premiers
Liesl Eichler Clark, Director, EGLE
Emily Finnell, Great Lakes Senior Advisor and Strategist, EGLE
James Milne, EGLE

GREAT LAKES-ST. LAWRENCE RIVER BASIN WATER RESOURCES COMPACT WATER CONSERVATION AND EFFICIENCY PROGRAM ANNUAL ASSESSMENT

State of Michigan

November 21, 2022

This Water Conservation and Efficiency Program Annual Assessment fulfills Michigan's obligation under Section 4.2.2 of the Great Lakes-St. Lawrence River Basin Water Resources Compact (Compact).

LEAD AGENCY AND OFFICE CONTACTS

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) Water Use Program is the lead agency responsible for Michigan's water conservation and efficiency program.

Compact Contact: James Clift, Deputy Director, Executive Office; 517-284-6871, CliftJ@Michigan.gov.

Program Contact: James F. Milne, Supervisor, Water Use Assessment Unit, Permits Section, Water Resources Division; 517-285-3253, MilneJ@Michigan.gov.

STATUS OF MICHIGAN'S WATER CONSERVATION AND EFFICIENCY 2022 GOALS AND OBJECTIVES

Michigan adopted water conservation and efficiency goals and objectives that are consistent with the Basin-wide goals and objectives. These goals and objectives were developed by the former Water Resources Conservation Advisory Council, a stakeholder forum of executive and legislative appointees that was established for collaborative study, evaluation, and advisement for Michigan's water management and water conservation and efficiency programs. Michigan's water conservation and efficiency goals and objectives continue to be met through the water conservation and efficiency program that was initiated with the adoption of the Compact.

The Water Use Advisory Council (WUAC), established under Part 328, Aquifer Protection, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), continues to play an integral part in Michigan's water management and water conservation and efficiency program. It provides a platform for raising water withdrawal related issues and establishes an integrated framework of roles and responsibilities for all stakeholders in managing Michigan's water resources. The WUAC collaboratively studies, evaluates, and provides advice regarding Michigan's water management, conservation, and efficiency programs. It also assists on technical issues, implementation, and monitoring overall progress of Michigan's water use program. The WUAC creates opportunities for the public, university researchers, industry professionals, advocacy groups, and other interested parties to be involved and

to work directly with state agencies to set policy and shape the program's direction. This promotes better understanding and cooperation to the benefit of the program and results in shared investment in the management and sustainability of Michigan's streams, lakes, wetlands, and groundwater.

The WUAC is charged to report biennially to the Michigan Legislature, the Michigan Department of Environment, Great Lakes, and Energy (EGLE), the Michigan Department of Natural Resources (DNR), and the Michigan Department of Agriculture and Rural Development (MDARD). The WUAC released its first biennial report to the Legislature in December 2020. The Council is preparing its second biennial report due in December 2022. The Council's recommendations have the potential to advance and improve data collection, modeling, research, and refine administration of the water withdrawal assessment process and Michigan's water conservation and efficiency program. They will also benefit many other state water management issues. In all, the 2022 report recommendations include funding requests to the Legislature totaling $5.2 million in Fiscal Year 2022 and $4.9 million in Fiscal Year 2023. $10 million has been appropriated in fiscal year 2022 to support the WUAC 2020 recommendations.

The WUAC's open and ongoing discussions keep agency program staff informed on the effectiveness and progress of these programs, providing valuable insight to guide Michigan's efforts to improve water conservation and efficient use of water.

In addition to the WUAC's collective work, Michigan is focused on the impacts of climate change, including building resilience to high water, reducing Michigan's carbon footprint, and addressing ageing water infrastructure. Michigan Governor Gretchen Whitmer has ordered EGLE's Office of Climate and Energy to coordinate the state's efforts to achieve carbon neutrality by 2050 through development and implementation of the MI Healthy Climate Plan, which is outlined in Executive Order 2020-182 and Directive 2020-10. The MI Healthy Climate Plan, released in April 2022, lays out a broad vision and roadmap to carbon neutrality. The Plan is meant to protect public health and the environment while also helping to develop new clean energy jobs by making Michigan fully carbon-neutral by 2050.

In March 2022, Governor Gretchen Whitmer signed the bipartisan Building Michigan Together Plan (Public Act 53), the state's largest-ever infrastructure investment at $4.7 billion, including more than $1.9 billion to be administered by EGLE for water infrastructure improvements. Funding for the Plan is through the federal American Rescue Plan Act, federal Infrastructure Investment and Jobs Act, and the state's general fund. The Building Michigan Together Plan's $1.9 billion for water infrastructure improvements dedicates $1.27 billion in federal funds to the state's drinking water and wastewater revolving funds over two fiscal years. The Building Michigan Together Plan includes:

- At least $314.8 million to replace lead water service lines statewide, including all lead service lines in Benton Harbor.
- $40.6 million to help communities tackle toxic contaminants such as PFAS in drinking water and wastewater.

- $20 million to help drinking water suppliers develop and update asset management plans and take stock of materials in their systems, such as lead service lines, through the Drinking Water Asset Management grant program.

Meanwhile, the bipartisan MI Clean Water Plan enacted in 2020 has provided 206 awards totaling $186.4 million for water infrastructure needs in communities across Michigan. The total included:

- $98.5 million for lead service line replacement in 36 municipalities.
- $36.5 million to study 108 communities' water infrastructure and identify potential hazards.
- $22.2 million to reduce per- and polyfluoroalkyl substances (PFAS) contamination in 11 communities.
- $29.2 million to improve drinking water infrastructure and planning in 51 communities.

In June 2020, Governor Whitmer also signed a package of bills to update the State Revolving Fund statute, lowering communities' burden to accessing state financing and funding and allowing flexibility to ensure financing is equitably distributed. The bills are critical to ensuring that communities can efficiently and effectively use the influx of state and federal water infrastructure dollars.

The Fiscal Year 2023 state budget also includes $48 million in technical assistance to help communities seek funding to replace lead water lines or other water infrastructure, and $7.9 million for drinking water permitting, both administered through EGLE.

Efforts are underway to assess Michigan's new and existing climate, energy, and water infrastructure programs and initiatives to identify opportunities to further advance Michigan's water conservation goals and objectives.

Michigan also continues to implement the Michigan Water Strategy, an all-inclusive vision and blueprint to ensure Michigan's water resources continue to support healthy ecosystems, communities, and economies for current and future generations. Implementation efforts focus on building capacity for shared governance for water and water stewardship.

WATER CONSERVATION AND EFFICIENCY PROGRAM OVERVIEW

Michigan's water conservation and efficiency program is founded on the water withdrawal assessment requirement that applies to all new or increased large quantity withdrawals (LQWs). The assessment process evaluates proposed water withdrawals relative to the environmental impact standards set for conserving and protecting the water resources of the Great Lakes Basin.[1] The likely resource impacts of a proposed withdrawal must meet the environmental impact standard and be authorized by EGLE before the withdrawal can begin.[2] If the withdrawal is likely to exceed the environmental

[1] Michigan Compiled Laws (MCL) 324.32705
[2] MCL 324.32706b, 324.32706c, 324.32723

impact standards, the applicant must reduce their withdrawal or show by site-specific data and analysis that their withdrawal's impact won't exceed the standard. LQWs are cumulatively tracked and accounted for against the environmental standard at a sub-watershed scale, ensuring that the water resources of the basin are conserved even at a small scale.[3]

Michigan's water conservation and efficiency program goes beyond the assessment process to include a comprehensive program of water use management. This program establishes an integrated framework of roles and responsibilities for private and public water users and governmental agencies in managing Michigan's water resources. Further, this framework creates opportunities for involvement by the public (e.g., local committees and volunteer efforts such as stream monitoring); universities (e.g., research and technical assistance); and other interested parties resulting in a latticework of shared investment in the sustainability of Michigan's lakes, streams, and groundwater.

In conjunction with annual water use reporting that is required for LQWs, owners are required to review water conservation measures applicable to their water use sector. Implementation of conservation measures is voluntary.[4] In sub-watersheds that are approaching the environmental impact standard, to have a withdrawal approved, an applicant must implement the water conservation measures they deem to be reasonable.[5] For applications greater than two million gallons per day (MGD) capacity, it is required that all sector or withdrawal-based conservation measures are complied with as a condition of approval.

WATER CONSERVATION AND EFFICIENCY PROGRAM CONSISTENCY WITH REGIONAL OBJECTIVES, AND THE PROMOTION OF ENVIRONMENTALLY SOUND AND ECONOMICALLY FEASIBLE WATER CONSERVATION MEASURES

Compact's Water Conservation and Efficiency Objectives	Summary of Current Efforts
I. Guide programs toward long-term sustainable water use.	• Regulatory framework that requires resource conservation. • Adaptive programs that integrate new data, methods, and policies in response to changing environmental conditions. • Develop centralized comprehensive groundwater database to inform decision-making.
II. Adopt and implement supply and demand management to promote efficient use and	• Sub-watershed scale cumulative impact limits for withdrawals. • Notification of nearby water users and local government when limits are approached.

[3] MCL 324.32706e
[4] MCL 324.32707, 324.32708
[5] MCL 324.32706c, 325.1004

conservation of water resources.	• Restrictions on withdrawals when local impact would exceed limit or is unreasonable. • Drinking water infrastructure grants to communities involving water main work, service line replacements, plant enhancements, and other upgrades. • Launch Retired Engineers, Scientists, Technicians, Administrators, Researchers, and Teachers (RESTART) program to provide assistance to institutions, government agencies and businesses with 500 or fewer full-time employees with on-site energy and sustainability assessments.
III. Improve monitoring and standardize data reporting within water conservation and efficiency programs.	• Increased water use reporting data quality. • Continuing efforts to bring into compliance previously unreported water uses. • Outreach efforts continue with property owners, well drillers, and other interested parties to increase awareness of Part 327's requirements and increase compliance. • Continue to improve usability of new database for agricultural water users. • Continue asset management planning initiatives, including a grant program administered by EGLE to further mature local community's asset management programs.
IV. Develop science, technology, and research.	• Ongoing state/federal glacial geology mapping partnership. • More than 110 streamflow measurement locations added in high water use areas. • Increased use of site-specific data and regional withdrawal impact models. • Research to develop an open-source, real-time sensor network in the Clinton River to assess and manage stormwater through hydrologic modeling. • Dedicated funding source for research and innovation through the Michigan Great Lakes Protection Fund.
V. Develop education programs and information sharing for all water users.	• Additional water use data made available online. • Water use data published in media outlets. • Integrated assessments provide on-site, direct assistance services to help businesses and communities to meet their sustainability goals. • Annual agriculture irrigation practices workshops.

	• Generally Accepted Agricultural and Management Practices for irrigation water use continue to be reviewed and updated on a yearly basis. This assures the most up-to-date standards are in place for agricultural water use at Michigan's farms. • Michigan Water School created online modules to educate and train local appointed and elected officials on water management. • EGLE formed an interagency work group to fund and develop a statewide collaborative Great Lakes education and outreach program on water stewardship. • Hosted annual Great Lakes Freshwater week to celebrate water resources and encourage Michigan residents to experience water, become educated about water resources, and take action to become water stewards. • Partnered with EPA WaterSense Program and hosted a Fix-a-Leak week, March 2022, to address plumbing and water system leaks in residential homes. • Implemented Phase 2 of From Students to Stewards Initiative to integrate water literacy principles into K-12 school curriculum and build a culture of stewardship; 13 schools are participating in 2022-2023 academic year. A total of 19 schools have participated in program.

I. Guide programs toward long-term sustainable water use.

Michigan continues to guide programs toward long-term water sustainability through the implementation of its water withdrawal assessment program. Michigan's LQW assessment process, environmental impact standard, and cumulative impact tracking system have effected significant changes in the planning and development of LQWs. This process has driven the integration of long-term sustainable water use concepts into water management decisions and has raised the awareness of water use and resource impact implications. The LQW assessment process is designed to be adaptive and able to respond to changing environmental conditions. Additional hydrologic data is continually being collected and combined with refined models to inform LQW assessment methods and policies to support better decision making and ensure long-term sustainable water use.

Additionally, the WUAC works collaboratively to continuously assess and improve the program based on new science, data, advancements in modeling and new technology. The WUAC created the Water Conservation and Efficiency Committee (WCEC) as a standing committee under the WUAC. The WCEC advises and makes

recommendations to the WUAC on opportunities to improve and enhance Michigan's water conservation and efficiency program and support sustainable water use. In 2022, the WCEC received the final report from the EGLE-sponsored University of Michigan Dow Sustainability Fellows Project Team on opportunities to advance Michigan's Water Conservation and Efficiency Efforts through state climate, energy, and water infrastructure Initiatives. The WCEC is working with state, academic, industry and utility partners to advance projects that address Dow Fellows report findings including public education on Great Lakes water conservation; accounting and measuring water and energy savings from water infrastructure improvements; and building public private partnerships with energy utilities to promote technical assistance and residential programs.

As part of this effort, EGLE is developing a project focused on assessing climate impacts on Michigan's major water sector's water conservation/business practices. The project will also seek to understand how water demands could change due to climate migration into the state of Michigan.

In addition, EGLE will award a contract to build more capacity to deliver existing education programs and trainings on water efficiency for the agricultural sector including animal industries. Funding is provided through a new state appropriation to support implementation of WUAC recommendations in their 2020 biennial report to the legislature.

The WCEC is also submitting a recommendation in the WUAC 2022 biennial report to create and fund a pilot program to address agricultural irrigation water and energy efficiency opportunities through irrigation retrofits to reduce water consumption, greenhouse gas emissions and carbon emissions. The goal of this pilot program is to expand and improve implementation of recommendations within the Irrigation Water Use Generally Accepted Agricultural and Management Practices (GAAMPs) through on-farm demonstrations, including evaluating and retrofitting the existing irrigation systems, measuring the improved water, energy use, and crop yield efficiency, and estimating the potential reduction of GHG emission and cost savings.

Current state policy initiatives are focused on climate, energy, and water infrastructure investments which have resulted in more opportunities to guide programs toward sustainable water use. Efforts are ongoing by many actors across the state to implement Michigan's Water Strategy, the 30-year roadmap to ensure the viability and sustainability of Michigan's water resources for current and future generations. For example, in 2022, EGLE formed an interagency work group to develop a concept for creating a collaborative statewide Great Lakes education and outreach program focused on water stewardship. Creation of a statewide education and outreach program on water conservation was also recommended in the WUAC's December 12, 2014, report.

II. Adopt and implement supply and demand management to promote efficient use and conservation of water resources.

EGLE works with many water users and industry contractors on an individual basis throughout the assessment process to ensure withdrawals are implemented in an

efficient manner. This assessment process incorporates both supply-side management of the water resources using a specialized database that tracks cumulative impacts of withdrawals at the sub-watershed level, and demand-side management by notifying all affected water users when withdrawal limits begin to be approached in an area. Michigan's common law reasonable use doctrine is the legal foundation underlying the assessment process and promotes the conservation and efficient use of water in its own way when conveying to water users that water is a shared, finite resource under this doctrine. Users are encouraged to conserve as a matter of routine, as opposed to conserving only when required, such as in the event of a conflict situation when supplies are limited or overtaxed. The LQW assessment process is designed to be adaptive and able to respond to changing environmental conditions.

III. Improve monitoring and standardize data reporting within water conservation and efficiency programs.

EGLE and MDARD collect annual water use reporting which includes reporting of water conservation and efficiency best practices. Some water use sectors (e.g., industry, public water supply) have better capabilities for accurate water use reporting because they meter their withdrawals and discharges. Measurement and evaluation of water conservation and water use efficiency, and changes over time, remain difficult to track from an agency perspective based on water use reporting data alone. Ongoing improvements to electronic data collection systems and databases and use of new tools are resulting in better consistency in water use data collection, and a better ability to identify trends in water use and account for variability. EGLE compliance staff continue to work on a case-by-case basis with property owners, well drillers, consultants, and other interested parties to bring newly discovered unauthorized LQWs and other violations of Part 327 into compliance.

State and federal agencies, research institutions, and stakeholders continue to assess available groundwater data and develop strategies for effective data integration to advance coordinated water monitoring programs and improve decision making. EGLE has prioritized investments in staff and resources to improve its technology and database management. Currently, data have been collected and are frequently compartmentalized to meet the needs of narrowly defined programs. Therefore, existing data are found in many locations and formats. Typically, the data are housed by categories of surface water (quantity and quality), groundwater (water levels, aquifer properties, and quality), geologic data (stratigraphy), climate data (precipitation, temperature, and evapotranspiration).

The WUAC Data Collection Committee developed recommendations for the biennial report to the legislature for the creation of an Integrated Water Management Database. The purpose of the database would be to increase the effectiveness and efficiency of all water related programs in Michigan by making all these data easily accessible and in a common geospatial format. This effort should include obtaining groundwater data currently only available in paper form (*e.g.*, monitoring well data collected under Part 115, Solid Waste Management; Part 201, Environmental

Remediation; or Part 213, Leaking Underground Storage Tanks, of NREPA). Michigan's water programs rely on sophisticated models and technical analyses to accomplish their goals. These all require high quality data, and enough data to adequately define water resources in Michigan to make proper management decisions.

As part of the effort to make data more accessible, the Michigan Hydrologic Framework (MHF), another recommendation from the WUAC, would facilitate the creation of models to support statewide sustainable water management of both surface water and groundwater. The MHF recognizes the critical importance of accessing a wide range of water-related data.

Multiple divisions in EGLE are collaborating in developing the Michigan Groundwater Data Warehouse Lean Process Improvement project. The Groundwater Data Warehouse will provide a common location and format for groundwater data submitted by EGLE staff and external parties. The data warehouse will be expanded in future phases to include other environmental media besides groundwater. The Groundwater Data Warehouse has a lot of overlaps with the 2020 Water Use Advisory Council recommendation to create a master environmental database. If there will be two separate projects, as opposed to a single project, then the two projects will be closely coordinated. The data warehouse will be linked to Geographic Information System (GIS) data layers for visual presentation of data as well as being linked to other external databases (e.g., federal agencies' databases).

The WUAC recommendations are consistent with Michigan's Water Strategy, which also includes a recommendation to create a coordinated strategy for groundwater data collection, including a data management system. Such data is a critical measurement and indicator of the effects of water use and the effects of water conservation and efficiency practices. The WUAC new recommendations, in most cases, require Michigan's legislature to appropriate additional funding in order to be implemented.

Other efforts underway to improve data collection include the work of the Michigan Infrastructure Council and the Michigan Water Asset Management Council. Both Councils were created in statute to develop and direct implementation of a statewide strategy to standardize and streamline data collection, storage, and analysis related to infrastructure. EGLE continues to provide financial support for asset management planning for water utilities through grants under its drinking water asset management program, in addition to providing Stormwater, Asset Management, and Wastewater Program (SAW) grants and technical assistance.

IV. Develop science, technology, and research.

Michigan is actively developing science, technology, and research on an ongoing basis through the efforts of various projects by state, federal, and academic institutions. Michigan is funding several research projects in high water use areas to better understand the groundwater-surface water interaction. This data will be used

to improve the assessment and forecasting of new water uses' impact on the resource through increased use of site-specific data and more localized regional models. Increasing and improving the quality of data is imperative to effectively promote proactive conservation and efficient use to water users before shortage issues occur. Michigan's Quality of Life Agencies (EGLE, MDARD, and the DNR) have been implementing several key research priorities from the WUAC's December 12, 2014, final report including:

Temperature Logging Sensor Studies and Research to Water Withdrawal on Fish Communities: The DNR, Fisheries Division, deploys temperature loggers to study stream temperatures and conducts fish population surveys in Michigan's lakes and streams.

The DNR, through its Partnership for Ecosystem Research and Management (PERM) with Michigan State University (MSU), supports studies to evaluate the impacts of climate and the effects of cumulative withdrawal in a stream network. The project titled, "*Improving Michigan's Water Withdrawal Assessment Tool (WWAT)*" has the following objectives: 1) improve performance of WWAT by including cumulative withdrawals; and 2) determine effects of high-capacity groundwater withdrawal on downstream warming trends in streams. The research is funded by the U.S. Fish and Wildlife Service, State Wildlife Action Plan through the DNR. The following report was provided to the WUAC in 2022: Incorporation of watershed-scale accounting and water use sector-specific return flows in the Michigan Water Withdrawal Assessment Program's streamflow depletion accounting process: a statewide analysis.

This work is ongoing and will be supported further in 2023.

USGS Monitoring Partnerships: EGLE and the USGS have joint funding agreements for operating stream gages and monitoring wells, as well as collecting miscellaneous stream flow measurements. The WUAC report contains recommendations to Michigan's legislature to provide continued long-term funding for stream gages, miscellaneous flow measurements, and monitoring wells. USGS Michigan staff are developing a regional groundwater model for Calhoun County in south central Lower Michigan. USGS staff from the Ohio-Kentucky-Indiana and the Upper Midwest Water Science Centers are collaborating with EGLE and the Michigan Geological Survey to collect additional geologic and groundwater data from the Michindoh Aquifer (a glacial aquifer underlying portions of Michigan, Indiana, and Ohio) and to develop a groundwater model for the Michindoh Aquifer.

Geologic and Groundwater Research

The glacial geology of Michigan is quite complex and varied, and it is one of the major challenges in gaining a better understanding of Michigan's groundwater resources. The Michigan Legislature has authorized an annual budget of $3.0 million per year beginning in 2022-2023 for the Michigan Geological Survey (MGS), the first annual funding in over 30 years. MGS will map in priority areas identified by EGLE, DNR and MDARD, plus other state and public recommendations. MGS will now be

hiring the first full time staff to conduct that mapping and data collection. MGS will also be supporting the EGLE Water Task force in developing a database to collect information on water quality and quantity. Part of that data process is a contract MGS has with EGLE to validate the water well locations in Wellogic (~560,000 wells) and input of the historic scanned records (~700,000) to the Wellogic data, employing nearly 30 students to correctly compile the only subsurface database. MGS has confirmed that over 35% of the Wellogic well locations are not correct. MGS has completed approximately 40% of the location validations and input of historic scanned records of the total of ~ 1.2 million data sets in the current Wellogic database needed by WRD-HC division to better assess the HC application process in a priority driven program with WRD.

In addition to these data collection and monitoring efforts, for more than 25 years through the USGS has the National Cooperative Geologic Mapping Program (NCGMP). This Federal cost share program is now expanded to geologically map the surficial glacial geology and collect samples to assess the glacial material and support the development of the National USGS 3D surface and subsurface geological mapping products on a county-by-county basis. As of October 2022, MGS has completed 23 3-D glacial geology quadrangle maps in Cass, Barry, and Calhoun Counties, has generated a Calhoun County map and has initiated the completion of the Cass County surficial geologic map. These map products include detailed surficial and bedrock maps at County scales. To meet National USGS mapping goals, MGS is now mapping at a larger scale (1:62,500 scale) for county maps and will be submitting an Ottawa County map by the end of 2022 along with a Draft Allegan and updated Kalamazoo County maps to USGS, which will be open file at MGS.

Approximately 8% glacial geology in Michigan has been mapped in three dimensions and there are approximately 25+ Counties needing this quality geologic mapping to support the growth in Michigan. In the last two years, MGS has cored six locations in Ottawa County and converted them to five monitor wells for the County who have installed continuous groundwater level monitoring equipment. The MGS-Ottawa County program is a collaboration to begin to establish an active groundwater monitoring system for Michigan, which would be suitable for inclusion for any future model in the area. MGS also drilled two core holes and established two monitor wells for the Allegan County mapping program.

The discovery of PFAS at locations across the state has required expedited geologic and aquifer mapping and data compilation to identify and protect potential receptors from exposure to the contaminants. The Michigan PFAS Action Response Team (MPART) has contracted the MGS to complete this mapping and have prepared geologic and aquifer mapping packages for a total of 27 sites and compiled well data for an additional 37 sites through September 2022. Under the geological mapping contract, a total of 64 focused 2.5-mile radius area sites have been completed by the MGS’s efforts.

EGLE is also supporting research on an innovative, real-time sensor network in the Clinton River. The goal of this work is to develop an open-source technology to assess and manage stormwater through hydrologic modeling that is accessible at a local scale. Dissemination and use of similar sensor networks would increase the availability of real-time data about Great Lakes water conditions and improve the state of knowledge about water quantity and quality.

The Michigan Great Lakes Protection Fund exists as a dedicated funding program to support research to improve scientific understanding of Great Lakes issues. The fund is administered by the Michigan Office of the Great Lakes.

V. Develop education programs and information sharing for all water users.

Michigan has several new and ongoing outreach and education programs that provide information about water conservation and efficiency and promote water stewardship principles and practices. Efforts are also ongoing to promote water stewardship through effective statewide communication strategies to improve the public's understanding of their impact on water resources and actions and behaviors that support responsible water use.

Presentations, Conferences, Webinars, and Trainings

EGLE and MDARD staff make educational presentations at meetings and various conferences as well as share information upon request, to a variety of interested parties. The WUAC and its subcommittee meetings are open to the public and provide educational opportunities and information sharing for water users and water managers about Michigan's ongoing program implementation. Meeting notes and informational materials from the WUAC proceedings are posted on an EGLE webpage.

EGLE continues to increase public awareness of water use information and access to data by publishing additional water use data online, holding public information meetings, and utilizing various media outlets. In addition, EGLE provides webinars, conferences, training, and information for businesses and industry to support enhanced water conservation and efficiency.

Source Water Protection Conference

EGLE hosted the Source Water Protection Conference in Mount Pleasant on October 12-13, 2022. The event was attended by community water supplies, watershed organizations, local public health staff, consultants, and others to learn more about best practices for source water protection, funding programs, and research on emerging topics. The event featured the U.S. Environmental Protection Agency (EPA) Source Water Program Coordinator as the keynote speaker and honored communities that have implemented source water protection plans that also promote conservation and efficiency. Presentations on water conservation and efficiency were highlighted during the conference.

Outreach for Agricultural Irrigators

MSU Extension convenes meetings around the state with agricultural water users to share information about conservation practices for irrigation.

Water Leak Pilot for Water Utilities and Residents
In 2022, the Office of the Clean Water Public Advocate received the final report for the Water Leak Pilot Program held in 2021. The program aimed to reduce water and energy waste associated with water leaks in homes in Benton Harbor and Highland Park. Water leaks can be a financial burden for municipalities and their residents and contribute to water quality and public health concerns. With the support of state agency staff and community partners, 96 homes in Highland Park and 70 homes in Benton Harbor benefitted from the program and received free plumbing repairs, totaling over $60,000 in each community. Cost of repairs averaged over $600 per home in Highland Park and over $900 per home in Benton Harbor (not including privately donated fixtures. Strong relationships with community partners were essential in carrying out this program. Some repairs found within the homes were outside of the programs scope and were unable to be addressed or were severe enough to prevent plumber access. These and other lessons learned through the pilot program will be useful in informing any future iterations. Additional data and analysis are needed to accurately quantify water and energy savings.

Highland Park Water Leak Detection Project
In 2021, EGLE funded a water leak detection program for the City of Highland Park through an Affordability and Planning (AP) Grant. The City is surrounded by Detroit and Hamtramck, is approximately 2.96 square miles and has a population of 8,977. This program allowed the city to assess its system and make strides to greatly reduce the amount of water lost on the both the private (customer) side and the public side of the distribution system. The final report for this study was submitted in September 2022. The program identified close to 1.3 million gallons per day (MGD) of water lost from leaks in the water distribution system. 97% of the leaks were able to be repaired as they were identified. The City will continue to apply for funding through the Drinking Water State Revolving Fund to address the remaining leaks. The city currently has a plan to target the entire system over the next ten (10) years.

Fix-a-Leak Week
EGLE's Office of the Clean Water Public Advocate promotes U.S. EPA's Fix a Leak Week each March to bring education and awareness to common plumbing leaks and their potential effects in residential homes in an effort to help support affordability and water quality for Michigan residents and community water supplies. Fixing leaks can save money, energy, and reduce health risks. This event focuses on:

- Sharing educational and how-to materials about the importance of finding and repairing household water leaks.
- Promoting water conservation resources available to Michigan residents.

Michigan Water School
MSU Water Resources Institute, MSU Extension, and Michigan Sea Grant continue to offer the Michigan Water School now available in an online module series. This

program is focused on educating local appointed and elected officials and staff about critical, relevant information needed to understand Michigan's water resources to support sound water management decisions. The program includes modules on water quantity, water quality, water finance and planning, and water policy issues. Topics covered include the Blue Economy, fiscal benefits of water management, incorporating water into local planning and placemaking, resources to help address water problems, water policy at the federal, tribal, state, and local levels.

From Students to Stewards Initiative
In 2020, EGLE launched an initiative to integrate water literacy principles in K-12 school curriculum, in partnership with the Michigan Departments of Labor and Economic Opportunity, Education, and Natural Resources, along with numerous community partners. This effort, called the From Students to Stewards Initiative, is intended to develop a life-long culture of stewardship by integrating Great Lakes and freshwater literacy principles into standards-based school curricula through place-based, authentic-experience approaches to improve stewardship behavior and provide an engaging context to motivate school performance. This initiative will teach STEM concepts using place-based, problem-based, and project-based approaches with a focus on Great Lakes literacy principles to foster the next generation of water stewards, leaders, skilled workers, and decision makers needed to solve complex water issues in a changing world. Six Michigan school districts participated in Phase 1 of the program to integrate water literacy principles and place-based education into school curricula and their continuous improvement plans. The program includes a toolkit and roadmap that other schools can use to develop their own Great Lakes-based curriculum to cultivate the next generation of water stewards.

EGLE secured additional funding from the U.S. EPA Great Lakes Restoration Initiative through the Great Lakes Restoration Initiative Program to implement Phase 2 of the From Students to Stewards Initiative in the 2022 and 2023 academic year. Phase 2 will support grants to 16 schools; interaction between Phase 1 and 2 cohorts and additional program evaluation. A total of 22 schools have participated in the program.

Great Lakes Fresh Water Week
Michigan held its annual Great Lakes Fresh Water Week June 4-12, 2022, to celebrate our water resources and encourage Michigan residents to experience water resources, become educated about water resources, and take action to become water stewards. This year's theme focused on becoming "water champions" – inspiring people to champion the health of this vital ecosystem and to enjoy, appreciate, and safeguard it for current and future generations. Watershed organizations, regional and local units of government, and other community partners hosted numerous virtual events to encourage water stewardship.

EGLE Classroom
EGLE helps educators, youth, and families access resources they need to learn about Michigan's environment, EGLE's work to protect it, and what they can do to

participate in that work through EGLE Classroom. Operated by EGLE's Environmental Education program, EGLE Classroom provides Michigan-based environmental curriculum, free hands-on resources to classrooms, professional development opportunities for educators, and video lessons on Michigan's environment and environmental careers. EGLE Classroom also administers the Michigan Green Schools certification program and hosts an annual Earth Day educational event. To view EGLE's environmental education opportunities or to borrow a hands-on activity from the Environmental Education Lending Station, visit Michigan.gov/EGLEclassroom and follow #EGLEClassroom on social media.

Integrated Assessments for Sustainability
EGLE's Sustainability Section provides a variety of on-site, direct assistance services to help businesses and communities meet their sustainability goals. Benefits of the integrated assessments include an increase of efficiencies and cost savings, elimination/minimization of waste streams, conservation of energy and water resources, and mitigation of risks and the potential for noncompliance.

EGLE also holds a Sustainability Webinar series promoting sustainability practices targeted toward businesses and industries in the water sector.

EGLE has reinstated its program formerly known as RETAP (Retired Engineer Technical Assistance Program) with a new program called Retired Engineers, Scientists, Technicians, Administrators, Researchers, and Teachers (RESTART). RESTART will provide assistance to institutions, government agencies and businesses with 500 or fewer full-time employees with on-site energy and sustainability assessments.

Forest to Mi Faucet
The DNR has launched a three-year initiative called Forest to Mi Faucet. The DNR Forest Stewardship Program is leading a dozen partners in connecting conservation groups to municipal water utilities and educating woodland owners about the relationships between forests and drinking water. Forest to Mi Faucet will strategically plant more than 800,000 trees to maintain or enhance water quality benefits.

The project builds on the federal Forests to Faucets 2.0 analysis of priority watersheds for protecting surface drinking water. The analysis, detailed in an interactive story map, identifies watersheds with potential for forest protection or restoration.

The DNR's Forest to Mi Faucet initiative has five main components:

1. Help at least 15 municipal water utilities implement source water protection plans.
2. Inspire and empower landowners to manage and conserve their woodlands to protect drinking water.

3. Plant 60,000 trees in riparian zones of urban and rural forests for water quality and reduced runoff.
4. Educate people about connections between forests and their drinking water.
5. Plant 750,000 trees in state forests to help protect water quality.

The goal of Forest to Mi Faucet is to build the foundation for a program to provide payment for ecosystem services where forest owners are compensated for practices that provide clean water.

WATER CONSERVATION AND EFFICIENCY PROGRAM IMPLEMENTATION TIMELINE AND STATUS

All components of Michigan's water conservation and efficiency program have been implemented. The foundation of the program, the water withdrawal assessment process, has been in effect since 2009. Sector-based water conservation measures are required to be reviewed annually by all large water users. Additional state funding resources have recently been allocated to bolster program areas of need. From the beginning, it has been recognized that the program would continually adapt based on new science, data, research, advancements in modeling, and technological innovation to improve and enhance sustainable water use. Michigan has shown a strong commitment to this forward-looking approach, continuing to improve its program, and remains dedicated to the betterment of the program and to upholding the ideals of the Compact.

Michigan is advancing new policies and programs to address climate, energy, and water that will further impact both state and Compact goals. This focus on climate, energy, and water presents new opportunities to identify specific innovative opportunities to improve Michigan's water conservation and efficiency program by building connections between current and new policies and programs and technological innovations. EGLE and the WUAC Water Conservation and Efficiency Committee are working collaboratively to identify strategies to integrate water stewardship into climate, energy, and water infrastructure policies, programs, including innovative technologies. These efforts will support the WUAC charge to identify priority recommendations for improvements to Michigan's Water Use Program and Water Conservation and Efficiency Program. In addition, new state policies and offices focused on environmental justice and clean water advocacy are improving state program administration and outreach and engagement efforts to address goals of equity, diversity, and inclusion.

Appendix 1 provides a full list of the water conservation and efficiency goals and objectives of Michigan's water conservation and efficiency program.

APPENDIX 1: MICHIGAN WATER CONSERVATION AND EFFICIENCY PROGRAM

Water Conservation and Efficiency Goals and Objectives

Goals

1. Ensuring improvement of the waters and water dependent natural resources;

2. Protecting and restoring the hydrologic and ecosystem integrity of the Basin;

3. Retaining the quantity of surface water and groundwater in the Basin;

4. Ensuring sustainable use of waters of the Basin; and,

5. Promoting the efficiency of use and reducing losses and waste of water.

Objectives

1. Utilize Michigan's Water Use Program and Water Withdrawal Assessment Process to guide long-term sustainable water use.

   a. The programs will be adaptive, goal-based, accountable, and measurable.

   b. Continue to develop and implement programs openly and collaboratively, with local stakeholders, Tribes and First Nations, governments, and the public.

   c. Prepare and maintain long-term water demand forecasts.

   d. Develop long-term strategies that incorporate water conservation and efficient water use practices.

   e. Review and build upon existing planning efforts by considering practices and experiences from other jurisdictions.

2. Adopt and implement supply and demand management to promote efficient use and conservation of water resources.

   a. Maximize water use efficiency and minimize waste of water.

   b. Promote appropriate innovative technology for water reuse.

   c. Conserve and manage existing water supplies to prevent or delay the demand for and development of additional supplies.

   d. Provide incentives to encourage efficient water use and conservation.

   e. Consider water conservation and efficiency in the review of proposed new or increased uses.

   f. Promote investment in and maintenance of efficient water infrastructure.

3. Improve monitoring and standardize data reporting among State and Provincial water conservation and efficiency programs.

a. Improve the measurement and evaluation of water conservation and water use efficiency.

b. Encourage measures to monitor, account for, and minimize water loss.

c. Track and report program progress and effectiveness.

4. Develop science, technology, and research.

a. Encourage the identification and sharing of innovative management practices and state of the art technologies.

b. Encourage research, development, and implementation of water use and efficiency and water conservation technologies.

c. Seek a greater understanding of traditional knowledge and practices of Basin First Nations and Tribes.

d. Strengthen scientific understanding of the linkages between water conservation practices and ecological responses.

5. Develop education programs and information sharing for all water users.

a. Ensure equitable public access to water conservation and efficiency tools and information.

b. Inform, educate, and increase awareness regarding water use, conservation, and efficiency and the importance of water.

c. Promote the cost-saving aspect of water conservation and efficiency for both short and long-term economic sustainability.

d. Share conservation and efficiency experiences, including successes and lessons learned across the Basin.

e. Enhance and contribute to regional information sharing.

f. Encourage and increase training opportunities in collaboration with professional or other organizations to increase water conservation and efficiency practices and technological applications.

g. Ensure that conservation programs are transparent and that information is readily available.

h. Aid in the development and dissemination of sector-based best management practices and results achieved.

i. Seek opportunities for the sharing of traditional knowledge and practices of Basin First Nations and Tribes.

APPENDIX 2: LINKS TO MICHIGAN WATER CONSERVATION AND EFFICIENCY DOCUMENTS

Michigan Water Strategy

2020 Water Use Advisory Council Biennial Report to the Michigan Legislature

2022 Water Use Advisory Council Biennial Report to the Michigan Legislature will be posted on this website after submission in late 2022.