

PIPELINE

MICHIGAN ASSOCIATION OF COUNTY DRAIN COMMISSIONERS

MANAGING MICHIGAN'S WATER RESOURCES SINCE 1899



LIGHTHOUSE CREEK DRAIN

*2019 MACDC INNOVATION & EXCELLENCE
AWARD WINNING PROJECT*

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DRAIN STORY

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Alan Cooper, Manager, Wexford County Road Commission



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PIPELINE is published four times a year. It is funded by the Michigan Association of County Drain Commissioners, and with advertising revenues. The Michigan Association of County Drain Commissioners is a nonprofit, statewide association.

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The cover photo highlights the Lighthouse Creek Drain culvert replacement and erosion protection.

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PRESIDENT'S MESSAGE

JOE BUSH

Ottawa County Water Resources Commissioner



Friends,

The new home I purchased last summer has quite a large drain running through it, and even though my daily job encompasses water, I often enjoy sitting out on the bridge, listening to the water rush by. During the winter months, it amazed me to see the constant water flow down the drain along the property even when it was below freezing temperatures. This spring, the waters will rise and flow, sometimes very quickly depending on how much rain has fallen. However, no matter how much water has fallen into the drain and rush passed, it will, eventually, lower once again.

I know the weather this spring has affected many different groups of people and water levels around the state are near record highs. Many farmers were unable to plant crops in the timeline they desired, homeowners had flooding issues, contractors had difficulties installing various projects, and engineering companies have been stumped on the best manner to solve a water issue. Thank you for your service as commissioners, contractors, consultants, suppliers, engineers, and all the others, who help make our jobs run smoothly.

An analogy I want to impart to you has to do with the rise and fall of the creek running through my property. Just like when the rains come and the drains rise, so do many of our workloads. Projects start, or developments need approving, and it gets busy in our offices. Sometimes, just like the drain, it gets murky and all churned up. It gets difficult to see through to the bottom of the creek or the end of any given project. Projects that were supposed to go one way, became a lot more involved, or head in a different direction altogether. Dates for materials arrived later

than anticipated and delay construction. All of this churns up our daily schedules. You must remember to continue to push through for your constituents in the counties we serve. Eventually, many of these projects will slow and the “waters” in our offices will once again become clear and a little more slow-going. During the times when it is a little quieter, I encourage you to reflect and rejuvenate. Take that sunset walk with someone you appreciate; go out for ice cream or grab that cup of coffee from the local coffee shop for no other reason than just to relax; go visit a friend or sit on the porch a little longer. Doing this helps us become mentally prepared for the next rise, the next set of issues that add to our schedules.

With summer conference quickly approaching, there has been a lot happening, and I appreciate the work that each and every one of you are doing for your own counties. Remember that we are here for each other. If you need to call and ask for advice, or simply need a sounding board, do so. That is what family does for each other.

With the rise and fall of our busy schedules, don't forget to hold steadfast during the busy times where things may get more difficult or murky, and relish in the quiet peaceful times where rejuvenation can happen. And just like how the waters continue to flow all year round, so do we, as commissioners – serving our constituents one call, one project at a time.

Stay Positive,

Joe Bush
MACDC President

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OF TRUCKS* 14

- HP Storm uses less trucks
- Self unloading - no lifting required



OF TRUCKS* 49

- RCP uses more trucks
- Machinery required to unload

* Based on 5,000 feet of 30" diameter pipe.

STAGING

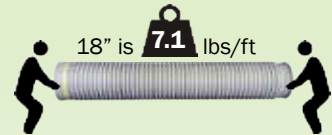


- HP Storm is able to be stacked high
- Nest smaller diameters



- RCP stacks two high

STRINGING



- HP Storm can be moved quicker
- Handle safer



- RCP is moved two at a time
- Requires machinery

INSTALLATION

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- 250 joints using HP Storm (625 joints with RCP)



30" HP Storm:
Installation Rate
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30" RCP:
Installation Rate
of 88 ft per day*

*Data compiled from RSMeans

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MICHIGAN ASSOCIATION OF COUNTY DRAIN COMMISSIONERS 120th Annual Summer Conference

SCHEDULE AT A GLANCE

Tuesday, July 16

- 1:30 - 3:00 PM **Legislative Meeting**
Bellaire Ballroom North
- 3:00 - 5:00 PM **Board of Directors Meeting**
Bellaire Ballroom North

Wednesday, July 17

- 10:00 AM **Registration Opens**
Parlor A Foyer
- 12:00 PM **Lunch on your own**
- 1:10 - 1:15 PM **Call to Order and Welcome**
Parlor AB
- 1:15 - 3:00 PM **Educational Sessions**
Parlor AB
- 3:00 - 3:15 PM **Break**
- 3:15 - 5:00 PM **Educational Sessions**
Parlor AB
- 6:00 PM **Reception**
Parlor CD
- 7:00 PM **Dinner**
Parlor CD
- 9:00 PM **Entertainment**

Thursday, July 18

- 7:00 - 9:00 AM **Breakfast**
Parlor CD
- 9:00 - 10:30 AM **Educational Sessions**
Parlor A B
- 10:30 - 10:45 AM **Break**
- 10:45 - 12:00 PM **Educational Sessions**
Parlor AB
- 12:00 - 1:00 PM **Lunch**
Parlor CD
- 1:00 - 5:00 PM **Networking Activities**
Various Locations
- 6:00 PM **Reception**
Promenade Patio
- 7:00 PM **Dinner**
Promenade Patio

Friday, July 19

- 7:30 - 9:00 AM **Breakfast**
Parlor CD
- 9:00 AM **MACDC District Meetings**
Parlor AB
- 9:30 AM **Business Meeting**
Parlor AB
- 10:30 AM **Adjourn**

CONFERENCE SESSIONS

Wednesday, July 17

1:15 - 2:00 PM Cloud Underground

Max Clever, P.E., P.S., Spicer Group, Inc.

This presentation will explore the utility of underground scanning. From simple manholes to labyrinths of intertwined pipes and custom structures, we will show how laser scanning can improve decision making for a range of projects.

2:00 - 2:30 PM Notices and the 5 W's

Doug Kelly and Lauren Burton, Clark Hill PLC

The Michigan Drain Code has nearly 400 references to 'notice' required for various actions, meetings, hearings and reviews. Test your knowledge of the who, what, when, where and why requirements of certain notices, including the proper recipients, required content, and various methods of service.

2:30 - 3:00 PM Trenchless Technology = Minimize Disruption

Jesse B. VanDeCreek, P.E., Hubbell Roth & Clark, Inc.

This session will provide an overview of trenchless technologies by category. Various trenchless technology applications, terminology, design and construction considerations will be presented.

July 17-19, 2019

Shanty Creek Resort, Bellaire, Michigan

CONTINUING EDUCATION CREDIT AVAILABLE!

3:15 - 3:45 PM Tips & Tricks to Preparing a Defensible Assessment Roll

Stacy L. Hissong, Fahey, Schultz, Burzych & Rhodes PLC

Details matter. This presentation will discuss the proper application of at-large apportionments, various factors used in property owner apportionments, what properties are exempt from assessment and the impact various land sales may have on a roll before levying an assessment.

3:45 - 4:15 PM Legislative Update

Deena Bosworth, Michigan Association of Counties

MACDC lobbyist Deena Bosworth will discuss the bills that have been introduced this legislative session that affect the work of county drain offices.

4:15 - 5:00 PM Who Pooped in Your Water?!

Aaron Snell, Streamside Ecological Services, Inc.

Aaron will summarize water quality monitoring results from several different watersheds, and explain why the results are an important consideration for resource management. The focus will be on fecal contamination of surface waters; specifically, where the contamination is coming from, what it means for users of the water and how it might be controlled.

Thursday, July 18

9:00 - 9:30 AM Intercounty Drain Lean Process Improvement

Michael Gregg, Michigan Dept. of Agriculture & Rural Development (MDARD)

In response to ever increasing demand for performing maintenance on the over 1,000 intercounty drains that MDARD is the drainage board chair for the program staff undertook a week long professionally facilitated Lean Process Improvement exercise. Results of this exercise will be presented and opportunities to improve customer service explained.

9:30 - 10:00 AM Economical and Ecological Drain Maintenance

Stu Kogge, PWS, GEI Consultants

There are economic and ecological alternatives to performing drain maintenance beyond traditional methods that have been used historically with drain

commissioners across the State. There's a time and place for yellow iron to re-establish drains to their historical dimensions and capacity and there are also times and places, or better yet specific drains having unique ecological values and characteristics that warrant more selective methods of correcting drainage problems. This presentation will walk through alternatives used on numerous drains and watercourses across the State which have improved drainage, reduced flooding, removed sediment and blockages, and prevented the removal of trees and disturbance of drain ROWs. At times in areas where no large equipment can or should be going.

10:00 - 10:30 AM What's new with EGLE and WRD

Jerrod Sanders, Michigan Department of Environment, Great Lakes, and Energy

Learn about the new EGLE and WRD, including organizational news, current priorities, and what's happening with the permitting program.

10:45 - 11:30 AM Federal Endangered Species Act

Jessica Pruden and Carrie Tansy, US Fish and Wildlife Service

This session will focus on federally listed species and the Endangered Species Act.

11:30 AM - 12:00 PM Green Stormwater Infrastructure Maintenance: Cost & Design Techniques

Catie Wytychak, Washtenaw County Water Resources Commissioner's Office

Green stormwater infrastructure is an effective tool for improving water quality by slowing and storing stormwater. Green stormwater infrastructure also poses a new challenge for municipalities: maintenance. This presentation will cover the costs and strategies behind our maintenance program as well as lessons learned.



LIGHTHOUSE CREEK DRAIN

2019 MACDC INNOVATION AND EXCELLENCE AWARD WINNER

By **Al Garibay, Spicer Group, Inc**

The Lighthouse Creek Drain project recently received special recognition from the State of Michigan after winning the Michigan Association of County Drain Commissioner's Innovation and Excellence Award for efforts to eliminate flooding in the City of New Buffalo and protect the local environment.

Signed by State Senator Kim LaSata, Congressman Fred Upton, State Representative Brad Paquette, and State Representative Pauline Wendzel, the special tribute highlighted Berrien County Drain Commissioner Christopher Quattrin's efforts

of ensuring the survivability of natural resources while dealing with flooding issues.

"The efforts displayed by Christopher Quattrin exemplify his dedication to the well-being of those in the City of New Buffalo. Not only was the project effective, but it also included thoughtfulness in regard to the surrounding environment. The securing of a natural watercourse as a county drain is the definition of what his award describes: Excellence through innovation," the special tribute said.



Restored Lighthouse Creek Drain outlet



850 tons of boulder installed to protect the outlet

One of the most important environmental benefits this project achieved was the reduction of flooding at the City's water treatment plant. The problem was drastic enough that the MDEQ addressed the issue with the City, noting that flood water could potentially contaminate their water system making it unusable. The efforts incorporated by the design team alleviated this problem by reducing the 100-year flood elevation by nearly eight feet thereby preserving the quality of drinking water for the City.

“The project team of Spicer Group, Inc., Fahey Schultz Burzych Rhodes, and the Berrien County Drain Commissioner's office approached the project by looking at the entire watershed to identify areas that could be improved to alleviate the downstream



Berrien County Drain Commissioner (Left) and State Representative Brad Paquette (Right) giving Christopher a letter of special recognition for winning the 2019 MACDC Innovation and Excellence Award, given by State Senator Kim LaSanta, Congressman Fred Upton, State Representative Brad Paquette, and State Representative Pauline Wendzel

flooding,” project manager Al Garibay said. “After completing a hydraulic model of the entire watershed, the project team discovered that a large wetland complex downstream of the water treatment plant could play a major role in reducing the flooding.”

The team also found that water was moving downstream too fast, and there was a major constriction at the culvert area under Water Street. Additionally, the creek's channel downstream from the culvert was eroding severely and impeding the flow of the creek.

“Based on the project team's findings, the City agreed to move forward with establishing a drainage district, and the Berrien County Drain Commissioner held a Board of Determination

Meeting where information was presented to the public about the results of the project



Lighthouse Creek Drain outlet before drain channel clearing and erosion control

design challenges had to be overcome before the project could be deemed a success.

The Lighthouse Creek Drain flows through a high-quality wetland adjacent to the City's water treatment plant and preservation of this wetland was an important goal of the project. The high-quality wetland was created in part by a beaver dam located at the lower end of the wetland. This led to a design challenge of reducing flood flows while maintaining a high enough level of baseflow to keep the wetland areas hydrated.

team's recommended solutions," Garibay said. "These solutions included replacing an undersized culvert under Water Street, stabilizing the channel along the creek, and construction of an earthen berm to protect the water treatment plant."

The project was deemed necessary by the Board of Determination and Spicer Group was commissioned to move forward with providing the final design and construction administration. However, some unique

This was accomplished by reinforcing the beaver dam, using riprap, to maintain the existing baseflow at the lower end of the wetland. The water level in the wetland during normal conditions is maintained at a height that is healthy for the wetland and its inhabitants yet not too high to cause damage to the nearby water treatment plant during flood events. Additionally, the reinforcement was designed to allow for fish passage.



MICHIGAN'S DRAIN EXPERTS

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The photo above shows Lighthouse Creek Drain culvert before construction. The photo below shows the Lighthouse Creek Drain newly constructed box culvert





Stone steps were installed to accommodate public access to the beach

Another design obstacle was the outlet of the Lighthouse Creek Drain at Lake Michigan, which is everchanging. The property located immediately at the mouth of the creek on the north side had experienced major erosion over years of damaging wave action, ice dam formation, and storm flows within the creek. The banks were so severely eroded that the homeowner had large steel pilings installed as a fence all along the bank to hold back what was left of their property.

The design team countered this issue by widening this section of the creek and stabilizing the shoreline. To provide an

aesthetically pleasing look to the project, the project team incorporated the use of natural quarry stone boulders weighing approximately six to eight tons a piece as bank stabilization. In total, 850 tons of the boulders were installed over a 170-foot stretch of the creek's bank.

“This was a great project for the area,” Christopher Quattrin, Berrien County Drain Commissioner said. “The project eliminated a major flood risk to New Buffalo while sustaining the local environment and protecting the City’s drinking water resources.”



The photo at left shows Lighthouse Creek Drain outlet before the drain project. The photo at right shows the completed Lighthouse Creek Drain outlet.

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POSITIVE ARBITRAGE IS BACK!

By Michael Steinbrook, PFM Asset Management LLC

Rising short-term interest rates mean increased potential for bonds to earn positive arbitrage. They also mean paying close attention to arbitrage rebate requirements and strategy. In this article, we discuss components that are important for County bond issuers such as exceptions to the arbitrage rebate requirements and reminders about debt service and debt retirement funds that are often overlooked. While low borrowing rates create potential to earn positive arbitrage, there are still ways to maximize retainable interest earnings.

SMALL ISSUER EXCEPTION

Counties that issue bonds with the following characteristics can issue up to \$5 million of tax-exempt bonds per calendar year that are exempt from arbitrage rebate*:

- Governmental issuer with general taxing powers
- Not private activity bonds
- Aggregate face amount of bonds not in excess of \$5,000,000

Some examples of the annual small issuer test are shown in the table below. Current refunding bonds can generally be excluded from the test.

Bonds issued in a calendar year that meet the small issuer exception are not subject to the arbitrage rebate requirements*. If bond proceeds are invested in a manner that earns positive arbitrage (investment yield above the bond arbitrage yield), the County can keep the positive arbitrage and all interest earnings.

*It is important to note that the small issuer exception is an exception to the arbitrage

rebate requirements, but not yield restriction. Generally, new money bonds with unspent proceeds remaining after three years will require yield restriction liability calculations.

DEBT SERVICE, SPECIAL ASSESSMENTS AND DEBT RETIREMENT FUNDS

Monies deposited into funds that are pledged to pay debt service on bonds fall under the “replacement proceeds” category, are treated as gross proceeds of a bond issue and are potentially subject to the arbitrage restrictions. Balances should be monitored annually—if the fund satisfies the depletion test, then the fund can be treated as a bona fide debt service fund that is exempt from arbitrage restrictions. Depleted doesn’t necessarily mean a zero balance, but can be the greater of (a) one-twelfth of the prior year’s debt service, or (b) interest earnings in the fund from the prior year. This generally equates to a one-month carryover. If the low balance does not satisfy the depletion test, then the fund is subject to restrictions and should be included in arbitrage rebate and yield restriction calculations. Generally, a Debt Retirement Fund where special assessments and other monies have been collected and set aside to pay debt service in future years is subject to the arbitrage rebate requirements because it is not depleted annually.

SPENDING EXCEPTIONS

The spending exceptions are rewards from the IRS that allow issuers to keep positive arbitrage if they spend bond proceeds quickly. To meet an exception, issuers have to spend proceeds (and interest earnings) based on prescribed six-month benchmark

BOND TYPE/CALENDAR YEARS	2017	2018	2019 (EXPECTED)
BOND TYPE/CALENDAR YEARS	4,000,000	3,000,000	8,000,000
(A) CONSTRUCTION/PROJECT BONDS	5,000,000	3,000,000	5,000,000
(C) ADVANCE REFUNDING BONDS	4,000,000	--	--
(D) OTHER TAX-EXEMPT LOANS, LEASES	1,000,000	1,000,000	2,000,000
TOTAL BOND ISSUANCE SUBJECT TO TEST (A+C+D)	9,000,000	4,000,000	10,000,000
SMALL ISSUER EXEMPT?	NO	YES	NO

SPENDING EXCEPTION	6 MONTHS	12 MONTHS	18 MONTHS	24 MONTHS
6 MONTH ALL GROWTH PROCEEDS	100%			
18-MONTH ALL NEW MONEY	15%	60%	100%	
24-MONTH CONSTRUCTION ISSUES	10%	45%	75%	100%

spending requirements (see chart above).

Because there is no catch-up provision, once a bond issue misses a spending benchmark, the ability to meet the exception is lost and rebate liability calculations should be prepared.

ARBITRAGE REPORTING AND RECOMMENDATIONS

Consult with your financial advisor and bond counsel and make sure you understand the compliance status of each tax-advantaged bond issue.

Small Issuer Exempt Bonds – set a reminder to review any unspent balance prior to the three-year anniversary date. If unspent proceeds remain after three years, engage a rebate analyst to prepare yield restriction liability calculations.

Debt Service and Debt Retirement Funds – review balances regularly and test that the low balance during the year meets the depletion test; if not, these funds should be included in arbitrage rebate and yield restriction liability calculations.

Other Tax-Exempt Bonds – engage a rebate analyst to prepare arbitrage rebate and yield restriction liability calculations. Fifth-year reporting is a must; annual reporting is better.

Ask your investment advisor about how they can help you maximize retainable earnings. Yield burning is not allowed, so strive to earn what you can at what the market will bear.

Mike Steinbrook is a Director in the Arbitrage & Tax Compliance Group at PFM Asset Management LLC, part of the PFM Group. He has prepared thousands of arbitrage rebate calculations and hundreds

of escrow verifications in his 15 year career. Mike assists issuers in developing strategies to optimize arbitrage liabilities and maximize retainable earnings. He is a frequent conference speaker and regularly provides training to issuer clients and industry groups.



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MACOMB COUNTY VIDEOS TELL DRAIN STORY

A new video series is educating Macomb County residents about the history behind their network of county drain.

Macomb County Public Works Commissioner Candice S. Miller launched the “Know Your Macomb County Drains” series earlier this year. So far, four of the videos, all about 90 seconds long, have been posted on the organization’s social media platforms, drawing rave reviews.



A screen grab from Macomb County’s recent “Know Your Drain” video about the Lawson Drain in Shelby Township.

“We are always looking for ways to educate the public, to engage the public in what we are doing in the Public Works Office,” Miller said. “The more they know, the better partners they are for us as we work on the drains.”

Each of the videos includes a few tidbits about the family for whom the drain was named along with its location and approximately how many residents and businesses the drain serves. The video is a mixture of what the department refers to as “beauty shots” of the drain, a map and a few historic photos.

A recent video, on the Lawson Drain in Shelby Township, highlighted that the Lawson family originally took deed to the area with a document written on sheep skin and signed by President John Quincy Adams. The 1.9-mile long drain serves 370 property owners.

“I grew up in Macomb County, was a newspaper reporter here and then worked for a couple of different government organizations, but until I joined the Public Works Office, I didn’t really have a sense of how important the drains were,” said Dan Heaton, who joined MCPWO as communications director when Miller took office in 2017. “Anything we can do to connect with the community helps us work toward our goal of using this office as a contributor to quality of life and economic prosperity in our community.”

As Miller’s team launched an aggressive schedule of drain clean-outs and enhancements after taking office, the newcomers were often impressed by the wealth of knowledge some of the organization’s longer-term employees, some with more than 30 years on the job, had on many of the drains.

“That’s when we started thinking wouldn’t it be good if we could share some of that knowledge with the people who have these drains running through their backyards,” Miller said.

The videos are created in-house using historic images available from local libraries and simple video shot on smart phones. A contractor helps with the editing. The four videos posted to date have each been seen an estimated 10,000 times between social media and the agency’s web site. MCPWO has been posting one video per month.

“Now we have people contacting us, asking us to do a specific drain next. With 475 county drains in Macomb County, we know we will never get to all of them. But we tell people to stay tuned, maybe your drain is next!” Miller said.

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SANILAC AND LENAWEЕ LEAD THE WAY OPEN DRAIN ASSET MANAGEMENT

Washtenaw County's Water Resources Commissioner, Evan Pratt, conducted interviews to learn more about county drain maintenance programs and how a proactive approach can lead to more effective management of our assets. Pratt interviewed Ed Scheffler, Deputy Drain Commissioner for Lenawee County and Greg Alexander, Sanilac County Drain Commissioner to learn more about their maintenance programs.

Pratt is a member of the state's Water Asset Management Council (WAMC) and was curious about what best practices are being used to maximize taxpayer value. One way of thinking of Asset Management for drains is to deliver the quality or level of service that the public and communities are willing to pay for at the lowest annual cost. Developing an approach similar to the minor and major maintenance schedule for your car is another way of picturing this – we would never buy a car and drive it until the brakes failed. Like your car, preventative maintenance and proactive planning helps extend the service life of the county drains.

EVAN: Can you describe your current proactive maintenance plan and how it got started?

ED: Our program took off in 1997 when the first large excavator with tree shear and mower attachments was purchased. Prior to that, maintenance consisted of limited tile repairs with a backhoe and vegetation removal by hand. Today, we have two large excavators, a mid-sized excavator, mini-excavator, tractor with boom mower/sprayer, dozer, jet truck and various other equipment. We can prove that routine maintenance is much more cost effective than the petition process. Most of our open ditches that have been regularly maintained can be mowed, dipped and spoil leveled for under a \$1.00/

foot. Petition projects are a lengthy process and often come back with construction costs of \$3.00-\$5.00/foot, not including engineering/administration. The farming community in particular realizes that our maintenance program provides them with effective drainage, cost savings and time efficiency.

GREG: We have had a proactive maintenance program since at least 1978, when Stuart Armstead set up a revolving fund. In 1994, the late Geoff Seidlen helped create a Maintenance Authority, which employs a full-time manager and owns all of the equipment. We don't have a mowing program but do have a limited spraying program to address woody invasives and broadleaves, with an eye to encouraging and maintaining grasses that help maintain stability. Another unique thing we do with our Authority is that the manager is seeding much of the year. Our maintenance contractors will prep and fine grade the areas they work on, and our manager is constantly out seeding during the growing season. They use a gel-based clotting agent to hold moisture as well as tack seed onto steep slopes.

EVAN: How has the program changed since you became Drain Commissioner?

ED: We added a field inspector, streamlined work scheduling, and have added some cutting edge technology like RTK GPS and machine grade control to help increase efficiency. In addition, we have upgraded two larger excavators with new low emission, fuel efficient machines.

GREG: We have had to respond to Ash Borer and extreme weather (e.g. 5-7 inches of rain across the county in 2017). This required additional effort (and cost) in wood removal. Sanilac has had to re-focus on the wood

removal, especially in areas that had woody vegetation that couldn't be maintained when the cost per mile was lower.

EVAN: What percent of total miles of open drain are in your program?

ED: Our GIS drain map data indicates that we have about 1,115 miles of County drains, 720 open ditch and 394 tile drains. I would classify about 650 miles of open ditch as being regularly maintained by our staff, meaning the drain has been cleared enough to maintain, is regularly mowed, sprayed and dipped when necessary. The remaining drains or portions of drains are purposely being maintained as "natural" due to their characteristics, the adjacent land use and environmental factors. Work on natural drains is generally limited to log jam removal or restoration efforts. In an average year we dip out about 40 miles of drains and mow/spray about 80.

GREG: Our records indicate about 1,480 miles of County drains, with only four enclosed. Sanilac has been consolidating and has 100 fewer drains than when I started in 2009. Part 197 amendments made it much easier to address consolidation where necessary. This helps address more substantial maintenance issues on a given drain more cost effectively and results in a more fair assessment. On average, around 15% of the drains are maintained annually, but many of those only need minor work or herbicide.

EVAN: How do you decide which open drains to clean in a given year?

ED: We maintain a database of all open drains indicating when we last inspected, performed maintenance, field notes, anticipated maintenance, etc. to help us schedule future maintenance on each drain. In addition, landowners and municipalities can make requests for maintenance. We try to inspect the condition of all open



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drains every year and perform vegetation maintenance every five years with dip outs every ten. It is necessary to clean some drains more frequently, such as in mucky or sandy soils or where there is little gradient. More stable drains may not need to be dipped for decades. We keep record of these conditions in our database, so when the current staff has retired we retain their knowledge.

GREG: The schedule is based on prior history, community requests, landowner requests, and observations of the Maintenance Authority manager throughout the year.

EVAN: *What issues would you see if you didn't do regular maintenance?*

ED: In the agricultural areas, they are going to expect the same level of service because they depend on good drainage. This service would cost a lot more due to more tree removal and small issues turning into bigger ones. It's especially important to inspect often and nip erosion issues in the bud since eroded soil deposits somewhere else and can turn into expensive problems in just a few years. If we don't do lots of small work under maintenance, we end up with petition projects that cost a lot more. An aggressive maintenance program through the Drain Commissioner's Office is often the most effective way to get it done, just like changing the oil in your vehicle every few months can prevent bigger, more expensive problems. The same holds true for storm drains, detention basins, etc. Routine maintenance goes a long way towards providing adequate drainage and keeping costs down.

GREG: We would see a loss of road culverts during major rain events due to all the big wood (especially lately with ash trees), and more severe flooding and crop damage. A downed tree in the channel can cause the channel to silt up upstream, or to carve a path around the tree or other obstacle that

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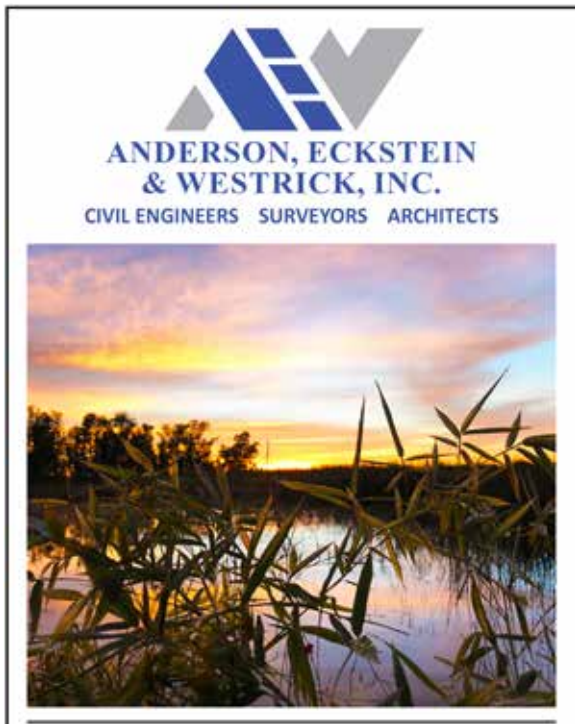
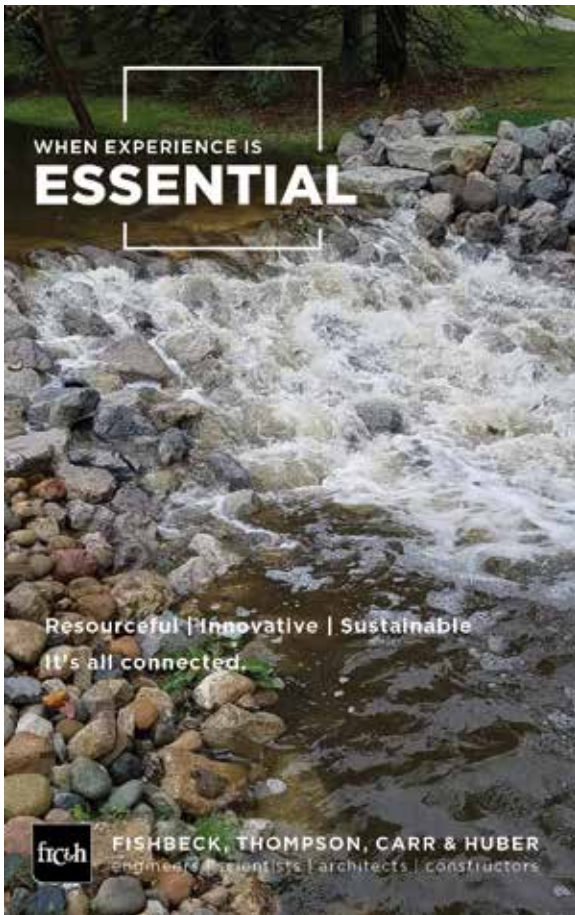


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ASSET MANAGEMENT - - - - -

can turn into a much worse erosion issue. Isolation of a senior center due to downed trees and flooding during a 2014 tornado event was an eye opener too. I like to aim for costs not higher than \$5-\$6/acre, and that is only possible with frequent minor maintenance.

EVAN: Do you have any other regular maintenance programs for enclosed drains, structures, etc?

ED: We have always done limited maintenance and repairs of broken or plugged tiles, averaging about 100 work orders per year, but are ramping up our efforts. Our focus is turning to locating all of our tile lines with the use of a maverick tile finder and surveying for horizontal and vertical data via RTK GPS, as well as conducting an inventory with condition, tile size, material, etc. Other maintenance efforts are clearing vegetation over tiles, treating brush and trees to prevent re-growth, use of high pressure jet to clear sediment from tile lines and root cutter nozzle to remove roots. We are also replacing outlets and catch basins as necessary. One hurdle is lack of access during much of the year due to crops.

EVAN: Wow Ed, those are exactly the steps in addressing Asset Management – inventory, condition assessment, then a maintenance schedule for each asset’s issues and needs. Washtenaw is about two years behind where you’re at with our problem tile drains.

Do you know if all of your enclosed drains flow properly or are you at least able to estimate the percentage that do not? (In Washtenaw, we probably have between 10-30 miles that are severely blocked by roots and/or dirt.)

ED: I would guess there are 70-80 miles of drains that are not functioning or are very limited in function. We are working towards identifying them and repairing as

we can to hopefully restore their function. Replacements are generally completed through the petition process due primarily to costs associated with engineering, materials and construction that would exceed maintenance funds.

EVAN: Roughly how many drains annually do you need permission to exceed the maintenance limit? What do you do in those situations?

ED: We had quite a few in the early 2000's when we were still clearing a lot of drains of large trees/stumps, but now we have relatively few, maybe five or six a year. There are a couple of ways that we have handled them. One is to complete a project in two different years. When we know the cost is more than a single year allows, we schedule for the end of the fiscal year and just work into the next year. We also bring resolutions to exceed the maintenance limit to township boards a couple times a year, where bridging two maintenance years still won't cover the cost.

GREG: Some drains are very old and haven't been maintained for a long time, and we will explain to Townships the pros and cons of petition vs resolution vs multi-year maintenance. A resolution to do a maintenance petition is followed by a petition, which may be financed over multiple years. Sanilac will also perform the maximum maintenance amount the month prior to the end of one fiscal year, and continue working into the first month of the next fiscal year, to address work up to double the maintenance limit of the drain.

EVAN: What do Townships say about your service and the cost?

ED: For the most part, townships are pretty positive about maintenance assessments, especially the agricultural townships. They understand drainage and what it is worth. We seem to get a few more questions from the more residential areas of the county.

Of course larger assessments from petition projects seem to receive more inquiries and concerns, so answering questions about maintenance work is usually a positive exchange.

GREG: Most Townships are in agreement, and the Road Commission feels good about the program. Like most of us, there are a couple of communities that have their own reasons for not choosing to work with the Drain Commissioner.

EVAN: Do most people generally understand that a modest assessment is in their best interest or do you get a lot of disgruntled property owner calls about the cost of maintenance?

ED: We get a fair amount, but not a lot of people calling in about their assessments. Generally after explaining what they are being charged for they are satisfied. Seems quite a few people have no idea what a



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ASSET MANAGEMENT

county drain is or what a drain assessment is. We try to keep good records so that we can show them what was done and where.

GREG: The vast majority are fine with it. Farmers see the benefit from the investment more directly, as compared to absentee landowners who may not be farming the land.

EVAN: For road crossings, do you partner with your Road Commission? (Note: Either seem allowed by statute, handled differently by many Drain Commissioners.)

ED: We have a policy with the Road Commission where we complete the sizing of the crossing and set the elevation of the crossing, and the Road Commission provides materials and completes the installation at their cost, or the Township covers if it's a Township road.

EVAN: Do the Townships and/or County pay a share of maintenance? How do you communicate with these groups to discuss anticipated costs? (Note: The shares paid by Counties and local municipalities can vary within different counties.)

ED: The County pays a drain assessment through the general fund based on a formula that considers historical percentages, length of roads in district, and other factors. In the end it averages about 15% per drain. We try to develop a working relationship with township supervisors and other officials so that they have a clear understanding of our process. We send them notices when we are performing maintenance in their municipality and we contact them in advance of large projects so that they can budget. With that being said, we try to keep assessments similar from year to year when possible.

GREG: The County share of the assessment is typically about 15%, and the Township share is about 10% for most projects and maintenance. An annual letter goes to




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all municipalities to advise them of the projected budget. Sanilac is a large county with 26 Townships, four cities, and nine villages. I offer to attend meetings for approval and also use the media to ensure information is shared in print or online when appropriate.

EVAN: Do you have any other thoughts or recommendations that you would like to share?

ED: The most important thing that we have developed and continue to work on is communication. It is important to give landowners as much information about what you are doing and why as possible. Once they understand, they are more likely to be in favor of it. Maintaining a good relationship and working with other agencies helps things go smoothly, and of course keeping staff properly trained and equipped will insure work is done properly and efficiently.





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ASSOCIATE MEMBER NEWS

HUBBELL, ROTH & CLARK, INC. BOARD OF DIRECTORS ANNOUNCE PROMOTIONS

Hubbell, Roth & Clark, Inc. (HRC) is pleased to announce the promotions of Adrianna M. Melchior, AIA, LEED AP®, BD+C, and Jesse M. Morgan, PE to Associates. HRC's President, Daniel Mitchell states "We are thrilled to announce the promotions of two outstanding leaders within our firm. I am confident Adrianna and Jesse will continue to demonstrate their commitment to our clients and the future of our firm."



Ms. Adrianna Melchior joined HRC in 2012 and is a licensed architect in the State of Michigan, as well as a US Green Building Council Leadership in Energy & Environmental Design Accredited Professional (LEED AP) in Building Design and Construction

(BD+C). As head of Hubbell, Roth & Clark's architectural department, Ms. Melchior has over 19 years of experience conceptualizing, designing, and orchestrating functional and aesthetically pleasing architectural solutions for commercial, industrial, municipal, and private clients. She holds a bachelor's degree and a master's degree in Architecture from the University of Detroit Mercy.

Ms. Melchior places a high priority on attention to detail and problem solving on every project. Her work is showcased at HRC corporate headquarters, where she is responsible for the firm's recent renovation of its Bloomfield Hills office space.



Mr. Jesse M. Morgan joined HRC in 2013 and has over 16 years of experience. He received his bachelor's degree in Civil Engineering from Michigan Technological University and is a professional engineer in the State of Michigan.

Mr. Morgan oversees municipal operations in HRC's Grand Rapids office and is a leader across our transportation, municipal, and utility sectors. He leads in-house multi-disciplined teams to provide planning, design, and construction oversight for publicly and privately funded infrastructure projects. Mr. Morgan's responsibilities include managing diverse projects, QA/QC, right of way acquisition, detailed design, plan and specification preparation, and construction contract administration.



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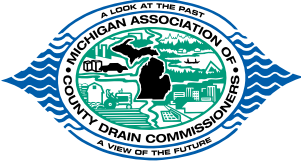
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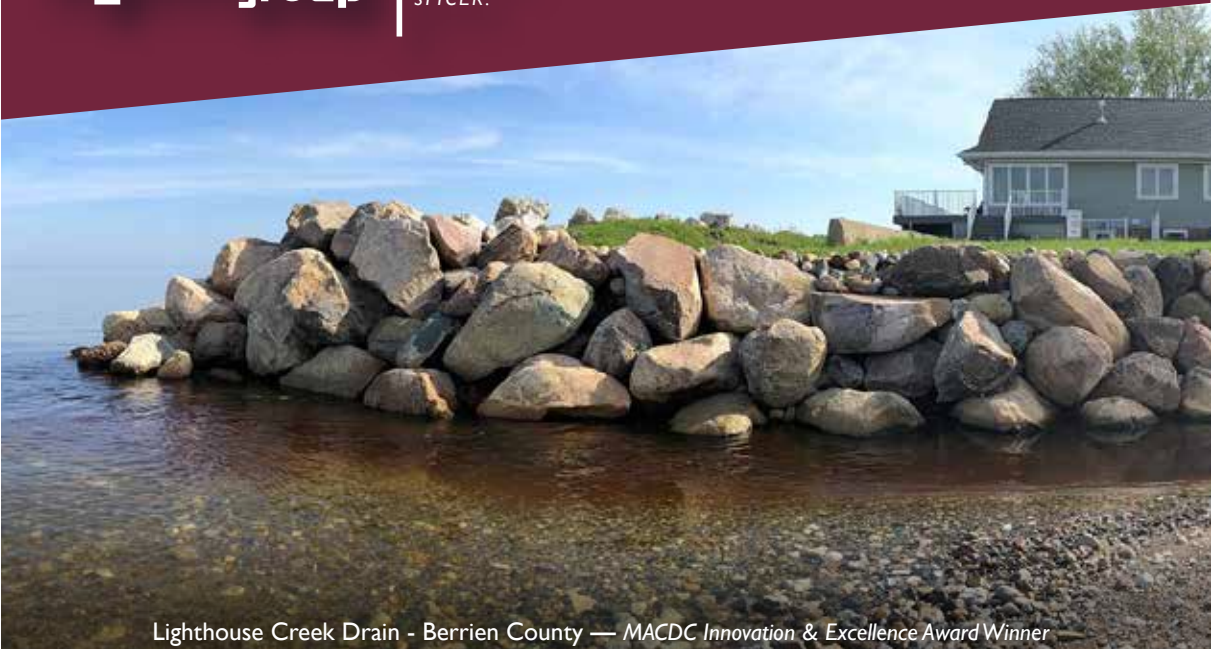
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