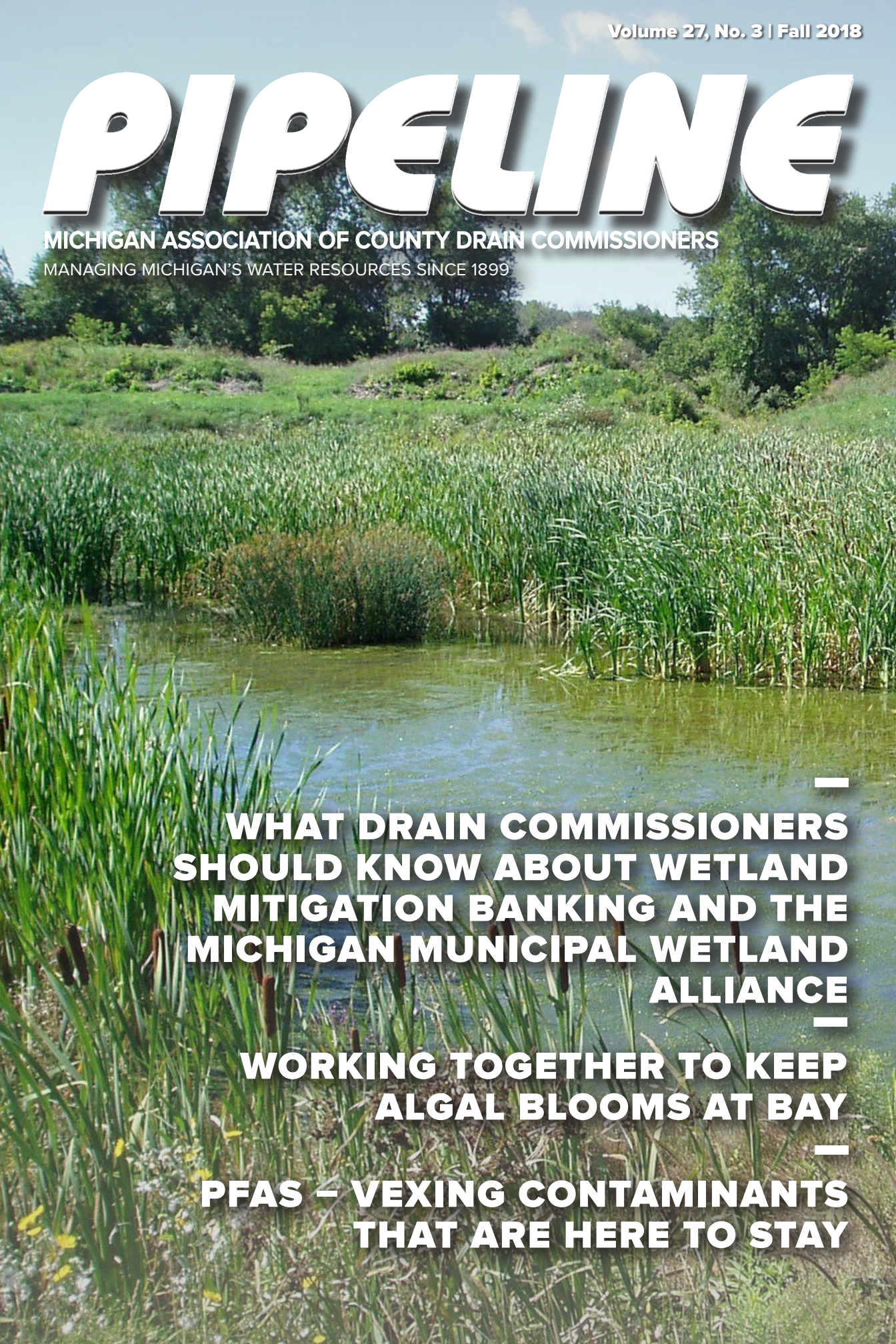
Volume 27, No. 3 | Fall 2018

PIPELINE

MICHIGAN ASSOCIATION OF COUNTY DRAIN COMMISSIONERS
MANAGING MICHIGAN'S WATER RESOURCES SINCE 1899



WHAT DRAIN COMMISSIONERS SHOULD KNOW ABOUT WETLAND MITIGATION BANKING AND THE MICHIGAN MUNICIPAL WETLAND ALLIANCE

WORKING TOGETHER TO KEEP ALGAL BLOOMS AT BAY

PFAS – VEXING CONTAMINANTS THAT ARE HERE TO STAY

Providing Concrete Solutions for 60 Years!

WITH OVER 175 YEARS COMBINED EXPERIENCE, OUR KNOWLEDGEABLE AND DEDICATED TEAM CAN PROVIDE EDUCATIONAL TRAINING AND ENGINEERING FOR ALL OF YOUR PROJECTS

"The Lunch & Learns are valuable. The technical information and insight is very helpful during the design process"
Alan D. Boyer, PE, LSG Engineers & Surveyors

"Thank you so much for the tour yesterday. It was very informative and interesting."
Rose M. Grinage
Michigan Department of Transportation

"The engineering support provided by Northern Concrete Pipe is exceptional." Claire E. Schwartz, PE, FTC&H, Inc

Durable, Reliable, Infrastructure

For training or assistance with your project design contact us at 800-222-9918 or www.ncp-inc.com

CONTENTS

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.

PIPELINE EDITOR — GCSI Association Services

COMMUNICATIONS COMMITTEE

Michelle LaRose, Chair
Linda Brown
Cameron Cavitt
Mike Gregg
Jim Nash
Cheryl Nodarse
Evan Pratt
Steve Roznowski
Claire Schwartz

CONTACT FOR ADVERTISING INFORMATION
120 N. Washington Sq., Suite 110A, Lansing, MI 48933
Phone: 517.484.9761, **Fax:** 517.371.1170

PRESIDENT'S MESSAGE

DAVID THOMPSON
Monroe County Drain Commissioner

Hello all,

We have recently completed another successful annual summer drain conference. I hope that you enjoyed your time with your peers and learned something new along the way. As always, I would like to thank all of the presenters for their time, as well as the program committee for their efforts to organize such a great event.

As an association, we do our very best to promote collaboration, continuing education, and professional development among Michigan's County Drain and Water Resources Commissioners. However, with a membership as vast and varied as ours, conflict is inevitable. It is part of our working life and is often a means to an end. It is both a way to work out differences and a way to reach a conclusion. Some conflict can be avoided, while some cannot.

At the end of the day, it is not the conflict itself that matters. Rather, it is how we handle the inevitable conflict that will determine how we move forward as an association. As Eleanor Roosevelt put it, "Understanding is a two-way street." Different people will always have different opinions, but that doesn't mean that we can't respect those opinions that differ from our own. The more respect and decorum we have in our interactions with each other, the better able we will be to continue to advance the ever-important goals of our association.

All the very best,

David

HP Storm HIGH PERFORMANCE

ADS

ADS SETS THE STANDARD FOR STORMWATER PIPE

ADS HP Storm and N-12® pipe utilize state-of-the-art lightweight materials. The pipe installs twice as fast, creates a safer working environment and saves money when compared to RCP.

DELIVERIES

OF TRUCKS* 14

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

OF TRUCKS* 49

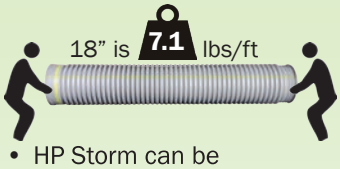
- RCP uses more trucks
- Machinery required to unload

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

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

INSTALLATION

A typical project with 5,000 ft specified on the plans will net you:

- **25 days using HP Storm (56 days with RCP)**
- **250 joints using HP Storm (625 joints with RCP)**

30" HP Storm: Installation Rate of 200 ft per day*

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

*Data compiled from RSMeans

THE MOST ADVANCED NAME IN WATER MANAGEMENT SOLUTIONS™

ADVANCED DRAINAGE SYSTEMS, INC.
800-821-6710 www.ads-pipe.com

SUMMER CONFERENCE RECAP

Ways to Reduce Nutrient Runoff in Tile Lines

Mike Cook, Clinton County

NEW WAYS TO REDUCE N&P FROM TILE LINES

- Improved Nitrogren Management
- Winter Cover Crops
- Perennials in the Cropping System
- Drainage Water Management (Controlled Drainage)
- Reduced Drainage Intensity
- Recycling Drainage Water
- Bioreactors
- Wetlands
- Alternative Open-Ditch Design
- Saturated Buffers

THESE PRACTICES IMPROVE WATER QUALITY BY:

- Reduing the Nitrogen Source
- Increasing Plant Uptake
- Reducing the amount of drainage or flow entering the stream
- Increasing Denitrification

Water Quality & Farming, bringing it together

Jim Isley, Palmyra Township Supervisor/Farmer

Ed Scheffler, Drain Supt./Deputy Lenawee Co. Drain Commission

HOW DRAIN COMMISSIONERS CAN HELP:

- Work together with Farmers
  - Understand their operations, develop relationships
  - Try to work with their schedules/planting/crop rotations, etc.
  - Communicate your intentions, explain your operations
  - Work together with them on BMPs, educate them on what's available and why, opportunities for funding
  - Acknowledge what they have implemented and work with them to maintain and/or improve practices.
- Work together with other agencies to promote water quality
  - County Conservation District
  - Watershed Councils
  - Farm Bureau
  - Natural Resource Conservation Service
  - The Nature Conservancy
  - Commercial Ag. Spraying and Fertilizing companies
  - Farm Co-Ops, grain elevators
- Demonstrations/Partnerships
  - Partner in Grant/funding opportunities
  - Install Demonstration/Permanent BMPS
  - Share GIS data and other resources

CHALLENGES

- Age challenge – "we've never done it that way before"
- Negative conservation attitude – "Conservation and profitability don't go together"
- Depressed commodity prices

OPPORTUNITIES

- Work with the "younger" generation of producers
- Be an example of "conservation" – take the financial risk
- Encourage other producers to "take the next conservation step"

Advanced Bathymetric Surveying Technologies

Nate Sleight, Spicer Group Inc.

WHAT IS MULTIBEAM SONAR?

- Multibeam sonar is used to complete channel bathymetry
- Emits sound waves from transducer in the form of large swaths
- Runs in conjunction with GPS and an inertial measurement unit (IMU)
- Inertial Measurement Unit (IMU): Records and measures the vessels Roll, Pitch, and Yaw (rotation about x, y & z)
- Needed to account for vessel motion

MULTIBEAM SONAR USES

- Pre and post dredge volume calculation
- Hydraulic Surveys
  - More efficient process
  - NO cross sections needed!
  - Complete site survey
  - Combine with LiDAR data
- Bridge Scour Inspection
  - More accurate extent of scour
  - Enables more effective scour mitigation and design of scour countermeasures

WHAT IS AIRBORNE BATHYMETRIC LIDAR?

- Used to create Digital Elevation Models (DEM) of shallow water areas
- Uses two wavelengths of light to determine water depth and detect bottom
- A green laser (532nm) to penetrate the water column
- A near-infrared laser (1064nm) to reflect off the waters surface
- Runs in conjunction with GPS and an IMU

BATHYMETRIC LIDAR USES

- Primarily used in shallow water and near shore areas
- Used to create Digital Elevation Models
- Helps delineate and distinguish flood plain and near shore habitats
- Provides flood and erosion assessments

Social Media and Your Employees: What to do, What to Do?

H. Lizzie Mills, Fahey Schultz Burzych Rhodes PLC

LABOR LAW 101: WHAT IS PROTECTED GENERALLY

- Labor (collective bargaining) rights include the right to address work-related issues, such as pay, benefits, hours and working conditions with their employer and coworkers.
- "Protected Concerted Activity": Acting with or on the authority of other employees; not solely and on behalf of one's self.

LABOR LAW 201: SOCIAL MEDIA AND THE NLRB

- Less or no protection if:
  - Intentional appeal to the general public that refers to a labor dispute
  - Disparaging beyond the intended protection of the right to criticize
  - Actual interference with employee's own work, work of others or the operations
- Evaluating Social Media Use: NLRB's Totality of the Circumstances Test
  - Evidence of anti-union hostility
  - Provocation
  - Impulsive or deliberate conduct
  - The location of the conduct
  - The subject matter of the conduct
  - The nature of the content
  - Similar content to be offensive
  - Specific rule prohibiting the content at issue
  - Discipline typical for similar violations or proportionate to the offense

LABOR LAW 301: SOCIAL MEDIA & PUBLIC EMPLOYEES IN MICHIGAN

- A public employee's rights to engage in union activities and other concerted activities may be violated, even in the absence of unlawful employer motive, if employer's conduct is "inherently destructive" of these rights.
- This is broad protection for public employees designed to limit (eliminate) the use of discipline or discharge to discourage union organization, bargaining, etc.

GENERAL RULES: UNLAWFUL DISCRIMINATION

The Michigan Employment Relations Commission analyzes the following four factors:

1. Union or other protected concerted activity;
1. Employer knowledge of that activity;
2. Anti-union animus or hostility to the employee's protected rights; and
3. Suspicious timing or other evidence that the protected activity was a motivating cause of the allegedly discriminatory action.

Employee conduct may lose its protection if "the conduct is so egregious as to take it outside the protection of the Act, or of such character as to render the employee unfit for further service."

- Merely rude or insulting is not enough

LESSONS LEARNED?

- Have a social media policy in place prior to an incident occurring.
- Confirm the discipline or discharge of the employee is (actually) unrelated to labor issues.
- Even if the social media post itself may not be "concerted activity," do not use a post to cover discipline or discharge due to labor-related comments.

LABOR LAW 401: THE CONSTITUTION

A public employee cannot be disciplined for his or her speech if the following three standards are met:

- The employee is speaking about a matter of public concern;
- The employee is speaking as a private citizen, and not as part of his or her official duties; and
- The employee's freedom of speech outweighs the municipality's interest in operating efficiently and effectively.

Critical Point about When Speech Occurs

- Public employees speaking as part of their official job duties can be disciplined
- Public employees speaking as private citizens, on the other hand, may be engaging in protected speech.

Critical Points about Balancing Interests

- Courts have traditionally considered whether the employee's speech disrupts a municipality's normal operations.
- Speech is considered disruptive when it interferes with "work," "personal relationships," "the speaker's job performance," or the "effective functioning of the public employer's enterprise."
- The potential disruption will then be weighed against an employee's right to free speech.

What To Do: Apply Old Rules to New Game

- Adopt (or Update) and enforce employment policies (and/or contract terms).
- Apply policies fairly.
- Explain that access to or use of social media should take place while off-duty. On-duty use of social media is permitted if approved or if part of position.
- Advise that public computers, internet, email, etc. are monitored, including employee blogging and social networking activity.
- Require and demonstrate that employees should treat each other with respect and courtesy.
- Consider requiring employees to post disclaimers.
- Counsel (and enforce a policy providing that) employees are permitted to speak on social media regarding issues of public concern; however, any posts made in relation to the employee's official job duties may be subject to disciplinary action.

**Before taking any action, carefully analyze the content and context of the particular social media post to determine whether the speech could be protected under the Public Employment Relations Act or the First Amendment.

Drain and Water Resources Workgroup

Brady Harrington, Michigan Department of Agriculture & Rural Development

Patrick Ertel, Michigan Department of Natural Resources

The Drain and Water Resources Workgroup (DWRW) was formed in 2013 to bring all the partners and stakeholders together in an effort to find new ways of doing business that could achieve the goals and responsibilities of all parties in mutually beneficial ways; specifically, to move water efficiently off the landscape while maintaining healthy and functioning aquatic resources systems. Several members have been involved with this Workgroup from the MACDC for quite some time (members of the MACDC's Aquatic Impacts Committee). The DWRW has two main goals:

1. Identify and encourage implementation of processes and partnerships for mutually managing water while meeting drainage law and landowner drainage needs, and maximizing natural resources benefits while maintaining public trust obligations.
2. Create a multi-disciplinary strategy to better align the goals and responsibilities of all partners engaged in managing water resources into a new, collaborative approach.

Treasury Tax Foreclosure & Land Banks

Eric A. Schertzing, Ingham County

DELINQUENCY TO FORFEITURE AND FORECLOSURE TIME LINE

First Year of Delinquency

- March 1 - Unpaid Taxes returned as Delinquent to County Treasurer as Foreclosing Governmental Unit (FGU) for collection
- June 1 – First Mail Notice
- September 1 – Second Mail Notice
- October 1 - $15 Fee
- November 1 – Forfeiture List: Tax Records Search – Mail Tax Record Search letter & Pre-Forfeiture lists to local units
- February 1 – Third Mail Notice (Certified Forfeiture Notice) - County Treasurer sends notice of delinquency and forfeiture via certified mail to last recipient of tax bill, and, if different, to owner. County Treasurer sends notice via first class mail to property addressed to "Occupant."

Second Year of Delinquency: Forfeiture; Beginning of Foreclosure Process

- March 1 – Property forfeited to County Treasurer.
  - $175 forfeiture fee
  - 1.5% interest begins to accrue retroactively to previous March 1st
  - Certificate of Forfeiture – Record with Register of Deeds by April 15th recording deadline
- May 1 - Title Search Forfeited properties – County Treasurer initiates title search of each delinquent property to identify owners entitled to notice. FGU may contract with title search company to conduct search to identify owners
- June 15 – Foreclosure petition of Forfeited properties filed in circuit court, with County Treasurer listed as FGU

June 15 – January 30

- Personal Visit - to each property forfeited for service of Show Cause/Judicial Foreclosure Hearing Notice and verbally inform occupant of foreclosure and advise of agencies that can help; or if unoccupied, to post notice – Completed at least 30 days before Show Cause Hearing
- Published Notice – Notice by publication for two successive weeks
- Certified Mail Notice of Foreclosure – Notice of foreclosure sent by certified mail at least 30 days prior to "Show Cause Hearing"
- FGU corrects deficiencies in notice
- Proof of notice filed with Circuit Court

February – March 31

- February – Show Cause Hearing- FGU conducts administrative show cause hearing no later than 7 days before the foreclosure hearing
- Foreclosure Hearing - Circuit Court hearing on foreclosure petition
- After Hearing or by March 30 – Entry of Judgment – Circuit Court enters judgment of foreclosure quieting title
- March 31 - Redemption Rights Expire – Clear title to foreclosed property vests in FGU and redemption rights expire
  - FGU records judgment or notice of judgment with County Register of Deeds.

Tax Foreclosure

After March 31, if property is foreclosed and prior to auction, the property is:

- Available to state for fair market value
- Available to local unit for public purpose
- Available to county for any use

Auction & After

If property is auctioned:

- 1st auction minimum bid must be for amount of taxes plus margin
- 2nd auction has no minimum bid requirment
- If unsold after auction, property is given to the local unit unless local unit rejects it

Brown Bridge (Boardman River): 5 Years After Dam Removal

Steve Largent, Grand Traverse County Drain Commissioner

The 1310-acre Brown Bridge Quiet Area in Traverse City is a popular area for hiking and wildlife viewing. The USDA estimates that over 2 million recreation user days are experienced in the Boardman River Watershed each year.

Brown Bridge dam, originally constructed in 1922, was removed in 2012 as part of the largest dam removal effort in Michigan's history.

Former delta area of impoundment: Sediment

excavation from relic channel resulted in large spoil areas consisting of unconsolidated minerals soils that are susceptible to soil erosion and lack the ability to revegetate well.

Protecting Streams from Development Impacts

Ryan C. McEnhill, PE, Eng., Inc.

CHARACTERISTICS OF IMPAIRED STREAMS

- Disruption to Stream Morphology
- Increased Erosion and Sedimentation
- Increased Pollutants
- Increased Volume and Velocity of Runoff

CRITICAL CRITERIA AND COMPONENTS OF STORM WATER MANAGEMENT REVIEWS TO PROTECT NATURAL RESOURCES

- Water Quality - Capture and treat the 1st flush which carries the highest concentration of pollutants
  - Sediments
  - Nutrients (Phosphorous, Nitrogen, Salts, etc.)
  - Petroleum & Oils
  - Temperature Increase
- Channel Protection - Post-development runoff rate and volume shall not exceed the pre-development rate for the 2-year 24-hour storm
  - Bankfull events (1- to 2-year events) have the greatest impact on the stability of streams
- Flood Control - Detaining or retaining the 25-year or 100-year rainfall events with a set maximum release rate.
- Direct Impacts to County Drains & Streams - Impacts can occur both upstream and downstream of the development

CHARACTERISTICS OF HEALTHY STREAMS

- Adequate Drainage
- Aquatic Habitat
- Diverse Aquatic Species
- Natural Filtering of Pollutants

PETITIONED DRAIN PROJECTS

- Natural Channel Design & Restoration - Restoring the Original Stream Form and Function : Ecologically important 'pool and riffle' pattern of the stream bed is usually destroyed in urban settings
- Regional Detention & Water Quality - A regional approach to solving water quality issues and controlling discharge for an already fully developed urban watershed.
- Water Quality & Reduced Discharges - An urban retrofit utilizing rain gardens: Filtering pollutants while promoting infiltration and reducing peak runoffs to streams
- Sizing Culverts Appropriately - Culverts sized to convey peak flows, set at appropriate elevations to alleviate scour and perching, span the bank full width to achieve consistent velocities.

CEA and APA Audits: What You Need to Know to Succeed

Matt Konieczki, Michigan Department of Environmental Quality

David Thompson, Monroe County Drain Commissioner

STEPS TO AN AUDIT

- Schedule Audit
  - Confirmation Letter
  - Questionnaire
- Plan for 1-2 Days
  - Discussion
  - File Review
  - Site Inspections
- Follow Up As Needed

WHAT IS REVIEWED DURING AN AUDIT

*See MCL 324.9105 (CEAs) & 324.9110 (APAs) for Approvable Program requirements

- CEA
  - Applications
  - Compliance & Enforcement
  - Funding
  - Inspections
  - Ordinance/Resolution
  - Permits
  - Plans
  - Site Conditions
  - Training/Staffing
- APA
  - Compliance & Enforcement
  - Funding
  - Inspections
  - Procedures
  - Plans
  - Site Conditions
  - Training/Staffing

POTENTIAL OUTCOMES

- Approval Letter
- Compliance Communication Letter
- Violation Notice Letter
- Probation/Escalated Enforcement, if Applicable

Japanese Knotweed: Friend or Foe? Invasive Species in County Drains

Stu Kogge, PWS, GEI

INVASIVE SPECIES – WHAT ARE THEY?

"...one that is not native and whose introduction causes harm, or is likely to cause harm to Michigan's economy, environment or human health..."

WHY DRAIN COMMISSIONERS CARE

- Kills trees
- Causes obstructions to flow
- Impedes water movement
- Clogs and breaks tiles
- Causes erosion issues
- Alters hydrology
- Is expensive to treat if they "get away on you"
- Impedes Water Movement
  - Grows aggressively in dense mats or stands
  - Creates hummucks/tussocks in drains

2019 MACDC Innovation & Excellence Awards Program

We will soon be accepting applications for the 2019 awards program and we encourage all sizes and scopes of projects to apply.

Look for additional information, including the 2019 application, at

www.macdc.us

blocking flows
- Will grow in most any condition including those unfavorable to native species

KNOTWEEDS – PROHIBITED

- 2 main species of Knotweed
  - Japanese (Fallopia japonica) and Giant (Fallopia sachalinensis)
  - Leaves are key identifier between Japanese and Giant strains
- Perennial
- 3-12 feet tall
- Hollow stalk looks similar to bamboo, but with much larger leaves than bamboo
- Stalk persists through winter
- Spread through underground rhizomes/shoots
- Creates thick stands or clumps
- Grows on banks of streams/drains
- Breaks/clogs tile

Treatment
- No "proven" method
- Most treatments require multiple years
- Potential for two treatments in the same year if rates and requirements aren't exceeded
- Foliar spray
- Injection
- Mowing will spread infestation

Removal of "litter"
- Dead dried material can be removed from site
- Anything killed in the same season should not be moved
- Movement of material is regulated by MDARD

PHRAGMITES – RESTRICTED

- Perennial grass
- Rigid hollow stem
- Range in height from 6-13 feet
- Stalks persistent
- Form dense mats/hummocks
  - Results in loss of open water
- Alters hydrology

Treatment
- Multiple methods
  - Foliar application
  - Hand wicking
  - Burning
  - Mowing
- Two "standard" chemical mixes
- ANC PERMIT USUALLY REQUIRED
- Likely needs an initial treatment and then maintenance schedule

OTHER DRAIN DAMAGING INVASIVES

- Glossy buckthorn (Rhamnus frangula)
- Multiflora rose (Rosa multiflora)
- Narrow leaf cattail (Typha angusafolia)
- Reed Canary Grass (Phalaris arundinacea)
- Eurasian watermilfoil (Myriophyllum spicatum)
- Curly leaf pond weed (Potamogeton crispus)
- Parsnip (Pastinaca sativa)
- Hogweed (Heracleum mantegazzianum)

INTRODUCING AARON B. KEATLEY


Keatley

Aaron B. Keatley joined the Michigan Department of Environmental Quality as the Chief Deputy Director on June 3, 2018. He is responsible for the management of Michigan's environmental programs, including water, drinking water, waste, air, remediation, and oil, gas, and minerals.

Born in California and raised in southwest Michigan, Aaron returned to Michigan after a 25-year career at the Kentucky Department for Environmental Protection. In Kentucky, he was appointed to multiple leadership positions by both Republican and Democratic Governors. He finished his public service in Kentucky as the Commonwealth's environmental Commissioner.

Leadership roles in waste management, water quality, enforcement, and compliance assistance have provided him with diverse experiences. This broad perspective enables him to see beyond the program silos that can define government agencies. He is committed to applying this perspective while seeking collaborative partnerships that produce meaningful results.

Aaron holds a Bachelor of Science degree in Wildlife and Fisheries Management from Michigan State University. He also earned a Master of Public Administration degree from the University of Kentucky.

He lives with his wife, Andrea, in their home along the Grand River. When he is not at work, he enjoys time outdoors, including fly fishing and birding.

Aaron is happy to be back in Michigan and is looking forward to meeting MACDC members. "Strong partnerships between state and local agencies are important for solving today's environmental problems, so I was pleased to learn that the MDEQ and MACDC have been working together on many issues across the state," said Aaron.

WHAT DRAIN COMMISSIONERS SHOULD KNOW ABOUT WETLAND MITIGATION BANKING AND THE MICHIGAN MUNICIPAL WETLAND ALLIANCE

By: Stacy L. Hissong and Rachel J. Kovelle, Fahey Schultz Burzych Rhodes PLC

There were 10.7 million acres of wetlands in Michigan before European settlement. Since the early 1800s, more than 4.2 million acres of wetlands in Michigan have been drained —that's 3.5 times the size of the Grand Canyon National Park, which is only 1.2 million acres by comparison.

In an effort to preserve these natural resources, restrictions and conditions have been placed on the use and development of wetland property. Wetland mitigation is often required as a condition of many permits issued under both state law (Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended) and federal law (Section 404 of the Clean Water Act (CWA)). Unfortunately, abiding by these stringent mitigation requirements can cause drain projects to become more complicated, more expensive, and more time consuming.

The Michigan Municipal Wetland Alliance (MMWA) can help. Developed specifically for Michigan's municipal entities, the MMWA was created to make wetland mitigation compliance less complicated, less expensive, and less time consuming. By purchasing credits from MMWA wetland mitigation banks—rather than completing your own mitigation or purchasing costly private bank credits—you can fast-track drain projects that impact wetlands and utilize tax payer dollars more efficiently.

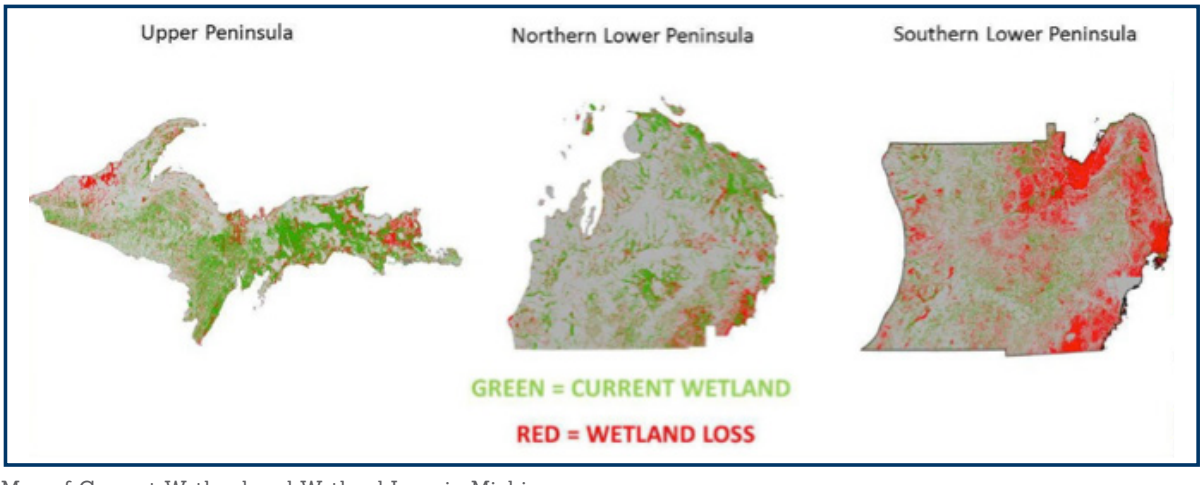
WHAT EXACTLY IS WETLAND MITIGATION?

Wetland mitigation is the replacement of wetland functions through the restoration or creation of wetlands. Mitigation is only considered after wetland impacts have been otherwise avoided or minimized. The goal of wetland mitigation is to replace wetland functions that provide public benefits so that there is ultimately "no net loss" of wetland functions. Restoring existing wetlands is preferred over creating new wetlands where none previously existed, and the restored or newly created wetland must be of a similar ecological type as the impacted wetland where feasible and practical.

Michigan Wetland Area

WHEN WOULD MY DRAIN PROJECT REQUIRE WETLAND MITIGATION?

Generally, wetland mitigation is required for all Michigan Department of Environmental Quality (MDEQ) permitted projects impacting over 1/3 acre of wetland, or any MDEQ permitted project



Map of Current Wetland and Wetland Loss in Michigan

impacting under 1/3 acre of wetland if a reasonable opportunity for mitigation exists. Wetland mitigation is not required if the project falls under a general MDEQ permit category, or if the basic purpose of the project is to restore or create wetlands.

Applicants for a MDEQ permit generally have three options to compensate for lost wetlands: (1) on-site mitigation, (2) off-site mitigation, and (3) mitigation banking. On-site mitigation is the restoration or creation of wetlands by the permit holder within the project limits of the impacted wetlands. Similarly, off-site mitigation is the restoration or creation of wetlands by the permit holder at another site within the same watershed or ecoregion. Several requirements for on-site and off-site mitigation make these options both costly and time consuming, including purchasing the property, designing and constructing the wetland, planting the appropriate aquatic vegetation, obtaining a conservation easement, and maintaining and monitoring the wetland in perpetuity. Additionally, several of these requirements usually demand the services of an engineer and environmental consultant. Mitigation banking, on the other hand, involves the purchase of credits from an already constructed wetland mitigation bank within the same watershed or ecoregion to offset the permitted impact to wetlands.

WHAT ARE THE BENEFITS OF WETLAND MITIGATION BANKING?

Michigan Wetland Mitigation Bank

Establishing new wetland areas—or "banks"—before existing wetland areas are impacted is the preferred method of mitigation under state and federal statutes, including Part 303 of the NREPA and Section 404 of the CWA, respectively. Each new acre in an approved wetland mitigation bank represents a bank "credit," which is then sold to a permit holder to satisfy mitigation requirements associated with the permit.

Mitigation construction on a per project basis can be very difficult and drain projects can be delayed or put on hold due to costly mitigation requirements. Wetland mitigation banking reduces permit processing time and costs, increases certainty regarding the availability of adequate mitigation sites, consolidates small mitigation projects into larger, better designed and managed units, and encourages integration of wetland mitigation projects with watershed-based resource planning.

HOW CAN I TAKE ADVANTAGE OF WETLAND MITIGATION BANKING?

In the past, drain commissioners had few opportunities to utilize wetland mitigation bank credits because their only option was to purchase privately owned wetland mitigation bank credits on the open market. The MDEQ maintains a registry of the established private wetland mitigation banks in Michigan. Currently, there are 25 bank sites on the MDEQ Registry. Unfortunately, these private bank credits are not available in some areas of the state, and they can be cost prohibitive. In fact, private bank credits cost up to $100,000 per acre credit. However, with assistance from the Michigan Department of Natural Resources (MDNR), the MMWA can offer a more affordable price point for drain commissioners who need to buy wetland mitigation bank credits.

WHAT IS THE MICHIGAN MUNICIPAL WETLAND ALLIANCE?

The MMWA is a non-profit organization engaging in a public-private partnership with the MDNR to offer affordable wetland mitigation bank credit opportunities to drain commissioners in Michigan. As a non-profit organization, the MMWA is utilizing grant funds from the MDEQ and the MDNR to create high-functioning, professionally managed and maintained wetland mitigation banks, encouraging long-term sustainability, high water quality, and biodiverse ecosystems. The MMWA is dedicated to preserving wetland habitat and enhancing outdoor recreation on MDNR public lands, while simultaneously addressing wetland impacts from municipal entities throughout the state.

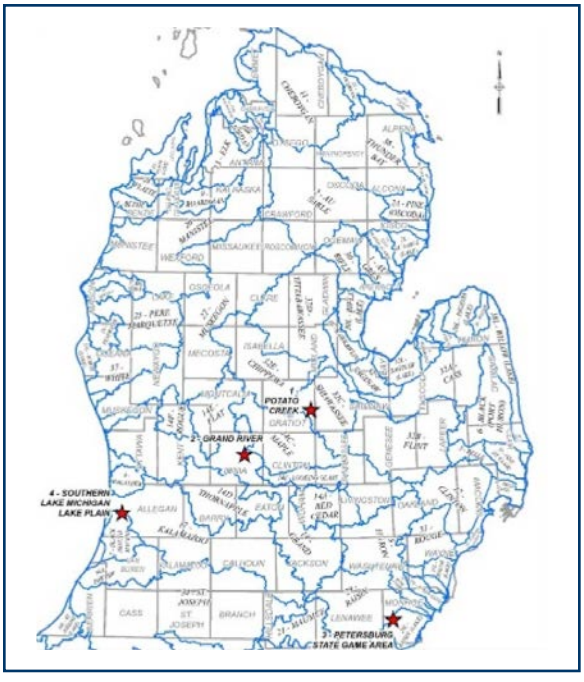
The organization is a coordination of effort between several member groups, including the Michigan Association of County Drain Commissioners (MACDC), the Michigan Association of Counties (MAC), the Michigan Townships Association (MTA), the Michigan Municipal League (MML), and the County Road Association of Michigan (CRA). Collaborators assisting in the advancement of the program include the Michigan Department of Natural Resources (MDNR), the Michigan Department of Environmental Quality (MDEQ), the United States Department of Agriculture (USDA), the Natural Resources Conservation Service (NRCS), the Michigan Department of Agriculture and Rural Development (MDARD), and Michigan Farm Bureau.

HOW CAN THE MICHIGAN MUNICIPAL WETLAND ALLIANCE HELP ME?

The public-private partnership between the MMWA and the MDNR helps to make compliance with strict wetland mitigation requirements less complicated, less expensive, and less time consuming for Michigan's municipal entities. The MMWA will build the wetland mitigation banks and serve as the bank sponsor, while the MDNR will maintain ownership of the land and maintain the wetland mitigation banks in perpetuity.

The MMWA is currently constructing four wetland mitigation banks (WMBs) on MDNR lands specifically for Michigan's municipal entities: (1) the Potato Creek WMB in the Shiawassee Watershed and Saginaw Bay Lake Plain Ecoregion; (2) the Grand River WMB in the Grand Watershed and Lansing Ecoregion; (3) the Petersburg State Game Area WMB in the Raisin Watershed and Maumee Lake Plain Ecoregion; and (4) the Southern Lake Michigan Lake Plain WMB in the Black "South Haven" Watershed and Southern Lake Michigan Lake Plain Ecoregion. Construction will begin on the Potato Creek, Grand River, and Southern Lake Michigan Lake Plain WMBs in Fall 2018, and credits for these three sites are anticipated to be available in Fall 2019 at just $30,000 per acre credit.

By using state-owned lands, the MMWA is able to save the purchase price of the bank sites. In this way, the benefit of the public-private partnership between the MDNR and the MMWA is passed on to the tax payer in the form of substantial savings. By purchasing these credits through the MMWA, you will be able to accelerate drain projects with unavoidable wetland impacts more affordably.



Map of MMWA Wetland Mitigation Bank Locations

WHERE CAN I GET MORE INFORMATION?

If you are planning a drain project with unavoidable wetland impacts, or if you have specific questions regarding any of the MMWA wetland mitigation banks, please visit the MMWA website at www.michiganwetlands.com. You can call the MMWA at 517.853.5806 or send an email to info@michiganwetlands.com for more information.

1. Chad Fizzell, Status and Trends of Michigan's Wetlands: Pre-European Settlement to 2005, Michigan Department of Environmental Quality 1 (2015), http://www.michigan.gov/documents/deq/wrd-wetlands-status-trends_556006_7.pdf.

2. Park Statistics, National Park Service, https://www.nps.gov/grca/learn/management/statistics.htm (last updated May 10, 2017).

3. Wetland Mitigation Banking, Michigan Department of Environmental Quality, http://www.michigan.gov/deq/0,4561,7-135-3313_3687-10426--,00.html (last visited Aug. 14, 2017).

4. Wetland Mitigation, Michigan Department of Environmental Quality, http://www.michigan.gov/deq/0,4561,7-135-3313_3687-86447--,00.html (last visited Aug. 14, 2017).

5. Id.

6. Id.

7. Id.

8. United States Army Corps of Engineers, http://www.nap.usace.army.mil/Portals/39/docs/regulatory/Mitigation/mitigation-qa.pdf (last visited Aug. 14, 2017).

9. Id.

10. Wetland Mitigation Banking, supra note 7.

11. Mitigation Banking Factsheet, United States Environmental Protection Agency, https://www.epa.gov/cwa-404/mitigation-banking-factsheet (last visited Aug. 14, 2017).

12. Wetland Mitigation Banking, supra note 7.

13. Id.

14. Please visit the MDEQ website at www.mi.gov/wetlands for more information regarding the availability of these credits.

15. The Cost of Wetlands for Business, Huron Township Local Development Finance Authority, http://hurontwpldfa.com/huron-township-michigan/the-cost-of-wetlands-for-business/ (last visited Aug. 14, 2017).

16. The MMWA is also working with the MDEQ to establish a small amount of wetland mitigation credits for blueberry growers who are planning for expansion. Additionally, the organization is working with the Natural Resources Conservation Service (NRCS) to develop a separate program to assist landowners who are out of compliance with the Swampbuster provision of the US Farm Bill.

17. The Petersburg State Game Area site is currently on hold.

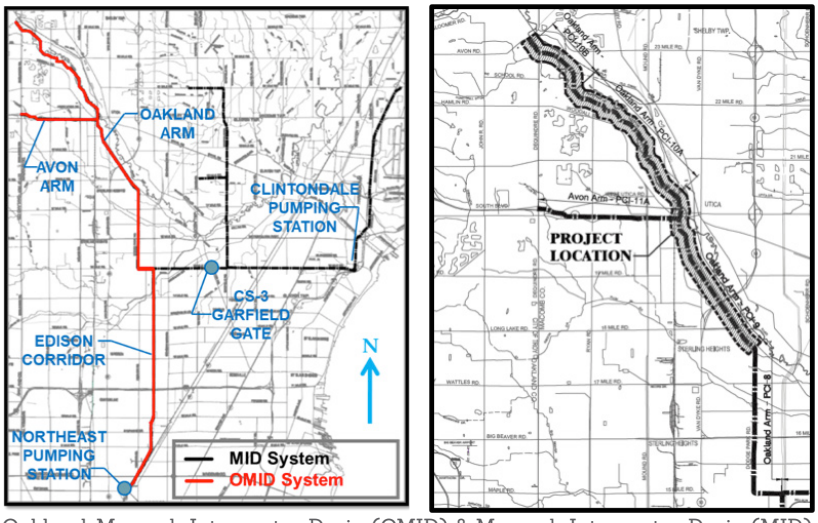
Stacy L. Hissong is a Partner at Fahey Schultz Burzych Rhodes PLC where she specializes in drain law and public projects. Stacy serves as General Counsel and Legislative Counsel for the Michigan Association of County Drain Commissioners. She works closely with clients on many permit issues involving wetlands, floodplains, and inland lakes and streams, and regularly provides input and testimony on legislative issues involving environmental regulation on public projects.

Rachel J. Kovelle is an Associate (unlicensed) at Fahey Schultz Burzych Rhodes PLC. She assists the firm's growing Municipal Practice Group, concentrating on the representation of drain and water resource commissioners throughout the state.

OMID CONTRACT 5 - COMPLETING THE LAST PIECE TO THE OMID REHABILITATION PUZZLE

By: Joel Schanne, PE, NTH Consultants, Ltd.

The Oakland-Macomb Interceptor Drain (OMID) is a vital piece of Southeast Michigan's infrastructure as it conveys sanitary flow from approximately 800,000 Oakland and Macomb County residents covering a service area of approximately 700 square miles. After a sinkhole occurred on 15 Mile Road in 2004, Oakland and Macomb Counties became concerned about the maintenance to the Oakland-Macomb Interceptor System (OMIS). Following transfer of the ownership of the OMIS to the Oakland-Macomb Interceptor Drain Drainage District (OMIDD) from the Detroit Water and Sewerage Department, the OMIDD Drainage Board selected a design team lead by NTH Consultants, Ltd. (NTH) to carry-out a phased series of inspection and rehabilitation projects starting at the southern downstream end of the system with the Edison Corridor Interceptor (ECI) and working north through the Oakland Arm Interceptor (OAI) and Avon Arm Interceptor (AAI). With the rehabilitation effort of the entire OMIDD system split into multiple repair contracts, the completion of OMID Contract 5, in December 2016, marked the completion of the system wide rehabilitation.



Oakland-Macomb Interceptor Drain (OMID) & Macomb Interceptor Drain (MID) Systems

OMID Contract 5 work scope completed leak sealing and soil stabilization through chemical and cementitious grouting and performed localized geo-polymer liner repairs to the northern portion of the Oakland Arm Interceptor. Stretching approximately five miles from Sterling Heights through the City of Utica and terminating near the Shelby Township-Rochester border, the northern portion of the Oakland Arm Interceptor was constructed in the 1970's in three phases: PCI-9, PCI-10A, and PCI-10B. These three phases run through a mixture of greenbelt, residential, and commercial areas. As a result, OMID Contract 5 was not without a unique set of challenges and logistical problem solving.

GAINING ACCESS WHILE IMPROVING THE PARK EXPERIENCE

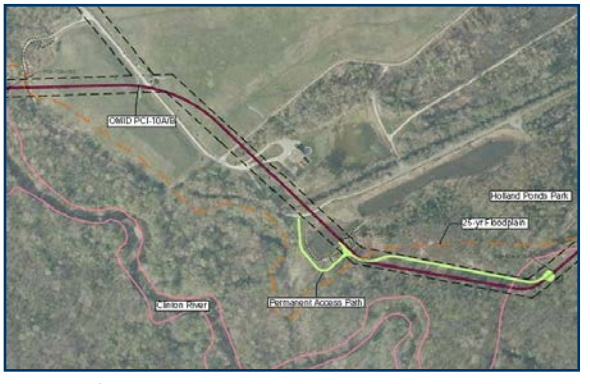
Access to the sewer and manholes was as much of a challenge on OMID Contract 5 as the in-sewer rehabilitation itself. A large portion of the PCI-10A/B pipe alignment runs through environmentally sensitive areas. The northern half of PCI-10A runs beneath Holland Ponds wetlands in Shelby Township, home to a thriving blue heron rookery and a variety of other protected species such as the spotted turtle and Indiana bat. Continuing south through Shelby Township's River Bends Park, the interceptor eventually crosses underneath the Clinton River in the City of Utica. As a result, many of the access manholes are located off the road system within wetlands and river floodplains, and have not been regularly accessed since their original installation in the 1970's.

In coordination with the Michigan Department of Environmental Quality (MDEQ) – Land and Water Management Division, access paths were designed to provide access for heavy equipment required for completing the sewer rehabilitation while minimizing the impact to the natural environment. The use of geogrids allowed for construction of gravel access paths over less than ideal soil conditions while limiting the excavation of native water absorbent soil materials. This resulted in gravel access paths with a final elevation level with the surrounding wetland and floodplain, eliminating the impounding of water during high water and flooding events, and allowing for unhindered migration of the spotted turtle.

Aside from providing access for rehabilitation and future maintenance inspections, the access paths provided a secondary benefit to the surrounding community. Part of the design to limit the project's

The above photos show the access path allowing free flow of water during the Clinton River Flooding Event

footprint in the wetland and floodplain areas was to use as much existing path and trail system as possible before constructing new access paths. The 12-foot wide gravel paths that remained in-place following the completion of OMID Contract 5 branch off of the trail system within Holland Ponds and River Bends Park. Today these paths provide important emergency services access to remote areas of the parks while extending the trail system for the enjoyment of local runners, bikers, and bird watchers.



PCI-10A/B Sewer Alignment & Access Path through Holland Ponds

Site Restoration - Access Path in River Bends Park

CHALLENGES OF IN-PIPE REHABILITATION WORK

The 5-mile stretch of sewer that makes up PCI-9 and PCI-10A/B vary in diameter from 8-foot to 8-foot 9-inches and continually operate at 20-25% full with a velocity approaching 5 feet per second (fps). With no upstream gate system to regulate flow, and bypass pumping not feasible because it was cost prohibitive, as well as disruptive to the surrounding wetlands, the project team realized rehabilitation work would need to be performed under live flow conditions. As a result, design considerations were made to use a train of work sleds attached to high capacity winches that pulled the sleds from manhole to manhole. This allowed for the transportation of repair materials, tools, and work crews to each repair area, and provided a stable working platform.

While the use of work sleds required additional pre-implementation planning and design of 8-foot diameter access shafts for the upstream installation and downstream removal, once installed the work

Work Sled Installation at Access Shafts

sleds could remain in the sewer for the duration of the rehabilitation project. The mobile work platforms raised tools and work crews safely above the flow of the sewer. This greatly reduced the safety concerns and crew fatigue associated with working under live flow conditions of over two-feet in depth and velocities approaching 5 fps.

The use of the mobile work platforms also had the added benefit of greatly reducing the amount of time required for equipment set up at each chemical and cementitious grouting location. The increase in productivity meant that an entire manhole to manhole reach of the sewer could be inspected, leaks identified, equipment setup, leaks sealed through chemical grouting, and work verified by engineering staff in a single sewer entry and work shift.

CONCLUSIONS

With the completion of OMID Contract 5 the design team and group of implementation contractors associated with all phases of the system-wide OMID rehabilitation mark the proud end to a challenging and innovative series of projects. It has been a privilege to work on such a vital piece of Michigan's infrastructure while solving engineering and logistical problems that will have benefits for many years to come.

WORKING TOGETHER TO KEEP ALGAL BLOOMS AT BAY

By: Michigan Cleaner Lake Erie through Action and Research (MI CLEAR)

As Monroe County Drain Commissioner, Dave Thompson leads a team of workers and helps recruit community volunteers who are successfully combating the algal blooms that have been appearing on Lake Erie in recent years.

Key to their winning strategy: collaboration and not playing the blame game, Thompson asserts.

“Finger-pointing doesn’t get us anywhere,” he said. “There’s not a single thing that got us to this point. But we’re all part of the solution. We want to see more friendships and assign less blame.”

Today, the River Raisin and Monroe County’s 1,100 county drains contribute little to harmful algal blooms that have plagued the Western Lake Erie Basin (WLEB) and threatened the lake’s tourism and fishing industries, according to the county drain commissioner.

Monroe County Drain Commissioner David Thompson gives a demonstration for Monroe Middle School students in June at the school’s Environmental Careers Day. This non-point source table shows how water moves throughout a watershed. Photo courtesy of River Raisin Institute

INNOVATION INSPIRES IMPROVEMENTS

Thompson credits a local committee he’s helped coordinate for reducing phosphorus runoff to counter the algal blooms that overwhelmed Toledo’s water intake in 2014 and shut off water to more than 400,000 water users, including approximately 35,000 Monroe County residents in four communities that make up the South County Water System — Bedford, Erie and LaSalle townships and the city of Luna Pier — and get their drinking water from the city of Toledo.

He also praises the dozens of Monroe County farmers he’s encouraged to embrace such

Water sampling training in the S.S. Lapointe Drain watershed. The area’s watershed management plan project was funded by a Michigan Department of Environmental Quality 319 non-point source grant. Photo courtesy of River Raisin Institute

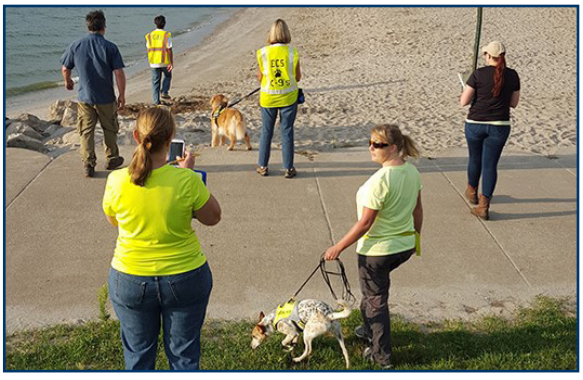
environmentally friendly practices as installing filter strips, managing nutrients and taking other steps to prevent nitrogen from draining into Lake Erie. At the same time, Monroe County leaders are inspiring builders of new developments to take part in the state’s Wetland Mitigation Banking program, which creates new wetlands or allows developers to purchase shares in existing wetlands to offset the loss of marshy areas, streams and ponds.

While government authorities in Michigan, Ohio and Canada have agreed to cut the amount of phosphorus and other harmful nutrients flowing into the basin by 40 percent by 2025, Thompson proudly notes “we are already at 36 percent” in Michigan.

“The river is looking great now and that committee is doing a great job” of monitoring pollutants, he said.

The strides Thompson and his allies are achieving in the River Raisin and Lake Erie are earning praise from environmental experts. They say the activities producing results in Monroe County may have

The S.S. Lapointe Drain Watershed Management Plan, approved in September 2017, includes sampling results and implementation activities to address water quality impairment issues. Photo courtesy of River Raisin Institute



Environmental Canine Services handlers used scent-trained dogs at Luna Pier Beach to identify E. coli by smell. Luna Pier Beach is in the S. S. Lapointe Drain watershed which feeds directly into western Lake Erie. Photo courtesy of River Raisin Institute

potential future application to reduce algal blooms that have plagued such Michigan waterways as the Saginaw Bay and Lake Macatawa near Holland.

A CLEAR VISION

Thompson's office was one of the founding members of the Michigan Cleaner Lake Erie through Action and Research (MI CLEAR) Partnership. The partnership includes farmers, agriculture and environmental leaders, universities, conservationists, landscape professionals, energy leaders and tourism and economic development interests.

By working together, MI CLEAR members aim to promote awareness of science- and research-based efforts to improve the health of Lake Erie and provide unbiased information about Michigan's efforts to preserve and protect the WLEB.

"The ecological causes behind the algal blooms are incredibly complex, but the work being done by the individuals and groups in the Western Lake Erie Basin to reduce the nutrients getting into local waterways is monumental in decreasing the chances for their occurrence," said Gordon Wenk, director, Michigan Department of Agriculture and Rural Development.

"In Michigan, high water quality is one of our biggest assets, and ensuring its continuation is always one of our greatest concerns," Wenk said. "And with the amount of focus Lake Erie is getting from the Monroe County Drain Commission and the groups it's partnering with, hopefully we can increase our chances of solving this problem."

A BETTER UNDERSTANDING

Thompson's efforts have been bolstered by local associations and conservation groups, such as the River Raisin Institute, a nonprofit organization dedicated to water quality, and the Sisters, Servants of the Immaculate Heart of Mary, a religious institute in Monroe whose ministries include issues of local environmental concerns.

Additionally, the National Oceanic and Atmospheric Administration (NOAA) announced last month that it had awarded a grant of more than $500,000 to the Great Lakes Observing System (GLOS), which collects and organizes data from local, state, federal and private groups in the WLEB. The information collected by the GLOS is accessible to the public at data.glos.us/portal.

Boaters, anglers and others with a vested interest in the health of Lake Erie can access that information to gain a better understanding of what's happening and forecasting what's to come in this ecologically sensitive and economically important region. And, of course, that information may also have potential applications in Saginaw Bay and Lake Macatawa, Thompson said.

BUILDING NEW ALLIANCES

Lake Erie's blooms are marked by a rapid increase in algae populations that sit on the top several inches of water, choking out other vegetation. This happens because algal blooms create dead zones, which are areas in the lake where aquatic life and plants cannot survive, due to low oxygen levels in the water.

"We know that agriculture and industry are contributors, but so is runoff from stormwater. Municipal sewer discharges, failed septic tank systems, invasive species such as zebra mussels, and heavy rains can also affect the blooms. These are matters that cut across a lot of disciplines," Thompson said.

"This is a complicated issue with a lot of factors, and it will only be through the work of many different groups bringing many different strengths to the table that we may be able to figure out a solution."

An innovative example of collaboration is a new pilot program comprising three Michigan county drain commissioners: Saginaw County Public Works Commissioner Brian Wendling, Washtenaw County Water Resources Commissioner Evan Pratt and Thompson. The goal is to establish best-management practices on farms to offer reduced drain assessments for farmers who implement filter strips on their property.

"That equates to less sediment in drains, and putting in less sediment means fewer cleanouts and fewer nutrients," Thompson said.

"It's great to know we have the support of so many groups, including MI CLEAR, which unites these different groups. The more heads we have on this problem, the quicker we can solve it, and the easier it will be to apply these solutions statewide."

interfaceh2o

Your partner in **FORWARD THINKING** green infrastructure and water management **SOLUTIONS.**

Flexamat® PERMANENT EROSION CONTROL

Tied Concrete Block Mat

FocalPoint BIOFILTRATION SYSTEMS

High Flow Modular Biofiltration System

PAVE DRAIN STORMWATER'S ARCH ENEMY

Permeable Paver Blocks

RTANK

Underground Storm Water Storage System

PRESERVER

Affordable Gravity Separator

10694 Chicago Drive
Zeeland, MI 46494

616.931.5584
interfaceh2o.com

PFAS – VEXING CONTAMINANTS THAT ARE HERE TO STAY

By: Jim Brode, CPG, Fleis & VandenBrink

PFAS are now routine in our daily news feed in Michigan. Many of us are wondering how the recent attention on PFAS might impact our management of drains and other surface waters.

PFAS, an acronym for per- and polyfluoroalkyl substances, are a group of chemicals used in the manufacturing of fluoropolymer products and coatings, and they have water professional around the state on their heels. These very complex group of chemicals are unlike many of the routine contaminants we have worked with in the past and many water professionals are learning that that even collecting representative samples and selecting appropriate analytical methods can be very difficult.

Because PFAS are associated with many products we use daily and are environmentally significant at low (ppt) levels, sample collection requires avoidance of potential PFAS containing items prior to sampling. Strict QA/QC procedures are also necessary to ensure samples have not been cross-contaminated. Laboratory methods differ depending on the types of media being analyzed. Guidance on laboratory method selection is rapidly being developed by both MDEQ and EPA.

Although much is still unknown about the extent of PFAS in Michigan's surface waters, especially in the smaller watersheds, our database is developing quickly. We know from studies from other regions that PFAS are ubiquitous in urban stormwater systems. Studies have shown that the primary source of PFAS entering stormwater is rainfall followed by absorbed PFAS on particulate matter from industrial/commercial sources.

Point sources for PFAS are being identified because of their historic association with PFAS-containing products and the extensive sampling efforts currently underway. According to MDEQ and EPA guidance, we can expect to see PFAS associated with plating operations, paper manufacturing, landfills, and locations where AFFF firefighting foams were commonly used. Other sources may also become relevant over time. Surface water runoff from air emissions and/or groundwater transport to surface waters from these types of sources are processes that can lead to the discharge of PFAS into surface waters.

Initially developed in the 1940s, there are estimated to be thousands of types of PFAS. Commercial laboratories currently analyze for less than 50.

PFAS have been an integral part of our daily lives and commerce. The chemicals are associated with products providing oil and water repellency, stain resistance, and non-stick surfaces, as well as breathable weather-resistant clothing, paints and adhesives, paper and packaging coatings, insecticides and aqueous film-forming foams (AFFF) for firefighting (used for petroleum-based fires).

The most extensively produced and studied PFAS are PFOA (perfluoroocatanoic acid) and PFOS (perfluorooctanesulfonic acid). These acids represent the more stable "end products" of PFAS and are both very persistent in the environment. Although PFOA and PFOS are no longer manufactured in the United States, they are still produced in other countries and imported into the US in consumer goods.

THE SCIENCE BEHIND THESE CHEMICALS

PFOA and PFOS are made of eight carbon atoms that are attached to fluorine and other atoms. Replacement chemicals, like GenX (which are also PFAS), tend to have fewer carbon atoms in their chain, but have many similar physical and desired chemical properties as their longer-chained predecessors. Shorter chain PFAS molecules are believed to be more environmentally friendly.

There are many aspects of PFAS that make these substances unique. Key differentiators include the chemical's complexity, ubiquity, toxicity and ability to be transported through the atmosphere.

PFAS molecules have a long chemical chain with two to 14 carbons in their molecular structure. They are resistant to degradation due to their strong carbon-fluorine bonds – one of the shortest and strongest chemical bonds known.

PFAS are also stable in acids and bases, resilient to oxidants and heat, and not conducive to biodegradation.

These chemicals are known to be everywhere – widely distributed on Earth in water, soil, sediment, the atmosphere and animal tissues and blood serum. Much of the widespread distribution in the environment is primarily associated with atmospheric deposition of industrial emissions coupled with the high production rates for these substances to meet global demands.

THE ENVIRONMENTAL AND HEALTH SIGNIFICANCE OF PFAS

PFOS and PFOA have toxic characteristics at low levels (parts per trillion, ppt). Studies indicate that they can cause reproductive and developmental effects, liver and kidney effects, and immunological effects in laboratory animals. Both chemicals have caused tumors in animals. The most consistent findings are increased cholesterol levels among exposed populations.

PFAS exposures, known to bioaccumulate in humans and wildlife, have also been potentially linked to:

- Thyroid hormone disruption (for PFOS)
- Low infant birth weights
- Effects on the immune system
- Cancer (for PFOA)

Source: USEPA https://www.epa.gov/pfas/basic-information-pfas

Although most PFAS have relatively low volatility, airborne transport of PFAS through industrial releases, such as stack emissions, is well documented and accounts for the wide-spread distribution of PFAS. Some PFAS may degrade through photooxidation, but most released into the atmosphere will eventually fall out and accumulate onto land or water where they are subject to other transport processes such as leaching to, or migration in, groundwater.

RESEARCH, DISCOVERY, AND WHAT'S BEING DONE

While PFAS are being labeled as an "emerging" contaminants, researchers and government agencies have been monitoring them since the 1990's. Early studies documented the widespread distribution of PFAS in the environment, including the Great Lakes ecosystem.

In 2001, working with researchers from Michigan State University, the MDEQ sampled major waterways in the state for PFOS and PFOA. PFOS was detected in 44 of 49 samples, with statewide concentrations of 0.87 ppt to 29.26 ppt. PFOA was detected in all samples, with the concentration ranging between 1.16 and 35.86 ppt.

To put this into perspective, Surface Water Quality Standards have been developed by the MDEQ for two PFAS - PFOS and PFOA. They include: PFOS - 11 ppt (drinking water sources) and 12 ppt (non-drinking water sources); PFOA - 420 ppt (drinking water sources) and 12,000 ppt (non-drinking water source).

PFOS and PFOA are more of a human health concern than an aquatic life issue. PFOS standards are lower than PFOA because they have a significantly higher bioaccumulation factor.

A recent discovery of PFAS in groundwater in Kent County has been a catalyst for state officials to take a more aggressive stance. In 2017, Governor Snyder issued Executive Directive 2017-4 which created the Michigan PFAS Action Response Team (MPART), the first multi-agency action team of its kind in the nation. The team is led by retired Michigan Chief Deputy Attorney General Carol Isaacs and has representatives from the Departments of Environmental Quality, Health and Human Services, Military and Veterans Affairs and Agriculture and Rural Development.

Efforts are being coordinated by MDEQ. They include:

- Point source monitoring of publicly owned treatment works (POTWs) that have Industrial Pretreatment Plans (IPP) to identify/prioritize PFAS sources and collect collection system samples for analysis. Some 95 IPPs are participating in the point source monitoring program and 32 submitted extension requests. This program will provide the state with a better understanding of PFAS in wastewater collection systems.
- Comprehensive sampling of Michigan's 1,380 Public Water Supplies and 461 schools in the state. The state is also collecting other samples to help understand the background distribution of PFAS in groundwater.
- Ambient monitoring of up to 180 receiving waters, source tracking, and evaluating of sources near Drinking Water Critical Assessment Zones and the Great Lakes.
- Fish samples collected from 25 sites, analysis of 2017 fish samples.

Additions are constantly being made to the list of known PFAS sites in the state. The MDEQ has estimated there are as many as 11,000 potential locations where PFAS was used in Michigan. It's too early to determine how many of these sites will be become sites of environmental significance.

PFAS will surely be part of our vocabulary for years to come. Mapping the extent of PFAS in Michigan's water resources will happen relatively quickly given the efforts that are currently underway. However, regulatory and technical solutions to address what

we expect to be a widespread distribution of PFAS in our environment will be our greatest long-term challenge. The solutions that served us in the past for more common contaminants may not work as we move forward in addressing these challenging substances. Our work is only beginning.

Jim Brode, CPG is an Associate and Senior Project Manager at Fleis & VandenBrink in Kalamazoo. He is a certified professional geologist and has over 30 years' experience in environmental and hydrogeological consulting services and has worked extensively with emerging contaminants in our environment.

Celebrating
30 years in business

30th ANNIVERSARY EST. 1988

MERSINO®

and GLOBAL PUMP®
A MERSINO COMPANY

DEWATERING BYPASS PUMPING
ONE-PASS TRENCHING POWER GENERATION

866.MERSINO

www.mersino.com 10162 E Coldwater Rd. Davison, MI 48423

SINKHOLE AVERTED

By: Dan Heaton, Macomb County Public Works Office

Candice S. Miller, Macomb County Public Works Commissioner.

It might be an overstatement to say SCADA saved summer in Macomb County, but in one key marina district that's just about the case.

In early 2018, the Macomb County Public Works Office decided to invest in adding several remote, unmanned pump stations to the SCADA – Supervisory Control And Data Acquisition – system that it uses to monitor its 11-community sanitary sewer system and a three-city storm water retention system.

Repair work being conducted at the Murdock-Ballard Pump Station in Harrison Township on Tuesday, July 17.

That SCADA data led MCPWO engineers to a developing sinkhole in the heart of Harrison Township's marina district, just as summer was heating up.

A temporary sewer grate installed on the Murdock-Ballard drain in Harrison Township. The grate will be replaced again in August when final repairs are made on the pump station.

"We are connecting all of our assets to the SCADA system to allow us to have the data we need to find and fix small problems before they become big problems," said Candice S. Miller, Macomb County Public Works Commissioner. "We are using all of the tools at our disposal to ensure our system operates in a way that best serves our residents."

The Murdock-Ballard pump station is an unmanned collection of two 7.5 horsepower dry weather pumps and two 10 horsepower wet weather pumps in underground manholes that lift storm water from the underground drain to a higher elevation to allow the water to drain in Lake St. Clair.

A 15-inch and 21-inch drain line begins near the junction of Metro Parkway and I-94, running due east to the lake. The drain helps to remove rain water and snow melt from that portion of I-94 and the neighborhood it passes through. Multiple storm water pipes operated by Harrison Township, the Macomb County Dept. of Roads and the MCPWO converge at the Murdock-Ballard pump station. The station pumps all that water to an outlet on Lake St. Clair, a few hundred feet away. Much of Harrison Township is below natural lake level, necessitating the series of pump stations.

Once the pump station was connected to SCADA, operators determined that energy usage at the pump was well above expectations. When a MCPWO truck backed up to the manhole, adjacent to busy Jefferson Avenue in front of a large boat marina, the truck began to sink into a depression that had begun to form around the manhole. Once a diver entered the pump wet well, a damaged piece

Damaged pipe that was removed from the Murdock-Ballard pump station. The pipe was further damaged during the removal process. A new section of pipe was installed.

of pipe and significant sediment was found. This damage and sediment was allowing water to seep out from the manhole and wash away nearby soil. A cavity had begun to form around the manhole, nearly adjacent to Jefferson.

The growing depression had reached the edge of the road's pavement, meaning a road collapse was a direct future possibility.

"Not discovered, this sinkhole likely would have closed Jefferson Avenue, potentially impacting several marina businesses during their summer season. Given where this is located near the Clinton River, any rerouting of traffic would have added miles to the trip and significantly impacted these businesses during their key season, not to mention a nearby neighborhood. But, we found it, we fixed it," Miller said.

Macomb County is no stranger to sinkholes impacting a major roadway. A Christmas Eve 2016 collapse of an 11-foot diameter sewer interceptor on 15 Mile Road in Fraser ultimately destroyed two homes, and took 11 months and cost $70 million to fix.

"One of the reasons we've made asset management such a priority is the experience of that collapse," said Miller, who took office a week after the Fraser collapse and resulting sinkhole.

In the Harrison Township incident, discovered in early July, the growing sediment in the pipe and wet well was interfering with the operation of the two dry-weather pumps.

Once the problem was discovered, it was a relatively easy fix to vactor out the sediment and make repairs to the dry-weather pumps, said Vince Astorino, operations & flow manager for MCPWO. He said the final repair bill should be well below $50,000.

"We expect to have our remaining pump stations all on SCADA before the end of the year, which will allow us to better monitor the stations and avoid this kind of near-catastrophe in the future," he said.

A pipe that allows a road ditch to drain in the Murdock-Ballard drain along Jefferson, south of Crocker, is seen.

The repair work closed a single lane on Jefferson, a four-lane road in that area that runs along the Lake St. Clair coast throughout the county. The repairs lasted several days and caused no damage to the road.

Dan Heaton is the public relations director for the Macomb County Public Works Office.

TWO SENIOR PROJECT MANAGERS AMONG EIGHT NEW F&V HIRES

Fleis and VandenBrink (F&V) has added eight new staffers, including two senior project managers for its Process Group in Grand Rapids.

Engineers Brad Lyons and Mark Bratschi, who have a combined 70 years of experience, recently joined F&V along with Steve Mills, Anthony Plutz, David Capser, Jacob Swanson, Robert LaPlaca and Ty Williams.

"We are excited to add a tremendous mix of experience and young enthusiastic talent all with great potential that strengthens our capabilities in some key areas," said Paul R. Galdes, Principal and F&V's president.


Lyons

Lyons career spans 33 years with a broad base of civil and environmental engineering experience. He will direct the process engineering staff and guide other disciplines on varied engineering studies, designs and construction support activities.

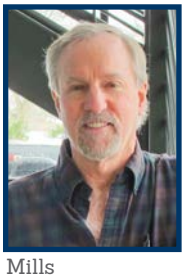

Bratschi

Bratschi has over 40 years of experience in engineering with a focus on construction management. He will provide strong support to the Process Group, applying his construction experience during design of projects. He will also take the lead as construction manager or project director on all alternative delivery projects (design-build, construction management).


LaPlaca

"Their knowledge and wisdom will serve our client base well, strengthening our capabilities in providing innovative cost-effective solutions to our clients' challenges," said Jeff Pugh, who heads the Process Group.

LaPlaca, a former intern, joined F&V as an Engineer-in-Training (EIT) with the Development and Enhancement Group after graduation from Calvin College this year. His construction experience while interning at F&V, will help him as a CAD technician and construction site supervisor.


Mills

Mills is a construction technician with over 30 years of residential project representative experience in the municipal area including roads, bridges and utilities. He will provide as-needed construction observation services in the Grand Rapids area.

Plutz, a CAD designer and drafter who has worked on major highways, tollways and airports in the Chicago area, joins F&V as a CAD designer. He'll be working on a variety of municipal infrastructure projects. He has nearly 20 years of experience in the field in both AutoCAD and Microstation software platforms.


Plutz

Williams has 20 years' experience working as a construction inspector on major airports, colleges and hospitals in California. He will provide construction observation and testing assistance on municipal engineering projects in the Muskegon area. He'll also be working with the Process Group and will be a site superintendent for the FV Construction Group.

Capser has re-joined F&V as a civil engineer in the Traverse City office after a brief stint as a project manager for a Montana-based engineering and survey firm. Capser brings 14 years' experience in project management, engineering design, stormwater management, hydrology and site planning.


Casper


Swanson

Swanson is a project engineer in the Farmington Hills office, working in the Traffic Engineering Group. He will work on a wide variety of projects including traffic impact studies, parking studies, transportation design projects among numerous other projects. Swanson is a recent graduate with both his bachelor's and masters degrees from Michigan State University.

F&V COMPANIES EXPANDS BOARD TO KEEP UP WITH GROWTH

The Board of Directors for F&V Companies, Inc. in Grand Rapids has been expanded from five to seven members.


DeVol

Shareholders for the parent company of Fleis & VandenBrink (F&V), F&V Operations and Resources Management, Inc. (FVOP), and F&V Construction (FVC) approved the Board expansion last week, adding Senior Associates John R. DeVol and Jeffrey F. Pugh.

DeVol joined F&V in 2004 as a project manager and has since become Group Manager for the Traverse City Office of the West Michigan Municipal Services Group. Pugh, who has more than three decades of experience in water and wastewater process and

design, is the Process Design Group Manager in Grand Rapids.


Pugh

DeVol and Pugh have served as advisory members to the Board. Other Board members include: Larry J. Fleis, chairman and F&V co-founder; Paul R. Galdes, F&V president; Craig L. Shumaker, F&V vice-president; Brian Rice, F&V Environmental Group manager; and Troy Stahl, Indiana Group manager. Fleis, Galdes, Shumaker, Rice and Stahl are also Principals.

"John and Jeff have served in an advisory capacity in the past and will be able to hit the road running in their new roles," Fleis said. "They were acclimated to the Board and now have voting powers."

F&V's continued client and staff growth led the Board expansion.

"We had been thinking about this for some time," Galdes said. "With the growth of the company, we wanted to get more of our senior leadership involved in Board activities."

Shareholders also voted Robert W. Wilcox, Jonathan W. Moxey and David W. Bluhm as Board advisory members.

HUBBELL, ROTH & CLARK, INC. BOARD OF DIRECTORS ANNOUNCE NEW BOARD MEMBER


Sneathen

Hubbell, Roth & Clark, Inc. (HRC) is pleased to announce the appointment of Todd Sneathen to the Hubbell, Roth & Clark, Inc. Board of Directors, effective July 1, 2018.

In a commitment to our growing HRC clientele in central and west Michigan, Todd's presence in the Lansing area will enable us to better serve this geographic region and continue to provide our communities with the type of professional service they have come to know well with HRC.

We look forward to the contributions Todd will make toward the success of the company, particularly in central and west Michigan. Please join us in welcoming him to the Board.

Todd Sneathen, P.E., Vice President, will broaden the capacity of the Board with his extensive background in the public works sector. He has over 25 years of experience providing highly regarded infrastructure design and management for a wide variety of projects. He rejoined Hubbell, Roth & Clark, Inc. in 2014 after serving in a variety of municipal positions. These roles included working for the City of East Lansing for more than 20 years, most recently as the Director of the Department of Public Works from 2003 to 2014.

During his tenure at East Lansing, he served as chair of the East Lansing Meridian Water & Sewer Authority Board, which administers the East Lansing Water Treatment Plant; chair of the Tri-County Capital Area Regional Transportation Study Technical Committee and the Greater Lansing Regional Committee for Stormwater Management. Since rejoining HRC, Todd has been instrumental in expanding our clientele, providing new services to our existing clients, opening our Jackson office, and growing our Delhi Township office.

CHERYL J. NODARSE, ACP, ELECTED AS TREASURER TO NALA BOARD OF DIRECTORS 2018-2019


Nodarse

Cheryl J. Nodarse, ACP of Saint Johns, MI was elected to serve as Treasurer on the 2018-2019 Board of Directors the National Association of Legal Assistants (NALA). The election took place during the NALA's Conference & Expo and annual member meeting in St. Louis, MO. She was installed as Treasurer on July 13, 2018.

Ms. Nodarse is employed as a paralegal with Vlahakis Cole Law Firm in East Lansing, Michigan, a firm specializing in municipal and real estate law. She graduated with a Bachelors of Science in Sociology from Central Michigan University. Ms. Nodarse was President and a founding member of Great Lakes Paralegal Association, and served two terms as Chair of the State Bar of Michigan Paralegal/Legal Assistant Section. She is also a licensed realtor with Vlahakis Homes in Okemos, Michigan.

Ms. Nodarse's service to NALA has spanned many years and several positions, such as contributing author to its publication, Facts & Findings, and serving on several committees, as the Region 5 Board of Director, and as a Continuing Education Council member.

CALENDAR OF EVENTS

OCTOBER 11, 2018
Southeast District Meeting
TBD

OCTOBER 15, 2018
Northeast District Meeting
Dow Event Center, Saginaw

OCTOBER 19. 2018
Southwest District Meeting
Berrien County

OCTOBER 25, 2018
Northwest District Meeting
Kent County

FEBRUARY 13 – 15, 2019
MACDC Annual Winter Conference
Radisson Plaza Hotel, Kalamazoo

JULY 17 – 19, 2019
MACDC Annual Summer Conference
Shanty Creek Resort, Bellaire

Check our website www.macdc.us for a complete list of events. To place your event on this calendar, contact us at 517.484.9761 or admin@macdc.us.

PIPELINE

120 N. Washington Sq., Suite 110A
Lansing, MI 48933
www.MACDC.net

PRSRT STD
U S Postage
PAID
Lansing, MI
Permit No. 515