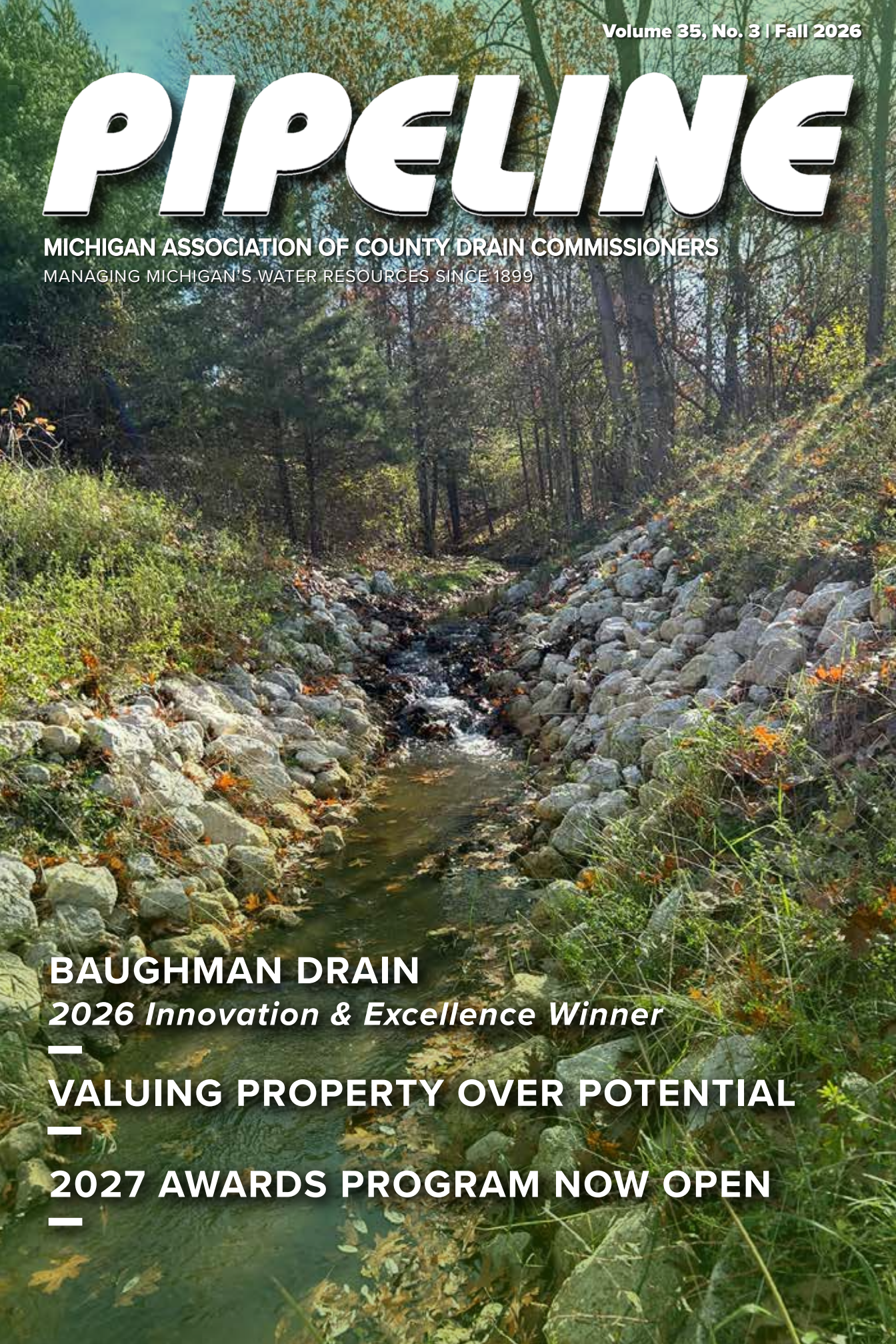
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PIPELINE

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Brandon Williams, **MI Dept. of Agriculture and Rural Devel.**
517-331-3661 — williamsb53@michigan.gov

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CONTACT FOR ADVERTISING INFORMATION
120 N. Washington Sq., Suite 110A, Lansing, MI 48933
Phone: 517-484-9761, **Fax:** 517-371-1170

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PRESIDENT'S MESSAGE

Michael Hard
Branch County Drain Commissioner



The 126th annual summer conference of the Michigan Association of County Drain Commissioners was a lot of fun and very informative. It is not everyday that you get to tour the locks at Sault St. Marie. I would like to take this opportunity to thank everyone who helped plan this event. It was a great event and I hope each participant learned a few new things.

I have been a Drain Commissioner for over 20 years. When I first started, the theme was dig it bigger, deeper and wider. Rain events seem to be getting more intense year after year, as experienced in much of Michigan this past spring. I feel more and more of my job now is looking for areas where I can store water temporarily to allow the systems to catch up. We cannot control the rain, but we can help create areas where it can be stored that really don't affect anyone. I see storage in the upper areas of a watershed as one opportunity to help with the reality of long-term climate change. County drains were first created to drain Michigan so that it could be developed. I see county drains now as mechanisms to allow Michigan to combat the challenges of a changing climate as we move forward.

The world is run by those who show up. I would encourage each and everyone of you to take the time to consider getting more involved in our organization. There are many leadership opportunities available to help guide MACDC's future. This is an election year. Please get to know your elected officials; we want to be the first call people make when they have drainage questions. MACDC is a family and we have many resources available to help you in educating officials and the public about drainage. The flip books and videos that were created this year are great resources to use for education purposes.

Sincerely,

Michael Hard



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YOUNG PROFESSIONALS COMMITTEE

The MACDC YPC group hosted another excellent presentation at the Summer Conference in Sault Ste. Marie! This presentation brought the detectives out of all the attendees to solve drain crime in a game of Clue!

One of the objectives of the YPC is to welcome new members to the drain conference and ensure they have positive introductions. At the last Winter Conference Aminata Ndiaye attended her first drain conference and is excited to be involved in the group. We would like to introduce her to everyone and get to know her more.



YPC members dressed up for their version of Clue at the 2026 Summer Conference

Hello! My name is Aminata Ndiaye, and I have been an engineer at Wade Trim for the past eight months. I attended the University of Michigan, where I earned my bachelor's degree in Environmental Engineering. My studies focused heavily on drinking water and wastewater treatment; however, I have found I am most in my element working in the hydrology and hydraulics sector.

As a young professional in the drain world, attending the 2026 Winter Conference shortly after starting at Wade Trim was a privilege. The wide range of presentation topics gave me a better understanding of the drain world and helped me recognize the importance of this work. The presentations also provided me with a strong foundation of knowledge in drain code basics and typical projects which has helped me succeed in my own projects.



Ndiaye

What stood out to me the most was how kind and welcoming everyone was. Many people took the time to answer my questions, share their knowledge, and include me in conversations. Helping host one of the nighttime suites was so fun and set this conference apart from others I have been to. What I appreciate most about MACDC is that

everyone contributes to making the conference special, whether through hosting intimate get-togethers, participating in mini games, contributing to auctions, or simply showing up and engaging with others in their district. The shared involvement creates an atmosphere where vendors, engineers, attorneys, and county officials all connect naturally, and I value that sense of community.



Out in the field

Joining the MACDC Young Professionals Committee early on has also been a privilege. It has made the drain world feel much less intimidating because everyone is so encouraging and optimistic. Through YPC, I have had the opportunity to take more initiative in MACDC and meet so many wonderful people that I can hardly keep all the names straight.

I am excited to reconnect with my YPC friends and continue to make new connections during the 2027 Winter Conference. A fun fact about me is that I enjoy rock climbing and hiking, so if you know any great spots around Michigan, please let me know!



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Pre-application Entry Form must be received by *5:00 PM, November 1, 2025*
Complete applications are due by *5:00 PM, December 1, 2025*

Application is available at https://macdc.us/awards

Awards Program | Rules and Procedures

Purpose and Goals
This Awards Program aims to:
- Recognize creative and innovative accomplishments of all scopes, sizes, and budgets, of Members and Associate Members of the Michigan Association of County Drain Commissioners (MACDC).
- Promote public awareness of the activities and contributions of MACDC, its Members and Associate Members.

Eligibility
Any MACDC Member or Associate Member may enter this Awards Program. Drain Commissioner(s) and/or Associate Member(s) may submit projects jointly or separately. Associate Members submitting separately must obtain the signature of the Drain Commissioner of record on their Entry Form.

Award Categories
MACDC's panel of judges will review submittals. Two projects will receive an *Innovation and Excellence* award. MACDC will provide one award for each winning project; recipients may purchase additional copies of the award. MACDC may also award Honorable Mention certificates to a maximum of two projects.

General Criteria
1. All entries must be submitted in accordance with the rules outlined in this document.
2. The project must have been conducted under the direct authority of the Drain Commissioner or through a Board of which the Drain Commissioner is a member.
3. A Member or Associate Member may enter as many qualified projects as they wish.
4. Projects that have received awards from other organizations may be entered.
5. Projects must have been completed and in use between April 1, 2023 and December 31, 2025.
6. Entries must comply with Submission Guidelines section of this document. Failure to comply may disqualify an entry. Please read the Guidelines thoroughly.
7. MACDC Awards Committee reserves the right to determine entry eligibility.
8. MACDC Awards Committee determines the Award Category based on submitted information.

Judges and Judging Criteria
The MACDC Awards Committee will evaluate entries based on the work completed by the entering organization(s). Finalists and winners are selected based on overall project excellence. Judges will evaluate and compare projects based on the following.

Judging Criteria *(in no particular order)*:

1. Public involvement and education
2. Environmental and water quality benefits
3. Use of new materials
   (including improving/finding new uses of existing materials)
4. Use of new technologies
   (product/method/tool to solve problem)
5. Innovation
6. Complexity
7. Cost effectiveness

Note: Projects need not contain all seven of the above criteria. However, the more criteria that a project effectively encompasses, the greater consideration it will be given.

Electronic submissions are preferred*

Email Entry Form and Final Application packet to: *admin@macdc.us*

Questions?
Contact MACDC at **517-484-9761**
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THE LONG VIEW FROM THE BANK

A Career in Michigan's Drainage History

By: Michael W. Quaine, PE

I came into engineering through water—not in the abstract sense, but the stubborn, muddy, inconvenient water that floods fields, undermines roads, and carries away what people thought was settled. In Michigan, water has a long memory. It remembers every cut, straightening, crossing, and compromise we've imposed upon it. My career has been spent listening to that memory, learning when to resist it and when to give it room.

I never saw drains as line items or ditches. County drains are history written in soil. Each one records decades of economic priorities, technological limits, landowner needs, and political will. You don't improve a drain without stepping squarely into decisions made long before you were there.

Over the course of my career, I have worked on more than 340 county and intercounty drains across Michigan. Many were large, complex systems. Many more were modest facilities that mattered deeply to the people they served. All of them demanded respect for water and for the landscape it moves through.

Early on, I learned that drains cannot be understood in isolation. They are systems—long, continuous, and unforgiving of localized thinking. A solution that works perfectly at one crossing may create problems miles downstream, sometimes years later.

Projects like the Northwest Drain in Tuscola County and many more clarified this reality for me. Following the damaging floods of the mid-1990s, it became clear that recovery would not come from isolated fixes. Conveyance, sediment transport, aging bridges, outlet capacity, and maintenance strategy all had to be considered as one system. That project did not just rebuild a drain—it reaffirmed that good drainage engineering is, above all, systems engineering.

Flooding leaves a longer imprint than erosion. This was evident in the Cass River watershed and the City of Vassar, where repeated flooding damaged buildings, closed highways, and challenged public confidence. Meaningful mitigation required persistence, collaboration, and an understanding that no single structure could solve the problem. Berms, diversion structures, flap gates, channel improvements, and detention features all played necessary roles.

As my practice matured, my focus increasingly shifted toward bank stability rather than aggressive channel reshaping. Michigan's soils—cohesive, layered, sometimes deceptive—tend to reward restraint. A repaired toe, properly protected, gives a slope a chance to stabilize naturally. Over-armoring or over-reshaping often simply transfers stress elsewhere.

Maintenance became central to my understanding of successful drainage work. Construction does not end responsibility. Drains remind us every spring that maintenance is simply design extended through time. Many of the drains I worked on were built long before modern standards existed. The objective was not to remake them entirely, but to ensure they continued to function reliably.

In parallel with drainage work, my career included approximately 180 structural engineering projects involving industrial facilities, municipal structures, foundations, inspections, and specialty designs throughout southeastern Michigan. Structural practice reinforced the same lesson water taught me early: physics does not negotiate.

Over time, my professional compass was shaped less by formulas and more by a quiet set of principles I came to think of as the Laws for Drain Engineers. They are not statutes or regulations, but reminders that the authority entrusted to

us is borrowed from the public and must be exercised with humility. They emphasize listening before speaking, preparation without arrogance, decisiveness without haste, and respect for the fact that every system we touch exists within someone else's livelihood. These laws recognize that while engineering requires rigor, public service requires restraint; while math may define solutions, humanity determines whether those solutions endure. Above all, they remind us that the true measure of our work is not how visible we are, but how well the system functions long after we have stepped away.

Engineering is a profession of continuity. Most of the work we do blends quietly into the landscape, unnoticed when it succeeds and sorely missed when it does not. I take pride in knowing that many of the drains and structures I worked on perform their duties without calling attention to themselves.

As I step back from daily practice, I do so with confidence in the Drain Commissioners, engineers, inspectors, and maintenance crews who continue this work. The challenges will change. The water will not. If I leave anything behind, I hope it is a way of thinking that values patience, listening, and humility before the forces we manage—not control.

That has been enough for me. Thank you all for a fulfilling journey. You have been appreciated.

Mike Quaine spent 28 years as a Project Engineer at BMJ, Inc. Prior to Engineering ar BMJ he worked as a surveyor for the company. Mike spent a decade as a middle school science and math teacher and tried various other professions along the way.





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DAM SAFETY, RESILIENCE, AND THE FUTURE OF WATER MANAGEMENT

By: Mariel Dunn, Fahey Schultz Burzych Rhodes



Photo Credit: Rockford Dam, Allan Rau, Wikimedia Commons

The importance of dam safety and dam operation has heightened in recent years following flooding events due to increased rainfall, infrastructure failures, including the Edenville Dam failure, and increasing weather variability. Just earlier this year the Cheboygan Dam reached dangerously high-water levels resulting in Governor Whitmer declaring a state of emergency. I personally had friends reach out to me regarding the fears of the dam failing and the repercussions of the lake levels for Mullett Lake specifically. With these recent dam failure concerns and increased rainfall, dam safety and emergency action planning have moved into the spotlight and have become increasingly important.

With these concerns receiving greater attention, the Michigan Department of Environment, Great Lakes, and Energy ("EGLE") held a dam safety workshop this past spring for dam owners, engineers, and water resource professionals.

The overall goal of the workshop was to discuss dam safety challenges and emerging solutions. This article highlights the key takeaways from the workshop for those who were unable to attend.

The main regulatory framework on dam safety includes the following:

1. Part 315 Dam Safety,
2. Part 307 Inland Lake Levels,
3. Part 31 Water Resources Protection, and
4. Part 301 Inland Lakes and Streams.

These statutes overlap to create Michigan's dam safety regulatory framework. When dealing with a specific dam, it is important to review all applicable statutes to ensure that all statutory requirements are being met.

After discussing the applicable statutory framework, the workshop shifted to understanding how dams fail and steps to avoid

dam failure. Some of the common dam failure mechanisms we have seen in Michigan are:

- Overtopping
- Internal erosion (piping)
- Structural instability
- Foundation failure
- Poor maintenance

Dam inspections are the first step to identifying these issues and taking corrective action. If a dam is determined to be unsafe, corrective measures may include repairing the dam, reducing the impoundment, or removing the structure altogether. Additional measures that EGLE identified to improve dam safety include:

- Increasing spillway capacity
- Controlling seepage
- Removing trees
- Repairing concrete
- Keeping outlets free of debris

"A comprehensive inspection program evaluates the entire system, not just the dam itself."

Regular inspections, annual operation reviews, preventive maintenance and corresponding timely repairs help keep dams in a safe condition and reduce the risk of dam failure. When completing an inspection it is important to review the entire dam system instead of solely focusing on the dam structure itself. Additional features to consider during an inspection are:

- Upstream conditions
- Downstream conditions
- Spillways
- Embankments
- Vegetation
- Adjacent infrastructure

A comprehensive inspection program evaluates the entire system, not just the dam itself.

A major point EGLE sought to emphasize was that, during emergencies, dam owners should act immediately to protect life and property. In some circumstances, EGLE may be notified after emergency action is taken. However, notification must occur as soon as practical. Importantly, taking emergency action does not relieve a dam owner of permitting obligations. Rather, the permitting process begins after EGLE is notified of the emergency action. In addition to addressing emergency actions, EGLE discussed its continued efforts to develop more standardized procedures for emergency and seasonal drawdowns.

Beyond infrastructure failures, it is important to take a look at increasing extreme weather. The National Oceanic and Atmospheric Administration ("NOAA") has been forecasting precipitation and river conditions. Based on its review of Michigan's rainfall, the state has experienced approximately 2.1 inches of additional rainfall per decade. NOAA's research into weather trends can help lead discussions on spillway designs, flood routing, emergency planning, and dam inspections. The weather prediction website can be found at: https://www.wpc.ncep.noaa.gov/#page=ovw

Many dams were designed using hydrologic assumptions that may not reflect today's weather patterns. It is imperative we use these sources to determine dam safety, operation and emergency response.



New studies are investigating how dam infrastructure can be used to control sea lamprey movement.
Photo Credit: Great Lakes Fishery Commission

As a bonus presentation, one of the presenters explained how dams can also be used for sea lamprey control. The current reliance to

thwart sea lamprey is chemical treatments. Another avenue that is being reviewed is designing infrastructure to prevent upstream migration. There are increasing collaborative efforts between fisheries managers and dam owners. Currently, there is approximately $8 million in Congressional funding supporting dam improvements and reconstruction projects designed to block lamprey passage. Dam infrastructure can provide ecological benefits in addition to water management and public safety functions.

As weather patterns continue to change and infrastructure ages, dam safety continues to evolve and be of utmost importance. The key takeaways for dam owners, operators and water resource professionals are proper dam management including but not limited to:

- Proactive maintenance
- Strong emergency planning
- Regulatory understanding
- Use of modern forecasting and inspection tools
- Collaboration among regulators, owners, engineers, and local officials

While dam failures often capture headlines, the workshop emphasized that proactive inspections, informed decision-making, and continued investment in infrastructure remain the most effective tools for protecting Michigan's communities and water resources.

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Baughman Drain Improvements

How Looking Beneath the Surface Solved a Decades-Long Groundwater Flooding Crisis

By: Dan Fredricks, PE, Land & Resource Engineering (LRE)

Nietzsche once said, “If you gaze long into an abyss, the abyss also gazes into you.” In the case of the Baughman Drain, it was only by looking beneath the surface that the project team uncovered the true cause of flooding and ultimately developed a long-term, sustainable solution for residents within the Baughman Drain Drainage District.

For generations, homeowners in Otsego Township of Allegan County lived with water that refused to leave. Basement flooding had become a community-wide crisis, costing residents hundreds of thousands of dollars in structural damage, lost possessions, and repeated attempts at floodproofing that ultimately failed. It became increasingly clear that conventional surface drainage improvements alone could not solve the problem.

The Baughman Drain Improvements Project became far more than a traditional drain cleanout project; it was an exercise in patience, rigorous investigation, and persistence. By quite literally digging deeper, the Allegan County Drain Commissioner (ACDC), Land & Resource Engineering (LRE), and project partners uncovered the underlying cause of the flooding and developed a science-driven strategy that restored balance between groundwater, surface water, and the surrounding community.

PROJECT BACKGROUND

The Baughman Drain was legally established in 1875 under the Michigan Drain Code and serves a 970-acre watershed that outlets to Pine Creek, a tributary of the Kalamazoo River. Over the past fifty years, the watershed transitioned from primarily agricultural land to residential neighborhoods, including the Southgate Subdivisions and Prairiewood Condominiums. Many of these developments were constructed during relatively dry periods when groundwater elevations were lower and shallow man-made channels appeared sufficient to control the local water table. Over time, however, fluctuating groundwater conditions and confining clay layers limited the effectiveness of these shallow drainage systems, resulting in chronic groundwater flooding throughout portions of the drainage district.

By the early 2010s, homeowners reported chronic basement flooding and saturated lawns even during dry weather conditions. Groundwater, trapped within coarse sandy soils confined by underlying clay layers, could not effectively recede following rainfall events. In February 2014, residents formally petitioned the Allegan County Drain Commissioner to pursue improvements to the Baughman Drain. A Board of Determination held in December 2015 determined the project to be "necessary and conducive to the public health, convenience, and welfare," beginning a decade-long effort involving hydrogeologic investigation, groundwater modeling, wetland delineation, environmental permitting, public coordination, and easement acquisition.

UNDERSTANDING THE PROBLEM

Following the Board of Determination, LRE undertook a level of hydrogeologic investigation rarely associated with county drain projects. Topographic surveys and channel inspections revealed that many of the historic tributaries had become heavily sedimented and disconnected



Before Construction – Manmade Channel Full of Sediment / Stagnant



Before Construction – High Groundwater / Saturated Lawn

from the surrounding groundwater system. Several private culverts were perched well above the historic channel bottom, further restricting drainage and aquatic connectivity.

Beginning in 2017, groundwater monitoring was conducted using piezometers, monitoring wells, and staff gauges installed throughout the drainage district. The investigation revealed that groundwater levels rose rapidly after storm events but receded only very slowly over several weeks. In several locations, basement floors were below the seasonal groundwater table.

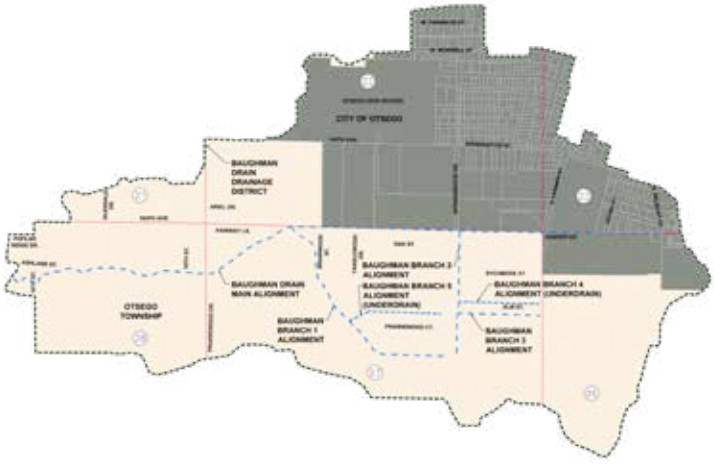
Supplemental soil borings and groundwater modeling confirmed the existence of a regional groundwater mound near Prairiewood Court. The findings showed that confining clay lenses were preventing groundwater from flowing downgradient toward tributaries of the Baughman Drain, effectively trapping water beneath residential neighborhoods and limiting the ability of the existing channels to draw down groundwater elevations. The investigation confirmed that conventional tributary cleanout alone would not provide meaningful relief.

DEVELOPING THE SOLUTION

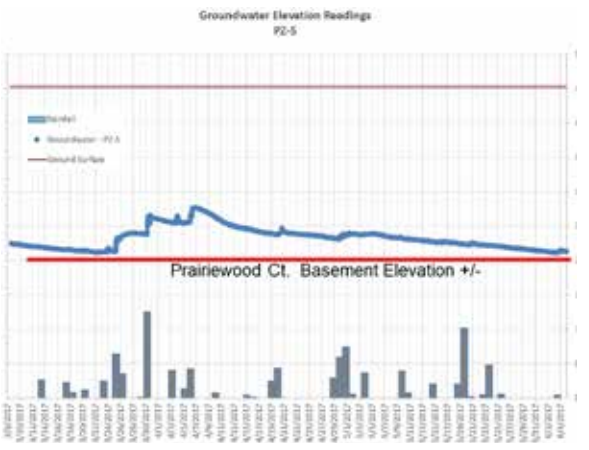
Over several years, LRE and the project team evaluated multiple alternatives ranging from traditional channel cleanout to full reconstruction with subsurface drainage improvements. Each alternative was assessed for groundwater effectiveness, environmental impacts, and long-term sustainability.

The final design paired surface and subsurface drainage improvements to address both groundwater and stormwater flooding. Major improvements included:

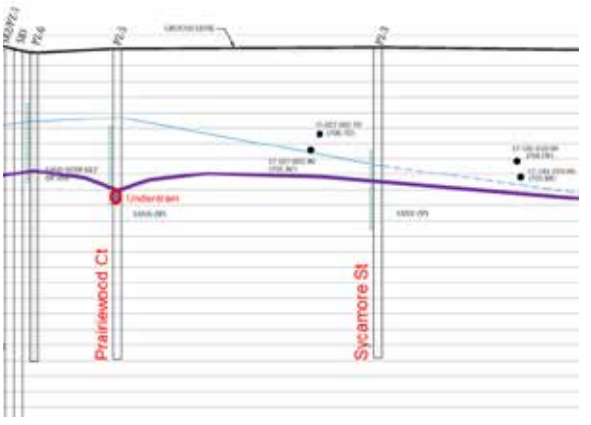
- Establishment of five new branches to the Baughman Drain.
- Installation of approximately 2,800 linear feet of perforated underdrain within residential areas to lower groundwater elevations.
- Reconstruction of more than 11,000 linear feet of open channel utilizing two-stage channel design to improve hydraulic capacity and natural sediment transport.
- Replacement of undersized and perched culverts to restore hydraulic capacity and improve fish passage.
- Installation of rock riffles and native vegetation for long-term stabilization and habitat enhancement.



Drainage district map



Groundwater elevation readings for a street in the district



Groundwater flow modeling was used to design the underdrain system.

The design was refined through extensive coordination with EGLE, DNR Fisheries, local municipalities, and affected property owners to balance flood protection, habitat restoration, and cost effectiveness. More than twenty drainage easements were ultimately acquired to complete the project.

ENVIRONMENTAL BENEFITS AND INNOVATION

Beyond providing flood relief, the project delivered significant environmental and ecological benefits. Removal of perched culverts restored aquatic connectivity to approximately 3,500 feet of upstream habitat. Two-stage channel geometry improved sediment transport, enhanced stream stability, reduced long-term maintenance requirements, and created benches suitable for native vegetation and floodplain storage.

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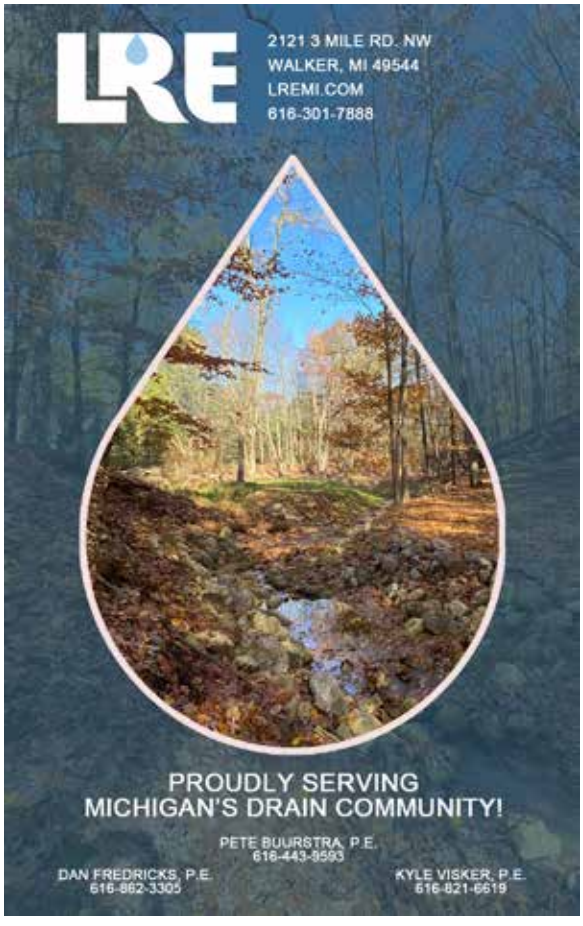


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BAUGHMAN DRAIN CONT.

The project also represented one of the most technically advanced drainage improvements undertaken in Allegan County. Groundwater flow modeling – a tool more commonly associated with environmental remediation projects – was used to simulate aquifer response and optimize the underdrain system. Extensive field monitoring and calibration allowed the project team to accurately predict both existing and future groundwater conditions.

Strategic coordination and detailed hydrogeologic analysis also allowed the project team to avoid sensitive wetland impacts and eliminate the need for costly compensatory wetland mitigation – a rare outcome for a project of this scale.

A MODEL FOR FUTURE DRAIN IMPROVEMENTS

Construction of the Baughman Drain Improvements Project required careful coordination within dense residential neighborhoods, including utility conflicts, narrow working corridors, and limited easement access. Despite these challenges, the project was completed efficiently while maintaining neighborhood access and minimizing disruption to residents.

With a total project cost just under $2 million, the Baughman Drain Improvements Project now provides long-term groundwater relief and flood protection for dozens of homes, restores aquatic habitat, modernizes aging infrastructure, and demonstrates how innovative engineering and collaborative problem-solving can successfully address complex groundwater flooding challenges.

Like the unseen aquifer it sought to understand, the Baughman Drain Improvements Project reflects the quiet power of persistence. What once felt like staring into an abyss ultimately became a story of clarity, restoration, and renewal – proving that by looking beneath the surface, communities can uncover not only the source of a problem, but also the path toward lasting solutions.



Underdrain construction through residential area



Construction of the underdrain system



The two-stage channel following construction

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Practical Generative AI in the Drain Office

From Reports to Public Communication

By: Brian Jonckheere
Livingston County Drain Commissioner

Tim Inman, PE
Spicer Group, Inc.

INTRODUCTION

Generative AI is software that creates new content from information you provide. Rather than simply searching for existing information, it can draft letters, summarize meetings, organize technical reports, explain complex regulations in plain language, prepare presentations, and even help write grant applications. Think of it as an exceptionally fast research assistant that is capable of producing a first draft in seconds.

Unlike a search engine, however, generative AI does not determine whether information is true. It predicts the most likely response based on patterns learned from enormous amounts of text. Because of this, its responses can occasionally contain inaccurate facts, incorrect legal citations, or fabricated information presented with confidence.

For government officials, this distinction is critical. AI is not replacing the Drain Commissioner or professional judgment, it is replacing the blank page by accelerating routine administrative work and tasks. The most effective approach is to use AI to prepare the first draft while the commissioner and staff verify every fact, statutory reference, engineering figure, policy decision, and public communication before anything is released.

CORE APPLICATIONS IN THE DRAIN OFFICE

Automated Meeting Minutes

Drain offices are legally bound by extensive documentation requirements, from Inter-County Drainage Board meetings to emotional Boards of Determination.

- The AI Application: You can feed raw audio transcripts (from platforms like Zoom or automated transcription software) or shorthand staff notes into a generative AI tool.
- The Output: The AI can instantly synthesize the data into structured, professional meeting minutes, organized by call-to-order, roll call, public comment summaries, resolutions offered, and voting outcomes.



Accelerating Grant Drafts

Securing funding from FEMA, the Michigan Department of Environment, Great Lakes, and Energy (EGLE), or federal infrastructure bills requires substantial technical writing.

- The AI Application: Input your engineer's raw scope of work, hydraulic modeling summaries, and estimated budget figures into the AI.
- The Output: Instruct the AI to draft the narrative components of the grant, such as the "Project Purpose and Need" or "Community Impact Statement," tailoring the tone to match specific grant evaluation criteria.

Public Notices & Statutory Communications

Communicating complex regulatory actions to property owners requires clarity and strict legal framing.

- The AI Application: Use AI to draft the plain-language cover letters that accompany formal statutory notices, such as Chapter 8 or Chapter 20 notices, or upcoming Day of Review of Assessments.
- The Output: The AI translates dense statutory mechanics into clear, transparent letters explaining exactly how a project affects a resident's property and tax bill.

Crisis Press Releases During Flood Events

When a severe storm hits and localized flooding occurs, commissioners must communicate rapidly to protect public safety and manage reputational risk.

- The AI Application: Provide the AI with quick bullet points regarding current road closures, open retention areas, and emergency phone numbers.
- The Output: Within seconds, the AI generates a calm, authoritative press release or social media update ready for immediate distribution to local media and residents.

BEST PRACTICES: PROMPTING, FACT-CHECKING, AND PREVENTING HALLUCINATIONS

Generative AI does not "think" but rather it predicts the next most logical word based on patterns in data. Because of this, using AI successfully requires specific operational safeguards.

Writing Effective Prompts

A poor prompt yields a poor draft. To get the best results, use the R-C-O Method:

- **Role:** Tell the AI who it is. ("Act as an expert communications director for a Michigan County Drain Commissioner.")
- **Context:** Provide the facts. ("We are addressing a culvert failure on the Black Creek Drain that is flooding Main Street.")
- **Objective:** Define the output. ("Draft a 200-word public update for our Facebook page.") Use short sentences and an urgent but reassuring tone.

Preventing AI "Hallucinations"

AI tools can occasionally invent facts, dates, or legal citations with absolute confidence—a phenomenon known as hallucination. To prevent this:

- Ground the AI: Explicitly instruct the AI: "Base your response ONLY on the provided text. If the answer is not in the text, state that you do not know."
- Source Verbatim Data: Do not ask the AI to "remember" the Michigan Drain Code. Instead, copy and paste the specific section of Act 40 of 1956 you are working with directly into the prompt box and tell the AI to summarize it.



Human-in-the-Loop Fact-Checking

Never publish AI-generated content without a thorough human review. A Drain Commissioner or legal counsel must verify every statutory citation, project cost, and engineering dimension before it leaves the office. The AI creates the first draft; the professional commands the final product.

LEGAL & COMPLIANCE CONSIDERATIONS: FOIA AND PUBLIC RECORDS

Operating in the public sector means AI use is not just a matter of convenience—it is a matter of law. Michigan's Freedom of Information Act (FOIA), PA 442 of 1976, and state public records retention laws apply directly here.



Are AI Prompts and Outputs Disclosable?

Yes. If you use an AI tool to draft a public notice, a grant application, or a memo regarding a drainage district dispute, those prompts and the resulting text drafts are considered public records. If a resident or journalist submits a broad FOIA request regarding a controversial drain project, your interactions with an AI tool concerning that project may be subject to disclosure.



Data Privacy and Security

Most free, consumer-facing AI models use the data you type into them to train future versions of their software. Never input confidential information into a public AI tool. This includes:

- Unpublished GIS data showing critical infrastructure vulnerabilities.
- Private property owner details, phone numbers, or un-redacted easement agreements.
- Sensitive legal strategies regarding pending drainage district litigation.

Solution: Ensure your office utilizes enterprise-grade AI applications or government-cloud solutions that explicitly guarantee data privacy, meaning your inputs are encrypted and never used for machine learning model training.

USING GENERATIVE AI RESPONSIBLY

The quality of AI's work depends largely on the quality of the instructions and information you provide. Clear prompts produce better results, while vague requests often produce vague or inaccurate responses. Every AI-generated document should undergo the same review process as any staff-prepared document. Government officials remain responsible for the accuracy, legality, completeness, and tone of every public communication, regardless of whether AI assisted in preparing it.

A useful mindset is to think of AI as your first-draft assistant. Let it organize information, improve writing, summarize lengthy documents, and eliminate repetitive administrative work, while elected officials and staff provide the judgment, experience, accountability, and final approval.

KEY TAKEAWAY

AI is not replacing the Drain Commissioner—it is replacing the blank page.

Used properly, generative AI allows public officials to spend less time writing routine documents and more time exercising the judgment, leadership, and public accountability that only people can provide.

Try the "Practical Takeaway" in the sidebar. Scan the QR Code—with it you can quickly copy the prompt into several different AI models and get results about your unique public relations challenge. You will notice a wide variety of responses to learn from / react to if you use the latest available models.

AI Practical Takeaway

PUBLIC RELATIONS PLANNING

One AI exercise each drain commissioner can do is use the prompt below to gain some introspection about their office. We put Brian's name into AI to see what it had to share about his office.

We gave five different AI models the same prompt to provide public relations feedback for the Livingston County Drain Commissioner. In a few minutes' time we had 35 pages of material to review and contemplate for relevance and validity. Below are Brian's reactions to these results.

How do results compare?
The results were eye-opening with Google AI, Gemini, and Copilot providing more generalist responses. Google AI seemed to be the most abbreviated and general, with a condensed response and limited suggestions. Perplexity and ChatGPT were the most comprehensive and drilled down into specific projects and controversies.

Do you find the responses fair and accurate?
They all appeared to be pretty accurate, even to the point of bringing up some controversies that I had totally forgotten about. For the most part, the models highlighted the same areas to focus on, though the sophistication of their responses differed.

Did anything surprise you?
The biggest surprise was that none of the models asked why anyone in their right mind would run for the position!! Several models mentioned that the office name doesn't seem to encompass the wide variety of responsibilities the office holds; I thought that was an extremely astute observation and one that really demonstrated a level of intelligence. Perplexity went so far as to look up the margin of victory in my last election and cited that as a strong indicator of the mandate for my office. Perplexity was the surprise for me, having used many of these models previously. ChatGPT had the most exhaustive output, however, Perplexity seemed to present the same material in a more organized and "well thought out" plan. It even noted the relatively small amount of discussion on social media platforms and suggested creating a presence in that area. Very comprehensive!

Will you act on any of the recommendations?
I've been in this for a long time and generally understand the game well. However, it was a reminder that there are things we can do better. The focus on communication was the most important recommendation and a common theme among models. It is the single most important component of the office and cannot be overstated, and these models recognize that. Suggestions of transparency and the need to "Over-communicate" were excellent and something that we will attempt to redouble our efforts on.

Scan the QR Code to get the prompt we used to try it for yourself. Make sure to fill in your county name. Paste it into the model or models of your choice – but remember that you are the "human in the loop" and are responsible for how you use this. Try your peer counties in the prompt also – you might find something to add to your plan that comes from a fellow drain commissioner you are impressed with or from someone who has faced great challenges.



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VALUING POTENTIAL IN THE DIRT

Why appraisers analyze the highest and best use of a property as if vacant, even when it isn't actually vacant

By: Maxwell G. Katsarelas, MAI, Egis

In the Pixar film *Up*, you may remember the protagonist's stubborn refusal to sell his single-family home as skyscrapers and high-rise construction rose up around him. Developers continued to increase their offers, but Carl Frederickson simply refused to sell. For the developers, the home was not the prize…it was the dirt.

One of the more striking examples of this is in Sydney, Australia. Homeowners refused to sell their property as suburban sprawl swallowed up the land around them. Reportedly $30,000,000 was offered, but again, it was not the home the developers wanted…it was the dirt.

While not as stark as Carl Frederickson's house in *Up*, or the home in Australia, you can probably think of an example or two in your own community. Maybe there is a farmhouse next to a new apartment complex, or an old car repair shop next to a new shopping center. As time passes, cities change, infrastructure expands, zoning adapts, and comprehensive plans plot out the future. Consequently, the underlying land value can outpace the value of the structure sitting on top of it.

SOLVING THE APPRAISAL PROBLEM

For appraisers, this disconnect creates a classic valuation problem, although solving the problem is often relatively straightforward. The appraiser starts by asking, which is more valuable – the property as if vacant, or the property improved. The answer to that question requires a highest and best use (HBU) analysis.



Photo Credit: Jakub Zerdzicki, Pexels

To illustrate the HBU process, let's use a hypothetical property as an example: a single-family home on a flat one-acre parcel of land in the middle of a growing city. The county drain commissioner needs a drainage easement on

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the property. The proposed easement is a small triangular area at the back corner of the property within the rear zoning setbacks. Since this easement does not impact the structure, only the property owner's rights to the land are impacted and there are no apparent damages to the home. Thus, the appraiser only needs to analyze the HBU as if vacant. In other words, to value the easement, the appraiser must isolate the value of the underlying land and ignore the home. The four HBU tests for the land in an as-if-vacant scenario are as follows:

1 **Legally Permissible:** What uses are allowed by current zoning, master plans, deed restrictions, and environmental regulations (including drain easements)?

When researching legal permissibility, the appraiser identifies the site is in a medium density residential zoning district that allows single-family dwellings on quarter-acre lots. The future land use map in the community's comprehensive plan indicates the area is reserved for medium-to-high-density single-family housing.

2 **Physically Possible:** What can the site's size, shape, topography, and soil conditions actually support?

A single-family home on the site is physically possible, but subdividing the site into smaller lots is also physically possible. Further, the site has public utilities at the street and the site is generally level.

3 **Financially Feasible:** Which of the legally and physically possible uses will produce a positive economic return in the current market?

Even though the site is currently a single one-acre parcel, market investigation reveals investors are acquiring one-acre residential lots to subdivide into quarter-acre parcels and then flip to home builders. In fact, there are new homes on quarter-acre lots nearby.

To determine if subdividing is financially feasible, the appraiser studies sale prices of one-acre lots zoned medium-to-high-density residential and the sale prices of quarter-acre single-family lots. Similar one-acre parcels sell for approximately $150,000 while the quarter acre lots sell for $75,000 each. This means four lots on the subject site could yield up to $300,000 in

gross sales. After deducting costs for surveying, municipal split fees, and investor profit, let's say the project yields a net return of $250,000. Because this generates a positive economic return, subdividing is financially feasible.

4 **Maximally Productive:** Of the financially feasible uses, which one produces the highest residual land value?

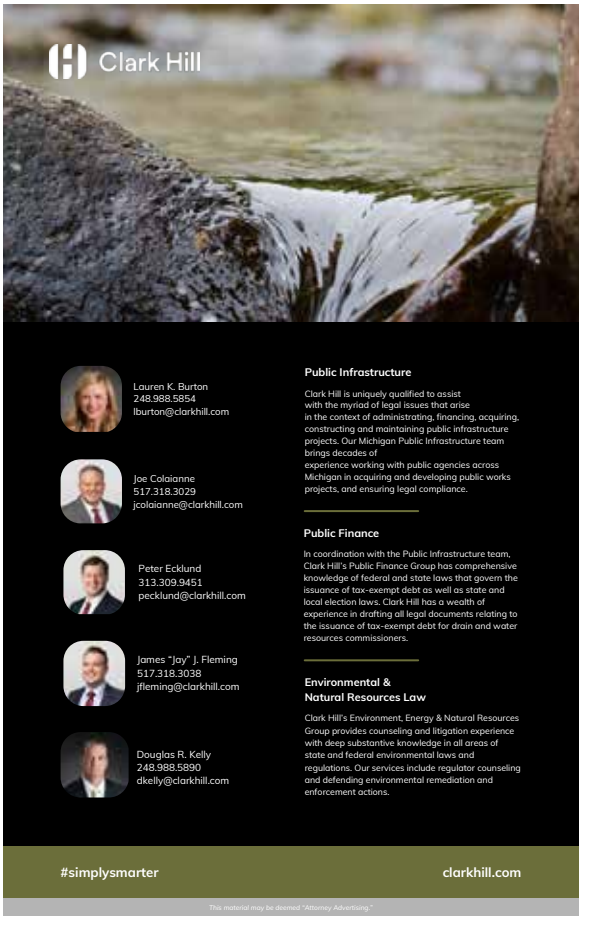
To find the maximally productive use, the appraiser must compare the financially feasible options to see which produces the highest residual land value. Because a $250,000 yield is greater than $150,000, subdividing the site is the maximally productive use.

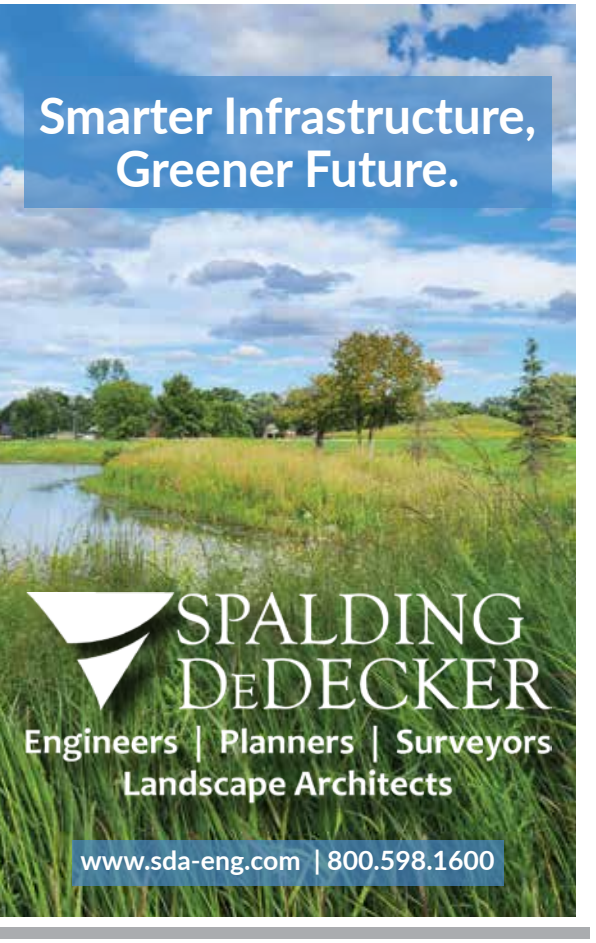
THE APPRAISAL TAKEAWAY

When valuing an easement that does not impact or damage the existing improvements, analyzing the HBU as vacant is critical because:

- **Just Compensation:** Laws require compensating owners for the property rights taken based on its HBU, which may or may not match its current improved use
- **Project Budgeting:** What looks like a house with a big yard could be multiple lots or a future subdivision (or something else entirely) and correct HBU analysis prevents costly surprises
- **Public Trust:** Appraisers must thoroughly research zoning, land-use maps and local market dynamics to protect the public trust and uphold professional standards

Ultimately, the four HBU tests guide the appraiser when determining if there's potential in the dirt. And by explicitly analyzing this potential, and looking past what sits on the site today, appraisers help safeguard budgets while ensuring property owners are fairly compensated and left "whole."





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STAFF SPOTLIGHTS

As a new feature of Pipeline, we will profile drain office staff and associate members. Do you have someone in your office who deserves recognition? Are you an associate member doing cool things?

Please reach out to Communications Committee Chair Joel Morgan at joel.morgan@kentcountymi.gov.

ALECIA LITTLE
Deputy Drain Commissioner, Tuscola County Drain Commission



Little

Where are you from?

Cass City, MI

How long have you been working in the drain world?

Since August 2020

What are two or three things we should know about what you do?

I oversee the spray program in our office and assist with the Drain Assessments.

What is the most rewarding part of your job?

The connections I make with people.

What is the most challenging?

Having frustrated landowners call or come into the office, I hear them out, let them vent, then try to have a conversation with them to resolve the issue.

What is your favorite (pizza, book, album, circus ride)...

My favorite thing is spending time with my daughter.

KYLE O'MEARA
Member, Fahey Schultz Burzych Rhodes PLC



O'Meara

Where are you from?

St. Joseph, MI

How long have you been working in the drain world?

Eight years

What are two or three things we should know about what you do?

1. I specialize in lake-related projects for our firm including lake levels and lake improvement boards. 2. We continue to try to practically solve complex problems for our clients and add value to drain commissioners.

What is the most rewarding part of your job?

See a project that we've helped our clients and other consultants accomplish get completed.

What is the most challenging?

Finding enough time in the day to get everything we'd like to get done completed!

What is your favorite (pizza, book, album, circus ride)...

Favorite pizza - Chicago Deep Dish

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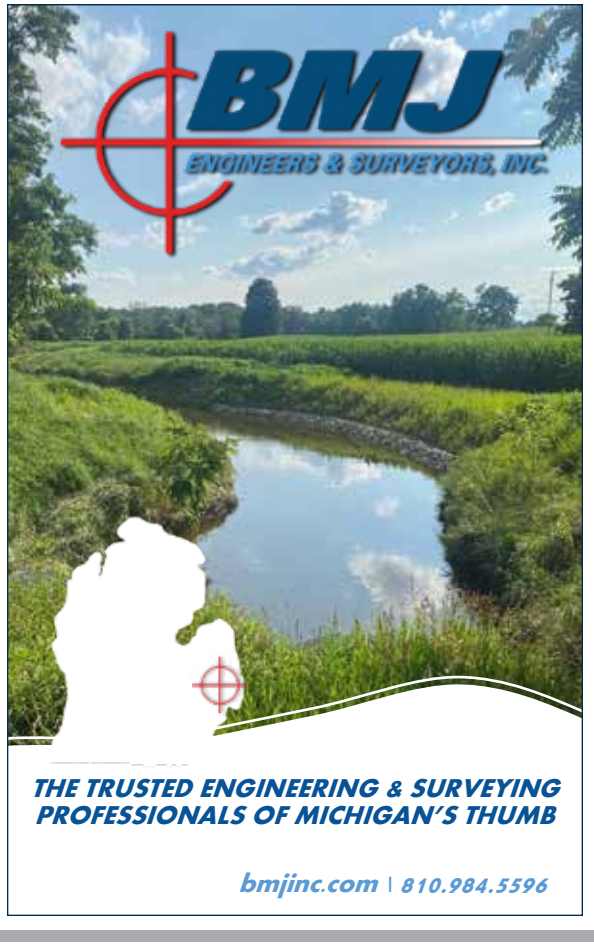
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