

PIPELINE

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PRESIDENT'S MESSAGE

Michael Hard
Branch County Drain Commissioner



Greetings everyone,

Growing up on a farm, when I think of fall, I think of harvest. Here is wishing our agricultural community a safe and bountiful harvest. In the drain world, when I think of fall I think of all the projects that need to be completed before the ground freezes or the asphalt plants shut down. I don't know about you, but it is always a race for me to get those projects done before the snow flies.

I hope each of you took the time to attend the fall district meetings. The meetings provide a perfect opportunity for networking with other commissioners and associate members. If you are not careful you might even learn something new.

Sign up for the MACDC Annual Winter Conference is now open. The conference is February 11th thru the 13th, 2026 at Grand Traverse Resort in Acme, Michigan. I would like to thank everyone involved in the planning of the conference. The conference provides many educational sessions and networking opportunities. Please plan on taking advantage of this wonderful conference opportunity.

I consider MACDC my drain family, and family takes care of family. If you are dealing with a difficult situation or just have a quick question, please reach out to a member of the board and we will help you in any way that we can. A little extra support during a difficult time can make a big difference.

I would be remiss if I did not mention the drought going on in most of Michigan. This is the first year in my 22 years of being the Branch County Drain Commissioner that all the legal lake levels under my supervision were substantially under their legal level for over two months. It seems to be a struggle for many people to understand that it takes rain to maintain legal lake level, and we didn't get any.

Sincerely,
Michael Hard



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CONFERENCE SCHEDULE

Tuesday, February 10

- 1:30–3:00 PM **Legislative Meeting**
Directors Room
- 3:00–5:00 PM **Board of Directors Meeting**
Directors Room
- 12:00–6:00 PM **Exhibitor Set-up**
Governors ABCD

Wednesday, February 11

- 8:00 –2:00 PM **Exhibitor Set-up**
Governors ABCD
- 10:00 AM **Registration Opens**
Governors Foyer
- 12:00 PM **Lunch on Your Own**
- 1:10 PM **Call to Order and Welcome**
Governors EF
- 1:15–3:00 PM **Educational Sessions**
Governors EF
- 3:00–3:30 PM **Break/View Exhibits**
Silent Auction Opens
Governors ABCD
- 3:30–5:00 PM **Educational Sessions**
Governors EF
- 6:00–7:00 PM **Reception/View Exhibits**
Governors ABCD
- 7:00–8:30 PM **Strolling Dinner/View Exhibits**
Governors ABCD
- 8:30 PM **After Dinner Activities**

Thursday, February 12

- 7:30–9:00 AM **Breakfast**
Level 17
- 8:30 AM **Exhibit Area Open**
Governors ABCD
- 9:15–10:30 AM **Educational Sessions**
Governors EF

Thursday, February 12 cont.

- 10:30–11:00 AM **Break/View Exhibits**
Governors ABCD
- 11:00–12:15 PM **Educational Session**
Governors EF
- 12:15–1:30 PM **Lunch/2026 Awards Program**
Governors EF
- 1:30–3:15 PM **Educational Sessions**
Governors EF
- 3:15–3:45 PM **Break/View Exhibits**
Governors ABCD
- 3:40 PM **Silent Auction Ends**
Governors ABCD
- 3:45 PM **Exhibitor Tear-down**
Governors ABCD
- 3:45–4:45 PM **Educational Sessions**
Governors EF
- 4:45 PM **Associate Member Meeting**
Governors EF
- 6:00–7:00 PM **Reception**
Tower Ballroom Foyer
- 7:00–8:30 PM **Dinner**
Tower Ballroom
- 8:30 PM **After Dinner Activities**
Euchre Tournament
Mackinac Ballroom

Friday, February 13

- 7:30–9:30 AM **Breakfast**
Level 17
- 9:30 AM **MACDC District Meetings**
Tower Ballroom
- 10:00 AM **Business Meeting/
Committee Reports**
Tower Ballroom
- 11:00 AM **Adjourn**

26TH WINTER CONFERENCE

CONFERENCE SESSIONS

Wednesday, February 11

1:15–2:00 PM

The Contested Case Process: How to Seek Review of Adverse Permitting Decisions

Dan Bock—Fahey Schutlz Burzych Rhodes

Obtaining environmental permits is a necessary, and often difficult, part of every Drain Commissioner's job. It is important to know how to seek review of adverse permitting decisions. This presentation will walk you through the contested case process, which is how state permitting decisions are reviewed administratively and by the courts.

2:00–2:30 PM

New Flood Data

*Luke Trumble—EGLE Water Resources Division
Steve Roznowski, PE—Spicer Group*

This session will give an overview of the new flow rate calculation that EGLE is using.

2:30–3:00 PM

Dynamically managing emergency situations during construction: Tecumseh Dam case study

*Ed Scheffler—Lenawee County Drain Commissioner
Rich Graham, PE—Spicer Group*

During the critical reconstruction of the auxiliary spillway at Tecumseh Dam, an adaptive lake level management strategy was executed for Redmill Pond and the dam itself. This high-stakes operation required seamless coordination with key stakeholders, including operators of two downstream dams, the City of Tecumseh, MDOT, and EGLE. The effort successfully navigated multiple significant rainfall events upstream in the watershed, ensuring stability and safety through proactive collaboration and real-time response.

3:30–4:15 PM

YPC Interactive Presentation

YPC Committee

Join our Young Professionals Committee for an interactive presentation featuring audience participation and test your MACDC knowledge. Contestants will be rewarded during the trivia.

4:15–5:00 PM

Legislative Update

Deena Bosworth—Michigan Association of Counties

MACDC lobbyist Deena Bosworth will give an update on the newly elected lawmakers, new legislative session, and discuss the bills that affect the work of county drain offices.

Thursday, February 12

9:15–9:45 AM

How Solid is your Drain Accounting?

*Megan Boos—Ottawa Water Resources
Cole Watson—SolidCircle*

In this session we will dive into the SolidCircle Drain Ledger Software. We will go over what it does and where the software is going. Megan Boos from Ottawa will go over how Ottawa is utilizing the software and some of their learned tips and tricks along the way. We then plan to have a Q+A session where the group can ask questions they have with the goal of learning how we can all effectively and efficiently manage our drain accounting for future sustainability and growth.

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CONFERENCE CONT.

9:45–10:30 AM

Getting to the Bottom Line: Fully Understanding Computation of Costs

Stephen Hayduk—Bendzinski & Co.

Brittany Nichol—Fahey Schultz Burzych Rhodes

This presentation will break down each component of cost computation, ensuring you properly account for — and fully understand — each line item. It brings together both legal and financial perspectives to help you arrive at a final computation of cost that is clear, accurate, and prepared for public disclosure. It will also provide a general overview of the different types of bond sales and how those are impacted by the computation of costs.

11:00–11:30 AM

Section 197 - 10 Years Later

Brian Wendling—Saginaw County Public Works Commissioner

This session will provide an update to attendees after performing approximately 1,200 legal reviews and associated district boundary changes under Section 197 of the Michigan Drain Code. Attendees will hear the pros and cons of performing boundary revisions, how to deal with future district boundary changes, and the results of all those legal reviews. As a wrap up, this session will share how all of this may impact your drain list and their respective financial accounts.

11:30 AM –12:00 PM

Elevate Your Annual Report

Stacy Hissong—Fahey Schultz Burzych Rhodes

Annual reports aren't just a legal requirement—they're a chance to showcase your office's achievements. This session covers the essentials and offers practical tips to make your report clear, compelling and impactful.

1:30–2:00 PM

Grants: 2026 and Beyond

Wayne Hofmann—Wade Trim

This session will provide insights into stormwater funding available in the FY 2026 Federal and State budgets, while also looking ahead to key federal spending authorizations that are up for renewal in 2026.

2:00–2:30 PM

Stream Mitigation

John Saltanovitz—EGLE Water Resources Division

This session will review means and methods for minimizing stream mitigation.

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2:30–3:15 PM

Ask a Lawyer: Drainage Legal Questions, Answers & Practical Insights

*Cole Hedrick—Fahey Schultz Burzych Rhodes PLC
Lauren Burton—Clark Hill PLC*

Ever wish you could ask an attorney about the legal issues that are confusing or make your life harder (free of charge)? This is your chance. Submit your questions in advance and join an open conversation tackling real-world legal issues.

3:45–4:15 PM

Ground Penetrating Radar for Drain Tile

*Will Word—Word Construction, Inc.
Alfredo Delgado—Stream Tile, LLC*

This session will demonstrate how Ground Penetrating Radar (GPR) technology can assist County Drain Commissions in accurately locating, mapping, and verifying existing drainage tile within drainage easements. Attendees will learn how GPR can be used to re-establish or correct GPS coordinates of buried infrastructure, improving record accuracy and reducing costly excavation or guesswork. Real-world examples will show how modern radar mapping integrates with GIS systems to enhance drain maintenance, permitting, and long-term asset management.

4:15–4:45 PM

Proactive Lake Level Management with Sensors and AI

*Ryan Woloszyk, PE—Oakland County Water Resources
Branko Kerkez—Hyfi*

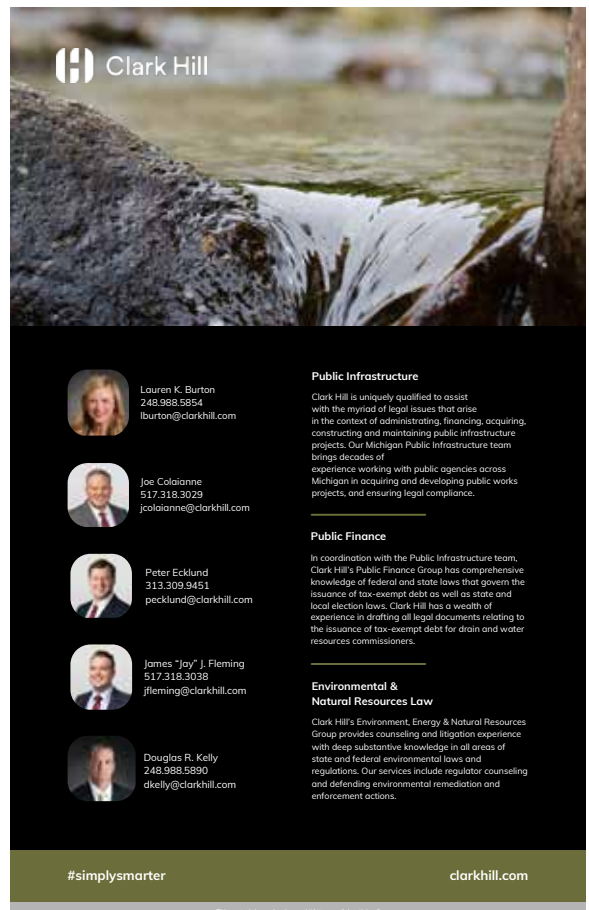
With demands for adherence to legal lake levels and changing rain patterns, Oakland County has pioneered a technology partnership that transforms lake management from reactive to proactive. This session demonstrates how real-time monitoring, predictive modeling, and smart alerting systems help drain commissioners document lake level fluctuations, automate reporting, and anticipate problems before they escalate. This hands-on session goes beyond theory—attendees will test drive a live dashboard on their phones. You will leave with practical implementation strategies and experience firsthand how these tools have reduced response times and enabled proactive maintenance across Oakland County's system of over 50 lakes.



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SOUTHEAST DISTRICT HOSTS INNOVATIVE MEETING

The Southeast District hosted its fall district meeting on November 5th with an innovative format in Lansing. Legislators and staff from the district were invited to participate in an informational forum to learn more about the work conducted by drain commissioners.

Wayne County Drain Commissioner Elmeka Steele and Washtenaw County Water Resources Commissioner Gretchen Driskell gave an engaging presentation on the importance of stormwater management and viable funding sources to maintain and invest in drain infrastructure.

Following the forum, the group toured the nearby Montgomery Drain, led by Ingham County Drain Commissioner Patrick Lindemann and joined by Deputies Paul Pratt and Carla Clos. The Montgomery Drain project reconstructs a century-old urban storm drain that carries runoff from the Frandor commercial district and surrounding residential neighborhoods to the Red Cedar River. Through the use of modern green-infrastructure strategies – including restored naturalized channels, cascading

treatment systems, expanded detention features, and native plantings – the project directly addresses the estimated 50,000 - 75,000 pounds of annual pollution historically entering the Red Cedar River from this watershed.

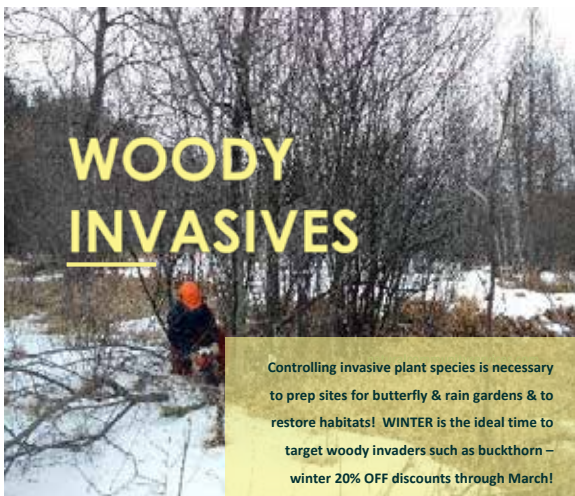
The redesigned system is engineered to remove approximately 96% of that pollutant load, significantly improving water quality while simultaneously enhancing wildlife habitat, stabilizing drainage function, and creating a more attractive, accessible landscape for the community.



Commissioners Steele and Driskell presenting



Meeting attendees touring the Montgomery Drain



John DeLisle - CERP, Principal Ecologist Ph: 248-672-7611

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NEW FACES

Meet Michigan's Newest Drain Commissioners

Editor's Note: With over 20 new drain and water resource commissioners elected or appointed for 2025, we have a lot of new faces. New commissioners are being featured throughout 2025.

TIM O'NON, **Leelanau** **County Drain** **Commissioner**

Why is serving as Drain Commissioner important to you?

Serving as Drain Commissioner is vital to me because it enables me to protect the land and water that make Leelanau County unique.

Growing up here and working in my family's land surveying business, I have developed a deep connection to the area and a firsthand understanding of the importance of effective water management for our environment and quality of life.

This role offers me the chance to manage our infrastructure responsibly and transparently. My goal is to provide cost-effective water management solutions while keeping the community informed and engaged in the decision-making process.

How will your former work experience help you serve in the position? What are your qualifications?

I have 46 years of land surveying and 41 years of civil engineering experience, having worked extensively throughout Leelanau County. My career, spanning from Suttons Bay to southern Michigan, Chicago, Colorado, and Arizona, has given me a deep understanding of the local landscape and water systems. My goal is to implement transparent water management practices that respect property rights and preserve Leelanau's natural beauty.



O'Non

What do you hope to accomplish as Drain Commissioner?

I will focus on maintaining and upgrading our drainage systems; anticipating, and resolving issues proactively; and ensuring ongoing communication with all involved parties. I aim to ensure our drainage systems continue to serve the community effectively and sustainably.

I will ensure the Drain Commissioner's office maintains open and transparent communication with residents about water management issues while keeping department expenses in check and maintaining operational efficiency. Additionally, I will ensure the availability to collaborate with local planning commissions during their Master Plan reviews. This early collaboration will help integrate drainage and stormwater management, minimizing potential issues and aligning new developments with the county's natural resources. My goal is to provide sound, cost-effective solutions to water management while keeping the community informed and involved in the decision-making process.

NEW FACES CONT.

LARRY PROTASIEWICZ Mason County Drain Commissioner

Before becoming drain commissioner, Larry Protasiewicz, P.E., retired from Spicer Group, where he worked for 36 years. He was named a principal of the firm in 1996 and served as vice president for 11 years.

Protasiewicz started working in Pinconning as a young boy, where he developed a love of farming. He later attended Michigan State University. There he worked for a faculty member typing reference cards and published several papers jointly.

While pursuing his master's degree at MSU, Protasiewicz worked with another faculty member to develop subsurface irrigation systems, which required studying and understanding the benefits of managing the water profile in the soil.

As his career advanced, Protasiewicz met Bill Rosebush, who was serving as Bay County Drain

Commissioner. He took Protasiewicz under his wing, mentoring him. Protasiewicz credits mentors like Rosebush for helping him understand the complex issues involved in being a Drain Commissioner.

“People need to understand that we are always teaching people; if you are not mentoring someone, if you're not teaching or finding your replacement or your next person or employee or teaching them, you're not doing your job,” Protasiewicz said. “You're holding them back from growth. That is one of my biggest life lessons to share.”



Protasiewicz



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STEPHANIE BARRETT
**Muskegon County Water Resources
Commissioner**

How will your experience and background help you in your new role?

From 2000 to 2011 I worked as a Zoning Administrator for a local township. As part of that I was involved in bringing water and sewer to areas of the township, working with property owners regarding easements and assessments, as well as site plan review – including drainage. I worked with the previous Drain Commissioner on several commercial sites in the township. I started working in the drain office in 2011 as the Drain Records Clerk. Within a year I became the Office Manager (a newly created position just for me) and within a year after that I became the Deputy. I continued as the Deputy until I stepped down in 2021.

What are you most looking forward to in this role?

Educating people on the importance of this office and the impact we can and do make not only on the environment but also in their daily lives (through flood prevention, improving water quality, etc.)

What inspired you to be a leader for improving drains and/or water resources?

Before I started working in the office in 2011, I really didn't know much about what the office did or could do – let alone the history of why the office was created. Once I started working in the office and realized the impacts we did and could make, as well as why our office was created, I wanted to share that information with as many people as I could. I still strive to educate people on the importance of our office and what we do.

What challenges does your county face related to functions of the Drain Commission?

As with many other counties, finance is one of our greatest hurdles. Many of our drains had limited maintenance over the years and now require more work than our annual expenditure limit allows without petitions, spreading the maintenance over several years, or receiving a resolution from the local municipality allowing us to spend more than the limit.

In working with the county and the local communities, I intend to help provide an education about the drains and how the assessments are made. In doing so, we can increase the capacity of this office while also providing meaningful benefits to the communities we serve. By actively including the municipalities throughout the stages of project development, I intend on providing greater insight into both the costs and benefits associated with the work being performed. The more awareness that we can bring to the communities, the more the projects developed will be able to help and collaboration will be increased through everyone who is involved.



Barrett

Recent MACDC Innovation & Excellence Awards:

- 2020 Selkirk Lake Drain (Allegan Co.)
- 2022 Cloverdale Drain (Barry Co.)
- 2024 Lake Bluffs Drain (Leelanau Co.)

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The Macomb County Public Works drone that generates high-resolution images inside sewer pipes.

Combining AI and Drone for Underground Infrastructure Inspections

By: Norb Franz, Macomb County Public Works

PROJECT BACKGROUND

The Macomb County Public Works Office (MCPW) has jurisdiction of 475 drains—402 miles of open drains and 330 miles of enclosed pipe. On Christmas Eve 2016, a massive sinkhole occurred on 15 Mile Road in the City of Fraser after an 11-foot-diameter interceptor pipe in the Macomb Interceptor Drainage District—which conveys the sanitary sewage of nearly 600,000 people in 11 of Macomb County’s 27 communities—collapsed. Emergency bypass was installed, the sinkhole excavated and a new interceptor installed. Under the direction of Macomb County Public Works Commissioner Candice S. Miller, who took office one week after the infrastructure disaster, the repair of one of Michigan’s largest infrastructure disasters was completed in 11 months at a cost of \$70 million—well ahead of initial projections and far below the initial project cost estimate of \$150 million.

During her first year in office amid the ongoing repair of the MIDD interceptor, Commissioner Miller and her team launched a comprehensive inspection program of the largest enclosed drains that are under the county’s jurisdiction, to detect whether other infrastructure was at significant risk. A rotating inspection schedule involved contractors using Go-Pro cameras to painstakingly examine pipes. Recorded video sometimes took months to analyze and record.

DRONE AND AI INTEGRATION

In early 2024, the MCPW transitioned from its previous manual inspection methods, investing \$100,000 in a specialized drone from Flybotix and AI software from Sewer AI Corp.

“The switch to combined use of the drone and artificial intelligence has dramatically improved the inspection and analysis process. AI analysis provides important details within hours – instead of months – vastly improving decision-making by engineers.”

Macomb County Public Works

The department’s subsequent launch of the first-in-Michigan combination of artificial intelligence and drone technology by Macomb County has vastly improved inspections of critical underground infrastructure and will save millions of dollars.

A Public Works employee now pilots the protective-caged, high-resolution drone up to 1,000 feet inside pipes ranging from 54 inches to 12 feet in diameter. The improved lighting and video quality are a major upgrade, and the captured video is immediately analyzed by the Sewer AI software.



A contractor’s traditional image from within a sewer interceptor before the switch to drone technology.



A high-resolution image of a sewer interceptor using drone technology.

MILLIONS SAVED AND INCREASED ACCURACY

The integration of AI has dramatically improved the quality and efficiency of the inspection process. In one of the initial reassessments, Sewer AI lowered the severity rating of pipe segments that contractors had previously recommended for immediate, costly rehabilitative lining. Engineers reviewed the AI data and agreed the work could be postponed indefinitely, resulting in a short-term savings of \$4 million for ratepayers. Furthermore, the AI eliminates human bias in coding, ensuring defects are rated consistently according to the Pipeline Assessment and Certification Program level. This has helped detect structural issues previously missed by human contractors.

Most notably, the MCPW previously spent approximately \$1 million every three years on outside contractors for inspection, analysis, and coding. By using an in-house employee to pilot the drone, this recurring contractor expense is now eliminated. Commissioner Miller held a press conference to announce the project, emphasizing the short- and long-term cost savings to ratepayers. The cutting-edge program has already drawn interest from other agencies and companies, including the Great Lakes Water Authority and the City of Madison, Wisc.



Artificial intelligence used by the Macomb County Public Works Office to analyze and code the condition of underground infrastructure.

ENVIRONMENTAL AND WATER QUALITY BENEFITS

Used in tandem, the sewer drone and AI technology has allowed for a more accurate and tremendously faster inspection program of underground infrastructure in a county of 875,000 residents. Many miles of pipes, particularly corrugated metal pipe, were installed 50-plus years ago and are rotting, having exceeded their useful life.

The vastly improved inspection process has allowed the MCPW management team to reassess and refine a capital improvement program to ensure that infrastructure is maintained properly and does not fail.

The specific environmental and water quality benefits are difficult to measure precisely. However, the collapse of a major sanitary sewer serving hundreds of thousands of residents, or even a smaller pipe serving a neighborhood, could result in raw sewage spilling into streets;



The drone being flown inside a sewer pipe in Macomb County.

“We’ve been doing whatever is necessary with the goal of preventing a reoccurrence of another underground infrastructure disaster. Inspections are an important element of that effort, and use of the drone and SewerAI software enables us to perform that task much quicker, more effectively and more efficiently while saving ratepayers millions of dollars.”

Macomb County Public Works Commissioner Candice S. Miller

creeks and streams that are county drains; or natural watercourses such as the Clinton River which flows into Lake St. Clair. Such an event could have a devastating impact on property and wildlife.

PUBLIC INVOLVEMENT AND EDUCATION

To highlight for the public the innovation and first-of-its kind combination of a sewer drone and artificial intelligence and the short- and long-term cost savings to ratepayers in Macomb County, Public Works Commissioner Candice S. Miller held a press conference to announce the cutting-edge project. News reporters from multiple television and radio stations, and print news media, attended the news conference.

MCPW also has publicized the project on social media and at government meetings open to the public.





Macomb County Public Works Commissioner Candice S. Miller and Operations & Flow Manager Vincent Astorino show the drone used in tandem with artificial intelligence for inspection of critical underground infrastructure.

CONCLUSION

The MCPW has completed several underground infrastructure projects and more than 100 drain cleanouts a year. Work continues on other projects and activities with the goal of preventing infrastructure disasters and to reduce combined sewer overflows into Lake St. Clair by performing drain maintenance in open channels within the county's borders. Inspections are a vital element of that effort, and the combined use of the drone and SewerAI software enables the Macomb County Public Works Office to perform that task much more quickly, more effectively and more efficiently while saving ratepayers millions of dollars. It's at the heart of the MCPW mission to improve quality of life by improving water quality.



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YOUNG PROFESSIONALS COMMITTEE

For this quarter's YPC article, we again decided to feature a new YPC member, Kristopher Koko from Spicer Group, to get his thoughts on joining the YPC and becoming active in the MACDC drain world.

We always welcome new members, from engineers, lawyers and surveyors to county staff.

Introduce yourself to MACDC.

I'm a proud grad of Lawrence Technological University with my bachelor's degree in civil engineering and a master's degree in construction engineering.

I grew up the son of a Spicer surveyor. So when I decided to go into engineering, Spicer was my first choice. I interned with our water resources group in Dundee for three years and was hired full-time as a design engineer in 2018.



Koko



Kristopher with donkeys on a drain project

Are there any past experiences from MACDC conferences or district meetings (if any) that stand out in your mind?

This is my first experience with MACDC and I am excited to dive in!

Any fun drain stories you have?

Becoming a part of the drain world has shown me a lot of our state that I hadn't previously visited. Whether it's inspecting storm sewers in Wayne County or rural areas in Hillsdale County, I have enjoyed traveling all over our beautiful state serving our drain commissioners.

One of my favorite stories is from this past summer when I was on a construction project rehabilitating a drain in Hillsdale County. The drain crossed through a petting zoo, so I got to meet a group of donkeys.

What do you plan to assist with in the YPC?

I hope to assist in as much as possible and grow YPCs' exposure and strengthen our team.

Any expectations for the upcoming winter conference?

I am just excited to get my first conference under my belt, but winning the euchre tournament is on my radar!

If you would like to get involved in YPC, attend our social events, or help with drain conference events, please contact Tanner Kragenbrink at tkragenbrink@wadetrim.com.



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2021 aerial photo of facility during BBQ luncheon customer appreciation event – Courtesy of Livingston County Drain Commissioner Brian Jonckheere

HISTORY OF THE LIVINGSTON COUNTY SEPTAGE RECEIVING STATION

By: Frank Ervin, Deputy Drain Commissioner, and Brian Jonckheere, Drain Commissioner, Livingston County

INTRODUCTION

The Livingston County Septage Receiving Station (SRS) stands as a major milestone for septage handling in Michigan, emerging not only from environmental necessity but also from the vision set out in early community health efforts, in particular, a community-wide health assessment initiated by the county health department. This initiative, rooted in the county's commitment to wellness and sustainability, helped frame the conversation around wastewater management as a matter of collective health and responsibility.

EARLY WASTEWATER MANAGEMENT IN LIVINGSTON COUNTY

The soils of Livingston County lend themselves well to onsite wastewater systems, with more than 60% of residents traditionally relying on these decentralized systems. Onsite systems weren't generally the problem that prompted the county to delve into the issue. Rather, it was the problematic disposal of this untreated waste, threats to groundwater and surface water, and the health exposure potential associated with land application. The primary method of disposal was land application of raw untreated waste. The sad evidence of those days is still visible in the form of plastics and other non-biodegradable objects still seen on these lands today. As noted in one early Livingston County Health Assessment report, *"the protection of our groundwater is essential to both public health and the vitality of our communities."* The initiative highlighted the potential dangers posed by unmanaged septage, warning that *"improper disposal can lead to contamination of wells, lakes, and rivers, threatening drinking water and recreation."* In the 1970s and 1980s, rising population due to sprawl from Detroit underscored the urgency of these risks.

“The protection of our groundwater is essential to both public health and the vitality of our communities.”

Livingston County Health Assessment Report

One of the long-standing obstacles to treating septage in Livingston County was the lack of Publicly Owned Treatment Works (POTW) of sufficient size to handle the concentrated waste strength of septage. As Table 1 illustrates below, septage waste strength is typically many times more concentrated than sewage flows and present significant risks for “upset” to municipal sewer systems.

In the early 2000s, the two townships in the Northeast corner of Livingston County, Tyrone and Hartland, approached the county to provide sanitary service to their townships due to development pressure, and some issues with groundwater contamination at an existing plant. Ultimately, connecting with Genesee County’s District 3 Wastewater Plant proved to be the most cost-effective option. It also provided access to a larger plant with sufficient wastewater flows to handle the septage waste. Genesee County Drain Commissioner Jeffrey Wright, Wastewater Operations Director John O’Brien, and District 3 Head of Operations Joe Goergon became great

REGULATORY CHANGES AND COMMUNITY RESPONSE (PRE-2000s)

The Clean Water Act (1972) and subsequent Michigan laws provided a framework for further initiatives. As more agricultural land was consumed by urban sprawl, lands available for septage disposal became more difficult to find. State regulations banning winter application of septage on frozen ground, in tandem with soil nutrient level restrictions, placed historical land application at great risk. It was those conditions, new regulations, and local health advocacy—galvanized by the 1990s Community Health Assessment—that spurred action. The initiative’s summary stated, *“Community health is built on a foundation of safe water and sanitary waste disposal. We must support infrastructure that upholds these principles for all residents.”* During this time, Livingston County officials convened public meetings, echoing the initiative’s call for “collaborative planning and shared responsibility.” However, it wouldn’t be until the early 2000s that the opportunity for local treatment officially ushered in a real opportunity for the establishment of a receiving station.

PLANNING AND ESTABLISHMENT OF THE RECEIVING STATION

During the planning stages, site selection, environmental review, and public engagement all reflected the dual priorities of environmental stewardship and community wellbeing.

TABLE 1

PARAMETER	RAW SEWAGE (INFLUENT)	SEPTAGE (PUMPED WASTE)	COMPARISON
BOD (MG/L)	155–330 (Typical: 250)	2,000–20,000 (Average: 6,500)	Septage has 26 times the typical BOD of raw sewage.
TSS (MG/L)	155–330 (Typical: 250)	> 50,000 (Average: 13,000)	Septage has over 50 times the typical TSS of raw sewage.
PHOSPHORUS (MG/L)	6–12 (Typical: 10)	Average: 210	Septage has over 20 times the typical phosphorus concentration.
NITROGEN (MG/L)	26–75 (Typical: 60)	Average: 97	Septage has a higher nitrogen content, though the difference is less dramatic.

advocates of this initiative and ran interference for us with some DEQ departments that were resistant to the move. Luckily, Genesee County’s discussions with DEQ prompted the various departments to sit down, remember what their charge was as the state environmental regulatory authority, and challenged them to do something different than to simply rely on land-application. It was a watershed moment borne of common

sense and a commitment to protect public health, which unfortunately is not nearly as commonplace today.

MISINFORMATION, MOTIVES, AND MANY TOUGH MEETINGS

Unfortunately, the regulatory hurdles were the easy part. As with anything new, residents came out to proclaim the destruction that would certainly ensue from any such facility. From clouds of noxious odors and collapsing property values, to Los Angeles type gridlock and poisoned groundwater, it appeared that we were attempting to destroy the community by some accounts. Of particular concern were some local officials who fanned the flames of discontent and turned normal meetings with the township into “attack the drain commissioner” rallies. In the end, strong support from an incredible Board of Commissioners, adherence to some rigorous design requirements from the township, and agreement to pay the township for costs incurred finally tipped the scales in favor of the facility.

THE SEPTAGE RECEIVING STATION: DESIGN AND CONSTRUCTION

The station was designed in adherence to specific township requirements for architecture, operation, and access. This included a requirement for indoor offloading, limits to hours of operation, access to the facility, and others. The design incorporated two indoor offloading bays with screening units and a completely automated discharge process. Doors activated with proximity cards, which detected and identified the hauler and their truck. Discharge was accomplished through a direct connection with a 6” hose and even printout of the date, time, volume discharged and available capacity on their account. Customer service was a principal focus as noted by commercial coffee vending machines, refrigerated beverages, computer access to county septic records, touchless bathroom facilities, and other amenities. We even built the HMI (Human Machine Interface) system with the ability to open the bay doors from the office, which is nearly 13 miles away. Redundancy was built into everything from transfer pumps, holding tanks, screens, etc. so that if one component had issues, we could divert to another system literally within minutes. A testament to that foresight is the fact that the

facility has never technically closed since the day it opened in May 2007, save for a few planned partial-day closures and reduced intake capacity.

THE COMPETITION

Despite our planning, projecting revenue, and creating buy-in with local haulers, we underestimated the impact that pricing from other facilities would have on our volume. Our models showed that we needed at least 9 million gallons annually to break even. During the first partial year of being open, we accepted only 3.7 million gallons, and 5.57 million gallons in the second year. Part of the problem stemmed from the pricing structure of the receiving stations in the area and the low cost they charged haulers at their facilities. It was an odd system of calculating truck volumes, which sometimes resulted in haulers paying a fraction of a cent per gallon. The SRS started at \$0.0725 per gallon, which was several times higher than the rates from Detroit’s Water and Sewer Department (DWSD), and Oakland County, and allowed out-of-county haulers to pump Livingston County



Graph 1. Historical Monthly Volume Discharge to the SRS.

tanks, and offload at Oakland County facilities much cheaper than haulers using our facility. We found DWSD management very approachable, knowledgeable, and intensely concerned with the impacts of its low rates. They recognized that the DWSD septage program was being subsidized by the sanitary users and took steps to create a realistic fee schedule. As soon as that was adopted in July 2009, volumes surged at the SRS. The combination of price, service, convenience, and comfort won them over and volumes continued to increase steadily year over year.

A VICTIM OF OUR OWN SUCCESS

While initial predictions placed total potential discharge to the facility at 14,000,000, the facility reached 28,426,611 gallons in 2018 without any significant upgrades to the facility, owing largely to the robust design we had forged into the project. This incredible success ultimately created a dilemma for us. As a reviving economy and new sewer connections consumed capacity in the District 3 Plant, the waste strength of the septage was creating issues with permit compliance with Genesee's Operators. The only alternatives were to limit flow and enter a deficit condition for the facility or build a press facility to remove the high strength organics and reduce the loading to the plant.

We chose option two, with all the challenges and opportunities that come with a new facility and new processes. Our original design discharged directly into the POTW. With our new dewatering facility, our operators had septage dewatering and biosolids handling to learn. We experienced some equipment issues with our first dewatering press and ultimately had no other choice but to replace it within the first year. Our operators understood the mission, and the importance of what we do. They worked tirelessly around the clock, literally, fixing equipment and pressing our flows to ensure the objective was met.

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LESSONS LEARNED

1. Ensure contracts are written thoroughly, with the perspective that whatever can go wrong, will, and in a manner which stands the test of time. Do not rely on discussions and understandings within partnerships; these are fleeting, and things change.
2. Regulations will change, and probably not for the best – assume that state regulations will put financial pressure on your system in some way, shape, or form. Be vigilant and include a contingency in your rate calculations to ensure you have resources to counter surprise rules.
3. Plan for the lows but prepare for the highs – make sure your rate model includes enough of a safety margin to cover you when someone opens a new receiving station in the area or undercuts your price and pulls volume from your facility. Conversely, use foresight in the design of your station to allow for easy expansion if a new major client wants to bring massive volumes of septage to you, or a nearby receiving station closes. Oversized tanks, screening units, redundant valves and piping, and other flexible design considerations will aid you in accommodating those instances with minimal cost.
4. Reach out to other receiving facilities currently in operation. Speak with them about the challenges and lessons learned, go on a tour, and learn from their success and mistakes.
5. As with any project, ensure that stakeholders are involved in the design phase – operation and maintenance staff, management, customer – not just engineers handling it. Had we not engaged with our customers during the initial design, we would have seriously underestimated the elevation required for gravity discharge from haulers trucks. A complete and costly rehab of the storage tanks and screening room would have easily reached six figures. A single comment from a hauler at a design meeting caught this problem.
6. Ensure you have floor drains! When you think you have enough, add more.
7. Many vendors will say their product is the best. Ensure you are getting the best by speaking with customers utilizing the equipment you are looking at utilizing in the same or similar manner. Go out to the site if possible and see the equipment in action. Not all equipment is created equal or versatile in use for multiple applications. Septage receiving stations are rough on equipment and seemingly small changes in percent solids can have a huge impact!
8. Ensure that you have redundancy built within the system!
9. Do the best you can to build a relationship with the local unit (township, city or village) your facility will be located in. These facilities can test the best of relationships and compound the worst of relationships.
10. Don't ever let someone tell you grit won't be a problem. IT IS! While designing, ensure a grit snail (or some sort of grit removal system) is placed before any holding tanks; your operators will love you!
11. Odor control and air exchanges will be a challenge. From both a safety and neighborhood aesthetic perspective, ensure the design addresses these and reach out to others who have dealt with it first.
12. Safety. Be prepared for issues with H2S. The movement of this waste stream between tanks and through presses and other processes release a significant amount of this chemical. Ensure that the facility is designed to handle this before putting workers in harm's way, and monitor.

CONCLUSION

The history of the Livingston County Septage Receiving Station is exciting and has lived up to the vision laid out in the 1990s Community Health Assessment. Since its opening, the station has kept 413,423,021 gallons of septage, and the unscreened products contained within, off the ground and out of our waterways. It stands as a model of technology and service that currently has no equal in the country. By embedding health, sustainability, and community engagement into its very foundation, the county set a standard for how infrastructure can serve the greater good: "A healthy county is built on healthy choices and shared commitments"—The Livingston County SRS is evidence of both. We encourage anyone contemplating such a facility to stop by for a visit.



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RIPRAP: AN EFFECTIVE TOOL TO MITIGATE EROSION

By: Kristen McCue, MACDC

Bridgeport is a little-known spot on the map – a quiet town of roughly 6,800 people.

So, one might be surprised to discover the small town hosts one of Michigan’s oldest quarries: Wallace Stone Quarry.

Built in the 1880s, the quarry was owned and operated by the Saginaw, Tuscola and Huron Railroad. It was formally incorporated around 1900 by W.H. Wallace, George Morley and A.H. Harvey. It’s now owned by Edw. C. Levy Co., as part of the Levy Group of Companies.

Located on the Saginaw Bay, the quarry produces primarily limestone, which, when blasted, creates riprap – large, loose stones used to protect shorelines, streambeds, bridge piers and other structures against water erosion.

The process begins deep within the quarry. Rocks suitable for riprap must be the necessary height, size, shape and durability. Riprap is then sorted and often palletized for ease of transport. It’s versatile, used in everything from decorative landscaping to the stone walls of a community.

The quarry has an onsite crusher and sorting facility that produces limestone aggregate riprap to MDOT specifications for use all over the Thumb.

Riprap produced by Wallace Stone Quarry has been noted for its use in significant construction or repair projects, such as dam sites in the region, suggesting its rock is suitable for heavy-duty erosion control.

It’s a topic that has interested engineers, drain commissioners and the public alike, so Erik Schwanz, PE, Project Engineer and Principal for BMJ, along with the Northeast District Officers Erik Tamlyn of Huron County and Tanya Suter of Lapeer County, coordinated a tour of the quarry as part of MACDC’s Northeast District Meeting.

“Proper application of riprap directly supports the [drain] commissioners’ goals of safeguarding public infrastructure, reducing maintenance costs, and promoting sustainable water management.”

Erik Schwanz, PE, BMJ Engineers & Surveyors

As engineers who support drain commissioners in the thumb region of Michigan, Schwanz said BMJ is routinely being tasked to specify the appropriate aggregate or riprap for various applications.

Schwanz said there are some things to consider when installing riprap.

For example, he said when installing riprap, it’s important to ensure proper foundation preparation and include a filter layer or geotextile fabric to prevent soil from washing out beneath the rock.

Additionally, the stone size and gradation should match design conditions, such as flow velocity and bank slope to ensure stability.

Riprap should be keyed into the toe of the slope to resist scour and placed to create interlocking contact between stones, avoiding large voids. Consider access and equipment needs for safe placement, as well as aesthetic and vegetative integration, where appropriate. Proper installation ensures long-term performance, reduces maintenance, and helps the structure function as intended.



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RIPRAP CONT.



Sorting riprap for palletization

At the same time, potential drawbacks of using riprap on county drains include the cost of materials and the logistics of hauling heavy rock to the project site. Riprap can also be ineffective if not installed properly with a filter fabric or granular bedding layer to prevent undermining.

In addition, extensive rock armoring can discourage vegetation growth and reduce the natural appearance of the drain. But overall, when properly designed and installed, the benefits of riprap typically outweigh these limitations.

“Drain commissioners are responsible for ensuring the long-term functionality and resilience of these systems, and riprap is one of the most practical and cost-effective tools available for protecting channel slopes, culvert outlets, and other vulnerable areas,” Schwanz said. “Understanding riprap sizing, placement, and potential failure mechanisms helps commissioners make informed decisions during maintenance, design review, and permitting.

“In short, proper application of riprap directly supports the commissioners’ goals of safeguarding public infrastructure, reducing maintenance costs, and promoting sustainable water management.”



A view of the limestone cliff at Wallace Stone Quarry



A completed retaining wall made from riprap



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LAND PRESERVATION

Stopping problems before they begin

**By: Jamie Burton, Gillian Pines and Devon Munsell, HRC,
and Chris Bunch, Six Rivers Land Conservancy**

Water resource professionals generally focus on restoring waterways after decades of degradation and water quality impacts. The Drain Code and most funding sources emphasize addressing existing problems. When done well, these restoration efforts can reverse land degradation, stem flooding, and clean up decades of environmental damage.

Restoration projects, along with proper site planning for future development, are critical for protecting the environment. Unfortunately, these projects are reactionary and often unable to completely resolve historic impacts or fully protect our waterways.

Land preservation can do something better – stop problems before they begin. Therefore, it deserves to be given equal priority to restoration for water resource professionals. Land preservation is a measured and carefully planned way to protect land from being developed and avoid future problems like water runoff, flooding, pollution, and land degradation.



*WQT Image for the Lamberton Lake Fen Nature Preserve
– Western Michigan Land Conservancy*

Land preservation is not glamorous and doesn't provide project sponsors with ribbon cuttings or impressive before and after photo montages. It does, however, take advantage of tax benefits to the property owner to protect wildlife habitats, conserve water, prevent soil erosion, and maintain open spaces for recreation. It's the ultimate gift to future generations, protecting the value of the land and preserving the environment for those who come after us.



Drain Commissioners bear the responsibility of intentionally balancing the need for economic growth with the need to protect against water quantity and quality impact of runoff generated by developed land. Representatives from local land conservancy organizations can become valuable partners and play a vital role in elevating the importance of land preservation.

Six Rivers Land Conservancy, operating out of Rochester, helps protect land by purchasing, protecting, and developing conservation easements and natural areas for long-term preservation. It is a private, nonprofit land conservation organization that recognizes and understands the value of an inviting landscape and a strong, vibrant natural resource base in local communities.

Land preservation helps make communities attractive, vital, and healthy places where people and businesses can create a life of prosperity. As EGLE emphasizes, when natural vegetation is replaced with streets, rooftops, and driveways, it greatly decreases the amount of water soaking into the soil, causing significantly more water runoff into streams and lakes, overburdening our waterways, and leading to flooding and higher pollutant loads.

To demonstrate the importance of land conservancy and to attract funding, Six Rivers needed to show that preservation is comparable

Six Rivers Land Conservancy Modeled Parcel Data Sheet

Site Information: PIN: MULTIPLE Address: GREEN RD County: MACOMBIST, CLAIR		Owner: MULTIPLE			
Costs: Parcel: \$ Easement: \$		Date Model Run: 7/3/2025			
Land Use Scenario	Total N Load (lb/yr)	Total P Load (lb/yr)	Total BOD Load (lb/yr)	Total Sediment Load (tons/yr)	Existing Parcel Makeup
Existing	204,318	37,574	628,409	4,596	85 %
Forest	51,091	24,911	124,969	1,726	14 %
Pastureland	1315,126	121,443	4182,189	22,993	0 %
Cropland	1215,511	275,47	2520,246	114,963	0 %
Urban Commercial	1802,292	180,229	8380,658	33,793	0 %
Urban Industrial	1743,286	278,926	6275,83	41,839	0 %
Urban Institutional	1255,196	209,194	9439,952	23,36	0 %
Urban Transportation	4617,346	789,658	14313,773	115,424	0 %
Urban Multi-Family	1331,105	242,019	6050,478	30,252	0 %
Urban Single-Family	774,544	140,826	3520,656	17,603	1 %
Urban Cultivated	847,767	133,858	1784,774	33,465	0 %
Urban Vacant	907,572	90,757	2420,191	21,177	0 %
Urban Open Space	465,657	46,566	1241,751	10,865	0 %

Pollutant Load Comparison					Qualitative Data	
Land Use Note	Total Nitrogen Load (lb/yr)	Total Phosphorus Load (lb/yr)	Total Biological Oxygen Demand Load (lb/yr)	Total Sediment Load (tons/yr)	Wetland:	Yes
Existing	204,318	37,574	628,409	4,596	Percentage:	69 %
Single Family	774,544	140,826	3520,656	17,603	FEMA Floodplain:	Yes
Difference					Parcel within 500 feet of lake or stream:	Yes
Stormwater Runoff					Lake or Stream Name:	
Land Use Note	Annual Runoff (acre-ft)	One Yr 15min Storm Event Runoff (acre-ft)	Five Yr 24 Hr Storm Event Runoff (acre-ft)	Ten Yr 24 Hr Storm Event Runoff (acre-ft)	Crepeau Creek	
Existing	68.11	0.50	0.75	12.50		
Single Family	129.56	0.99	1.54	24.79		
Difference	41.14	0.19	0.28	4.65		



WQT Output Report

management practices, and acquisitions converted to parks and open space lead to healthier habitats, supporting local heritage, and living together in harmony with nature. This tool provides a comprehensive, data-driven framework for targeted funding and helps maximize the impacts of conservation efforts.

The GIS tools identify and prioritize parcels targeted for acquisition. Parameters can be adjusted based on desired ecological priorities, such as stormwater capacity, canopy cover, wetland presence, and more. It can create a ranked list of parcels prioritized for protection based on water quality effects, stormwater management capabilities, and economic factors.

The Six Rivers Land Conservancy Model provides precise information on a given parcel or area, including parcel ID, owner, address, existing parcel land use, whether the parcel is in a floodplain, and how far it is from a lake or stream. The tool helps answer the question of how land is chosen for conservation and provides an intentional approach to selecting the land for purchase.

Costs associated with land preservation include the purchase price of the land itself, plus any long-term maintenance costs. After obtaining properties or easements, land conservation organizations typically overlay a conservation covenant over all or a portion of the land. They then can manage, hold, or redevelop a portion of the land in the future.



Natural trails on a Six Rivers Protected Property – Six Rivers

to, or even better, for the environment than restoration. HRC helped develop a GIS-based tool designed to perform quantitative assessments, help funding agencies recognize the benefits land preservation has on water quality, and encourage them to allocate funds for obtaining development rights. Preserving land has often been overlooked for precisely this reason – it’s been hard to quantify the benefits and justify the costs.

The EPA’s STEPL tool can help illuminate the reasons why land preservation is so vital. It can be used to evaluate annual pollutant loads and explain water quality metrics. The Six Rivers Water Quality Model simulates land-use scenarios and evaluates soil data, watershed impacts, and pollutant loads. By studying urban land vs. protected land, the data can show the negative impacts on our rivers and lakes caused by overdevelopment.

The STEPL tool uses annual rainfall data to show the pollutant loads and stormwater runoff from developed land. It makes a great case for conservation and the value of “down development,” (i.e., reforestation) to limit the negative impacts of development. Land preservation, regional stormwater best

Land conservation organizations can help Drain Commissioners with acquisition of pollution offset and stormwater management credits, grant procurement and administration, and planning for future property development. Land conservation groups also have resources to help Drain Commissioners with invasive species management, grant writing, and public outreach initiatives.

Incorporating land conservation and preservation into stormwater standards and future development helps garner public support for future Drain Commission projects. By promoting cluster density and changing zoning regulations to ensure that natural land preservation is incorporated into development, Drain Commissioners can demonstrate their commitment to preservation.

Drain Commissioners can play a role in counteracting the notion that land preservation is “doing nothing” and land/drain restoration is “doing something.” When before and after photos look the same for land preservation projects, it can be a hard sell to the public, when the benefits are actually measurable and far-reaching.

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JULY 15-17, 2026

MACDC Annual Summer Conference
Kewadin Casino | Sault Ste. Marie, MI

FEBRUARY 10-12, 2027

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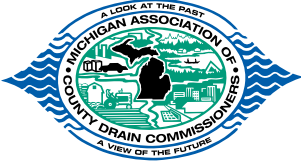


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