

# The Ohio Water Table

A Publication of the Water Management Association of Ohio

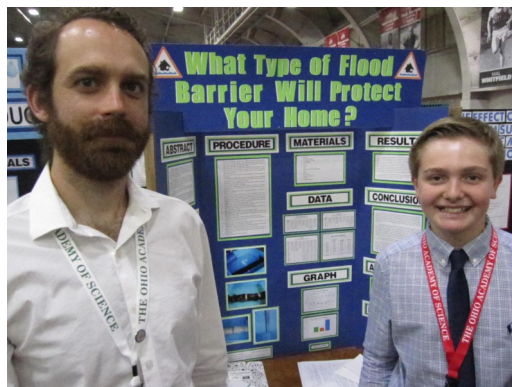
No. 146 / Quarterly



## WMAO Awards Scholarships at 2018 State Science Day

By **Rick Weber**, State Science Day Committee Chair

The 2018 State Science Day was held at The Ohio State University in French Field House, on Saturday May 12. Twenty-eight students requested to be judged for the two WMAO awards: 19 were in the lower 7<sup>th</sup> - 9<sup>th</sup> grade category, and 9 were in the upper 10<sup>th</sup> - 12<sup>th</sup> grade category. The Peter G. Finke Water Management Award in each grade category includes: a \$250.00 check, a plaque, recognition in WMAO's "The Ohio Water Table" publication, and an invitation to the WMAO Annual Conference in October. Kurt Rinehart, Peter Soltys, Zach Smith, and Rick Weber did the judging this year for WMAO.



**Photo 1:** Sam Hawkins, 7<sup>th</sup> grader at St. Columban School in Loveland Ohio, was awarded a WMAO scholarship.

The WMAO 2018 State Science Day awardee in the lower grade category is **Sam B. Hawkins**, a 7<sup>th</sup> grade student at St. Columban School located in Loveland. Sam's project was titled "What Type of Flood Barrier Will Protect Your Home?" Sam researched the effectiveness of three different barriers constructed and used to hold back water in a mini pool. Barrier #1 was a commercial flood barrier purchased online. The barrier was activated by soaking it in water for 10 minutes before using. Barrier #2 was a typical sand bag used in most floodwater mitigation situations. The bag is filled halfway with sand and folded over itself three times. Barrier #3 was constructed mixing 12 liters of cat litter with 8 liters of water, pouring the mixture into a 3 by 3 foot bag, and forming it into a log. Two such logs were additionally wrapped by another bag to form the barrier.

With the barriers constructed, Sam started the experiment. The procedure involved placing the front edge of the barrier in the mini pool on a predrawn line 36 cm from one end. Forty liters of water from two buckets were poured into the pool at a rate of

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## President's Column

**Craig Smith, WMAO 2018-2019 President**

I was in Nevada a couple of weeks ago. That's not too remarkable – a lot of us take trips around the country and around the world. I especially enjoy the view from 30,000 feet – it's spectacular and at times scary. The geology of the western states is breathtakingly beautiful, and I can't help thinking about the forces and processes that creates the mountains and canyons. The scary part wasn't the altitude, it was the massive plumes of smoke rising from wildfires and the stark gray of the mountain peaks.

The latter is the most sobering – there were white patches on the in

Rockies, but less than we humans are used to. I can't help but think how the citizens of our western states are going to adapt, to make the changes that will be needed to confront the limitations in their access to water.

It's human nature to be wary of, even fear, change. Change often brings uncertainty - those of us in the public sector know this all too well since face this uncertainty every four or so years. Uncertainty makes change hard it makes us hesitate even when we recognize the need for change.

Change is coming to WMAO. Later this month the Board will be evaluating Association Management Software. I believe Association Management Software will improve the functionality of our website, improve communication and interaction between our members and provide some, if not most, of the support that our Divisions have asked for. It will be a big change, but I think we'll be in a much better place as an organization.

*"Change is coming to  
WMAO....Association  
Management Software  
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functionality of our  
website....."*

Change is also coming, at least for a year, to our Annual Conference. As you know the WMAO Fall Conference is usually held over two days in early to mid-November. Two years ago, the Ohio Lake Management Society (OLMS) and the Indiana Lake Management Society made a joint bid to host this year's North American Lake Management Society's (NALMS) annual conference. The bid was accepted and the 2018 NALMS Annual Conference will be held in Cincinnati from October 30 to November 2. Since the conference dates essentially occupied the same portion of the calendar WMAO will forego our usual fall conference and share time and facilities with the NALMS conference. So, this year the WMAO Fall Conference will be one day event held on October 31 in conjunction with the opening day of the NALMS Conference.

I hope all of you have a great summer. And I hope to see you all in Cincinnati on Halloween.

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke extending to the right.

## WMAO Awards Scholarships at State Science Day

*Continued from Page 1*

one bucket per minute behind the barrier. As soon as the water touched the pool, a ten minute timer was started. Time was recorded when water was first observed leaking through the barrier. Depth measurements on both sides of the barrier were also taken at 10 minute intervals until the water reached equilibrium or three hours had elapsed. This procedure was repeated seven times for each of the three types of barrier. Sam also took pictures of each step of the procedure.

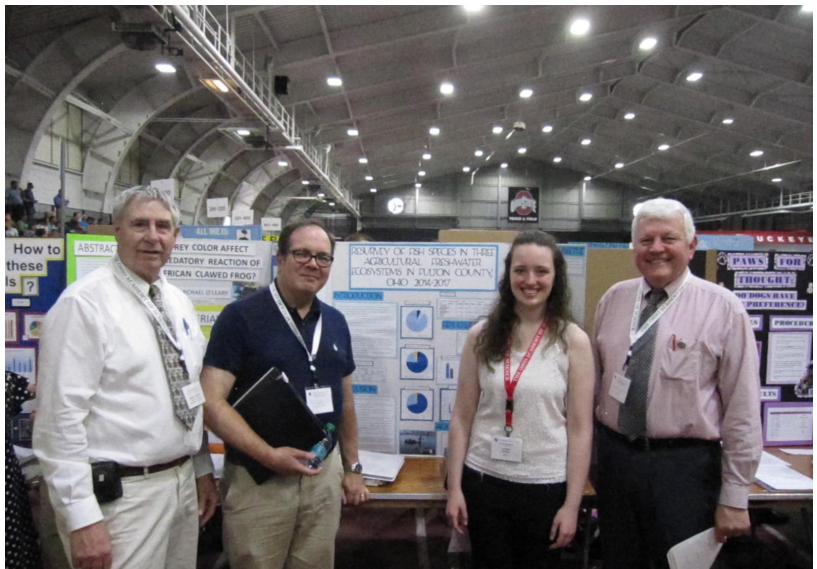
The results of the experiment reveal that barrier #3 made with the cat litter and water mixture out-performed the other two barriers. In four of the seven trials barrier #3 went the 180 minute duration of the test without attaining equilibrium and averaged 132.9 minutes. Neither of the other two barriers in their seven trials held back the simulated flood water for the three hour maximum of the test. The commercial flood barrier #1 averaged 61.4 minutes until equilibrium attainment, while the sand bag barrier #2 averaged 44.2 minutes.

Sam hypothesized that the commercial flood barrier would be the one that performed the best to hold back water. Even though his hypothesis was not proved true, Sam constructed an excellent project with good documentation and made effective use of the scientific method. Sam's science teacher at St. Columban School is Mr. Ben McPheron.

The WMAO 2018 State Science Day awardee in the upper grade category is **Jordan M. Skates**, a senior at Pettisville High School located in Pettisville. Jordan is only the second individual to receive WMAO's first place award two years in a row. Jordan's project was titled "Resurvey of Fish Species in Three Agricultural Freshwater Ecosystems in Fulton County, Ohio 2014-2017." The objective of her study was to resurvey in 2017 three different freshwater bodies surveyed in 2014 for the purpose of identifying any relationship between environmental abiotic factors to the population diversity and individual growth of fish species. The study area included the Pettisville school pond, the school ditch, and Nafziger Creek. The siting criteria was that the areas had to represent three different ecosystems surrounded by farm land with no canopy cover, and be able to sustain a fish population. Jordan's hypothesis was that the data will show an increase in individual fish species growth and numbers because the ecosystems are healthy, with abiotic factors the same as the 2014 survey.

Jordan began the proof of her hypothesis by researching literature which identifies fish species and defines methods to determine fish age and growth. She learned that on average fish increase in length over time. She also learned the effect of water quality on fish growth rates including water temperature and dissolved solids present in the water. Finally, she researched the effects of anthropogenic influences on freshwater communities, which in this study could be dredging or channelization.

Jordan conducted her field work by collecting and identifying fish species at each of the three



**Photo 2:** Committee members Rick Weber, Peter Soltys, and Kurt Rinehart congratulate Jordan Skates, award recipient, from Pettisville High School, Pettisville, OH.

freshwater bodies in her study using baited Torpedo minnow traps. Jordan also did a micro/macro invertebrate survey at each site. She collected water samples for water quality analysis. The parameters analyzed were nitrate, phosphate, turbidity, and pH. Jordan collected soil at each site to determine soil type to correlate with the soil survey of Fulton County. Additionally, ODNR staff electro-shocked the pond fish to determine fish species, age, size, and numbers. Jordan kept a detailed field and lab book to accurately record data. All results and calculations were listed in tables and graphed to make comparisons and conclusions.

Jordan's hypothesis was only partially supported. The data supports the idea that there is a relationship between fish species richness and abiotic factors of the three different freshwater bodies. The pond and creek both increased in population and species richness with either maintained or improved water quality. While the ditch did not significantly decrease in water quality, it greatly decreased in population diversity. Jordan demonstrated a thorough understanding of her project, composed an excellent report, and made effective use of the scientific method. Jordan's science teacher at Pettisville High School is Mrs. Donna Meller.

# **Ohio Statewide Floodplain Management Conference**

**August 1 & 2, 2018**

**Doubletree Hotel Columbus/Worthington  
175 Hutchinson Ave., Columbus OH 43235**

**Theme: NFIP for the 21st Century**

***Visit the [conference website](#) for more information.***



# Research Highlights from State of Ohio Water Resources Center

## The Fate and Function of Acid Mine Drainage

By **Danielle Kohan**, Shumate Fellow, The Ohio Water Resources Center

For hikers and general wanderers who enjoy getting out into nature, the sight of a red earthed stream may be familiar. This unusual coloring is often an indication that the area may have previously been subject to mining operations. The excavations fill with water, and pollution seeps from the abandoned mines and waste piles. As water leaches out, this acid mine drainage (AMD) contains unnaturally high levels of acidity and dissolved metals, some of which are toxic. The AMD mixes with the surrounding water and causes an increase in acidity and concentration of toxic metals, a condition which impairs the water and prevents aquatic life from thriving.

Although systems to treat AMD have been created and implemented, areas exist where the water is still quite acidic. In order to better understand the fate of AMD, and why it persists in certain areas despite treatment efforts, Ohio Water Resources Center funded researcher, Prof. Elizabeth Herndon and her team are investigating the hydrology and geochemistry of the watershed to find the connections between the AMD system and the surrounding streams and ponds. Prof. Herndon is studying the Huff Run watershed, located near in Mineral City, OH. As its name might suggest, this area was previously a site of mining operations for coal and other minerals. Two thirds of the land surface have been affected by legacy mining operations, evidenced by mine refuse piles which stipple the landscape.



**Picture 1:** Rust-colored AMD affected water



**Picture 2:** Limestone rock treatment area

To gain a better understanding of AMD and its effects on the environment, I visited Mineral City to join Prof Herndon and her graduate student, Lindsey Yazbek, in the field. I have seen rust colored streams before, but this extremely red/orange water was striking. They first showed me a stream, running through a channel parallel to the road, which receives a mixture of treated mine discharge and neutral stream water. Measurements taken at this outlet have revealed that the water acidity and dissolved metal concentrations are high, meaning there is still an undiscovered AMD source of this contamination entering the tributary. We then hiked into the main abandoned coal site. They pointed out the main treatment site: toxic limestone rock piles, which work by neutralizing the pH as the impacted water flows through. Next, they showed me a beaver dam area (beavers have been safely

relocated), which separates the cleaned area from the area which still shows signs of AMD impact, despite the treatment efforts. Potential sources of AMD may be leachate from the surrounding refuse piles, contamination from groundwater trickling up into the surface water, or even drainage from an undiscovered mine opening. By taking a variety of samples at different times, Prof Herndon is able to collect information about the spatial and seasonal differences in discharge that may help unravel the complexities of the system. Tracking the water acidity, dissolved metal concentration, and where it meets the neutral water in different parts of the watershed can help determine how, when, and where the water is still being impacted – the key to determining how to capture and treat the remainder of the AMD water currently treated. This work may also provide a model for other watersheds that may be experiencing similar issues and will help watershed managers develop better strategies for implementing treatment systems, as well as providing more insight into the overall fate and function of AMD impacted systems.



**Picture 3:** A beaver dam separates clean water from AMD impacted water



## Changes in the Ohio EPA's Water Quality Monitoring Program

By **Kurt Keljo**, OWPA President

As some people are aware, the state's water is going through some significant changes. While what follows is not an official statement from the Ohio EPA, it is my understanding of the information available at the present time. Some of the changes are a product of new regulations with regard to the development of Technical Support Documents (TSDs) and Total Maximum Daily Loads (TMDLs). Both documents require significantly more public input than they have in the past. In addition, the TMDL production process in particular was on hold for a couple of years, as new regulations were put in place (H.B. 49) governing TMDL development in order to fix the statute due to an Ohio Supreme Court decision. The agency is now working on rules to comport with that statute which opened the door to issue reports again. Partly as a result, there is a backlog of TSDs and TMDLs, 21 TSDs



and 44 TMDLs that are in various stages of completion. A list of the documents and their stages of completion is available on the Ohio Watershed Professionals Association's webpage.

Because of this backlog, the number of TMDL watersheds being sampled this year is limited to one, the Cuyahoga. There is no schedule for future monitoring in the current Integrated Report, which suggests that the future schedule beyond 2019 is uncertain. It is hoped that the agency will be able to return to previous monitoring levels, when 400-700 sites were sampled in a given year.

In light of the fact that the return interval between sampling years in a given watershed could already be as long as 15 to 20 years, changes may need to be made in the manner monitoring is undertaken. What changes might be implemented is yet to be determined. The establishment of statewide standards regarding loads for such parameters as phosphorus, which is being considered, may have an impact on how monitoring is undertaken. In some cases, supplemental monitoring is being done on a regional scale by other entities, and certain monitoring responsibilities may be contracted out. The agency is open to input based on monitoring data from other entities.

The Ohio EPA field staff members remain occupied with a variety of sampling tasks. During the 2018 field season, Ohio EPA will be sampling for 319 projects (approximately 65 sites) and a water quality survey for the Cuyahoga River Tributaries. In addition, lake sampling will be conducted at Grand Lake St. Marys, Buckeye Lake and Caesar Creek Reservoir.

*There is a new Water Quality Certified Professional program that will be getting underway, and changes are in process with regard to the Qualified Data Collector program.*



*Photo courtesy of USGS, Little Miami River Basin*

There is a new Water Quality Certified Professional program that will be getting underway, and changes are in process with regard to the Qualified Data Collector program. The WQCP program will focus on certifying individuals to conduct wetland habitat and biological assessments to evaluate wetlands, and stream habitat assessments including the QHEI and HHEI to evaluate streams, in support of applications for section 401 water quality certifications and isolated wetland permits. The WQCP rules are in development, but the program may also certify WQCPs to conduct stream biological assessments and/or may utilize Qualified Data Collectors for stream biology. Any proposed changes to the QDC program will be shared with stakeholders for feedback before they are put in place. Whatever changes may be undertaken with regard to water quality monitoring, it remains a core function of the Ohio EPA.

# Innovation in Water Resource Management



## 47th Annual WMAO Conference

Wednesday, October 31, 2018

*Hilton Netherland Plaza and Duke Energy Convention Center*  
Cincinnati, OH



The WMAO 2018 Annual Conference will be held in conjunction with the [North American Lake Management Society's](#) international conference. Pre-conference NALMS [local tours](#) and [workshops](#) on October 30th are available to the WMAO audience. Registration directly through NALMS.

Two concurrent sessions and an evening reception with poster presentations will comprise the WMAO conference on October 31st held at the same venue as NALMS. WMAO attendees will also have full access to all NALMS concurrent sessions, as well as their exhibit hall and poster displays.



**Final adjustments are being made to the WMAO agenda that will be posted online in mid-August.**

**Cost for this one-day WMAO event is \$190. Register online at: [www.wmao.org](http://www.wmao.org). CEU credits are offered through NALMS.**

**Please consider becoming an exhibitor or sponsor at the 3 day international event: <https://www.nalms.org/> or October 31st only for \$250: <http://wmao.org/> !**

Questions? Feel free to contact the WMAO office at 330-466-5631 or [admin@wmao.org](mailto:admin@wmao.org).



# Ohio EPA Issues Latest Water Quality Report

Press Release - Ohio EPA

{<http://www.epa.state.oh.us/News/OnlineNewsRoom/NewsReleases/TabId/6596/ArticleId/1300/language/en-US/ohio-epa-issues-latest-water-quality-report-2018.aspx>}

On March 22, Ohio EPA released the draft 2018 water quality report that outlines the general condition of Ohio's waters and includes a list that identifies impaired waters that are not meeting their federal or state water quality goals, as well as waters that have improved to meet federal standards.

The draft report highlights that between the 2002 and 2018 biennial reporting cycles, the percentage of large river miles in full attainment of federal water quality goals has increased from 62.5 percent to 87.5 percent. The draft report includes 71 areas that have improved enough to de-list as impaired since the Agency's last report in 2016. Waters being removed from the list include the Hocking and Walhonding rivers and tributaries to the Maumee, Little Muskingum, Vermilion and Ohio rivers.

"This is a clear sign that our work and long-term investments in Ohio to improve water quality are succeeding," says Ohio EPA Director Craig W. Butler. Several areas also have been added to the list as being impaired for drinking water due to harmful algae, including Sims Run, parts of the Maumee River, the headwaters to Grand River and the headwaters of Cowan Creek in the Little Miami River watershed.

For 2018, the Agency is proposing to designate the open waters of Lake Erie's Western Basin (from the Michigan/Ohio state line to the Marblehead Lighthouse) as impaired for recreation due to harmful algae and drinking water due to occurrences of microcystin. Previously, only the shoreline area of the Western Basin and drinking water intakes had been designated as impaired.

This first-time assessment of Lake Erie was completed because the Kasich Administration requested input from representatives from The Ohio State University Sea Grant College Program, Bowling Green State University, University of Toledo, National Oceanic and Atmospheric Administration (NOAA) and U.S. EPA to identify a science-based process for assessing impairment in Ohio's Western Basin open waters for harmful algae. To date, no such process has existed, so Ohio has not been able to determine if the open waters of Lake Erie should be listed.

*"This is a clear sign that our work and long-term investments in Ohio to improve water quality are succeeding," says Ohio EPA Director Craig W. Butler.*

"We have taken unprecedented steps in recent years to put Lake Erie on a better trajectory – including investing more than \$3 billion to improve its water quality," said Director Butler. "Governor Kasich takes his responsibility to protect the lake very seriously. While designating the open waters of the Western Basin as impaired does not provide, as some suggest, a magic bullet to improve the lake, the State remains committed to our obligations under the Clean Water Act and to examine emerging science and practices that we can put in place to help improve it."

The summary of each water body assessment unit is available online at Ohio EPA. Visit this [website](#) to review specifics concerning water bodies that are impaired or delisted.

***REGISTER NOW!***

***Post Construction  
Inspection & Maintenance  
Workshop***

**OHIO  
STORMWATER  
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In partnership with:



**Franklin Soil and Water  
Conservation District**  
Creating Conservation Solutions for Over 60 Years

Join the Ohio Stormwater Association (OSWA), local MS4 communities and other stormwater professionals for the day as we learn about maintenance of post construction practices (such as basins, bioretention, permeable pavements, and more) and what it takes to manage a long-term inspection and maintenance program. Elizabeth Hiser, with Cuyahoga Soil & Water Conservation District, will be our presenter.

Agenda:	8:30 a.m. - 9:00 a.m.	registration
	9:00 a.m. - 12:00 p.m.	presentations
	12:00 p.m. - 1:00 p.m.	lunch (provided)
	1:00 p.m. - 3:00 p.m.	presentations

***Meeting Locations***

***[Register Here](#)***

**Date:** July 26, 2018  
**Cost:** \$25.00  
**Location:** Cambridge Center  
418 N. Central Ave.  
Lima, OH 45801

**Date:** August 2, 2018  
**Cost:** \$25.00  
**Location:** Butler County Engineers Office  
1921 Fairgrove Avenue  
Hamilton, OH 45011

# Low Dam Removal to Improve the Great Miami River

## *Project Area Near University of Dayton Arena*

Submitted by **Mike Eckberg**, Miami Conservancy District

By fall, paddlers and trail users will enjoy a new look and feel along the Great Miami River near the University of Dayton Arena. A dangerous low dam will be removed. In its place, water will cascade over a riffle of stones, creating a more picturesque experience while improving river safety, river access, and water quality in the Great Miami Riverway.

The Ohio Department of Transportation (ODOT) is fully funding the \$1.75 million project to remove the Tait Station low dam. The project is scheduled to begin July 1 and be completed in October.

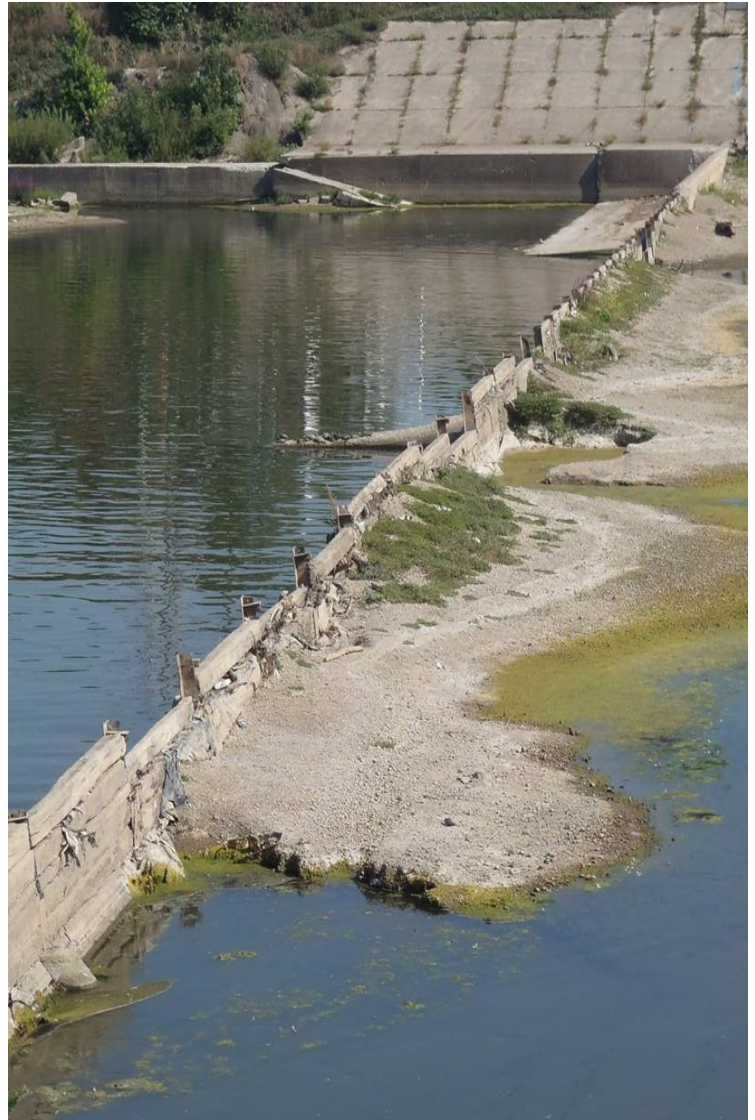
“Removing Tait Station Low Dam is a real positive for the paddling community,” says Sarah Hippensteel Hall, Miami Conservancy District (MCD) manager for watershed partnerships. “Low dams are notoriously dangerous. Boaters can be trapped at low dams and drown. Now, people will be able to more safely enjoy this section of the river.”

Removal of the dam also is expected to improve water quality as well as habitat for fish, insects and birds that live in and along the river.

MCD worked with ODOT to secure funding for the project. The Tait Station low dam project is part of MCD’s work to improve conditions along the Great Miami Riverway – 99 miles of river, paved trails and connected communities in southwest Ohio.

The 2015 US Army Corps of Engineers report about the Great Miami River Corridor recommended removing the low dam. Both the City of Dayton and Montgomery County passed resolutions supporting the project.

The dam no longer serves any purpose and needs extensive repairs totaling \$5 to \$8 million. It is not part of MCD’s flood protection system.





## WATER MANAGEMENT ASSOCIATION OF OHIO

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*Dana Oleskiewicz, Administrative Director*

[www.wmao.org](http://www.wmao.org)

The Water Management Association of Ohio (WMAO) is the one organization dedicated to all of Ohio's water resources.

**VISION:** To be recognized statewide as the go-to community for people who manage and safeguard Ohio's water resources.

**MISSION:** To support Ohio's water resource professionals with essential information, education, and networking opportunities

*Permission to reprint with credit to WMAO.*



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