2021OHIO STORMWATER CONFERENCE

www.ohstormwaterconference.com

REGISTRATION INFORMATION
2021 OHIO STORMWATER CONFERENCE

Online or Kalahari Conference Center - Sandusky | May 20-21, 2021

14th Annual Ohio Stormwater Conference

Conference Overview

Recognizing that watershed and stormwater management involves people of varying disciplines and degrees of experience, our conference engages speakers experienced in many aspects of stormwater or water resource management. Speakers will address: examples of planning and design; new standards being developed; incorporating environmental goals into traditional stormwater areas; practice effectiveness; program administration and management; communications; as well as meeting regulatory requirements. Beyond learning from listening and dialogue with speakers, the conference provides an excellent opportunity to meet, network and collaborate with peers.

Who Should Attend?

Planned by a committee of professionals who deal with stormwater issues on a daily basis, the conference is appropriate for public and private engineers, planners, policy makers, scientists, managers, and elected officials throughout Ohio and the region. Those interested in innovative solutions to common issues relating to stormwater management should attend.

Continuing Education

A Certificate of Attendance will be provided to all individuals who attend the conference. This certificate, along with a copy of the agenda, will assist individuals needing to document professional development hours for their technical profession. We are also seeking to get approved hours from a variety of professions. Please contact Harry Stark with any questions at 216-385-5248 or hstark@ohstormwaterconference.com.

Online or In-Person at Kalahari Conference Center

Kalahari Resort and Conference Center is located at 7000 Kalahari Drive, Sandusky, Ohio 44870. Complete directions can be found on the conference website.

Hotel Information

The Conference Committee has secured group rates for the Kalahari Resort and Conference Center.

We are pleased to announce that the Conference has secured a group rate of $127 per night for the conference.

Booking Website:
https://book.passkey.com/e/50076044

Go to the conference website and under hotel/travel is a direct link to the reservation page.

Note: The Resort Fee has been waived and will not be charged on any guest room. The standard wording on their website and confirmation letters though cannot be changed so it will reference the Resort Fee but no fee will be assessed.

Presented By

The Ohio Stormwater Conference is presented annually by Tinker's Creek Watershed Partners and the Ohio Stormwater Association.

Tinker's Creek Watershed Partners
Rediscover • Respect • Revitalize

Ohio Stormwater Association

Conference Schedule

The Below Schedule is Subject to Change

Thursday, May 20, 2021

Exhibit Area Open 9:00 a.m. - 12:00 p.m. and 1:00 p.m. - 7:30 p.m.

7:00 a.m. - 8:30 a.m.	Registration / Breakfast
8:00 a.m. - 12:00 p.m.	Concurrent Sessions with breaks
12:00 p.m. - 1:00 p.m.	Luncheon
1:00 p.m. - 5:30 p.m.	Concurrent Sessions with breaks
5:30 p.m. - 7:30 p.m.	Opening Reception

Friday, May 21, 2021

Exhibit Area Open 9:00 a.m. - 1:00 p.m.

7:30 a.m. - 8:30 a.m.	Registration / Breakfast
8:30 a.m. - 12:00 p.m.	Concurrent Sessions with breaks
12:00 p.m. - 1:00 p.m.	Luncheon
1:00 p.m. - 3:30 p.m.	Concurrent Sessions with breaks

Registration Type/Fee

Attendee	Speaker	Student	Scholarship
$195.00 In Person ($245 after 4/30/21)	$100.00	$95.00	$95.00
$150.00 Virtual/Webinar of all presentations ($195 after 4/30/21)			

Registration Includes:

- Unlimited admission to the sessions of your choice on both days
- All presentations available live webinar format and will be recorded.
- Access to all recorded presentations after the event.
- Admission to morning breakfasts on both days and all breaks
- Admission to luncheons on Thursday and Friday
- Admission to the Reception on Thursday

Register online
ohstormwaterconference.com

Questions? Contact us at
216-385-5248 or e-mail at
hstark@ohstormwaterconference.com

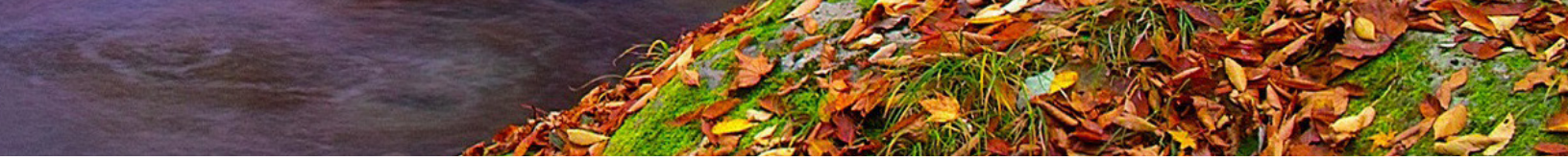
MS4 Boot Camp
May 19, 2021

Managing an MS4 is not easy. Educating and involving the public on stormwater pollution, preventing illicit discharges, keeping up on construction site inspections, and making sure your own municipal operations are in compliance with stormwater regulations can be tough

Come to the MS4 bootcamp and learn how other municipalities are addressing these challenges. Five MS4 representatives from around the state of Ohio will speak about how they are managing a specific component of their program. Ohio EPA will also provide an update on the NDPES stormwater general permit. This session aims to provide information about each of the six Minimum Control Measures and will offer time for Q&A

You won't want to miss this opportunity!

Link to register: https://wmao.org/content.aspx?page_id=4002&club_id=259593&item_id=1396752
Time: 9:30 a.m. – 3:00 p.m.
Cost: $20.00 WMAO members; $30.00 non-members



Program Sessions and Topics

Please Visit Website for Agenda and Session Times at:
https://ohstormwaterconference.com/wp-content/uploads/2021/02/OSWC-Agenda.pdf

Monitoring, Inspection, and Maintenance

Data at Your Fingertips: Mobile GIS for Stormwater Monitoring
Katie Norris and Greg Hornbeek, City of Dayton Department of Water
Tired of carrying pen and paper in the field, squinting to read someone else's handwriting, or entering pages of data? The City of Dayton will demonstrate and provide lessons learned from its GIS-based mobile Collector app for monitoring and IDDE data collection.

Aerial and Bathymetric Drones Aid Detention Basin Inspections
Alan Stadler, Wade Trim
Aerial and bathymetric drones were used to build digital data sets of the configurations and conditions of existing stormwater detention basins. Because of their unique capabilities, these tools supplemented more traditional field inspection methods. The digital data acquired was used in hydraulic model development and O&M (asset management) planning.

Digital Technologies for Effective Green Infrastructure Management
Stephanie Weagraff, Arcadis
Arcadis has developed several innovative, digital tools to streamline green infrastructure inspections and quickly disseminate monitoring data for project management, subject matter experts, and clients. This presentation showcases three digital tools: the Blueprint Clintonville inspection application package, 360 Reality Capture, and Remote Expert.

Asset Management for Constructed and Natural Stormwater Systems
John Aldrich and Jeff Claus, CDM Smith
Stormwater program managers are increasingly embracing risk-based protocol for defining appropriate levels of capital and operational investments. This paper will present a foundational framework for managing risks associated with stormwater management, supported by examples of asset management programs being implemented by several stormwater programs throughout the US.

Improving SMP Design: Lessons Learned from Inspections
Shiny Mathew and Allison Hill, JMT
The stormwater management practice (SMP) inspection program at Philadelphia Water Department (PWD) consists of approximately 1,000 project locations and more than 2,400 SMPs. The presentation will highlight the challenges encountered during the inspection of SMPs and focus on the recommendations to incorporate into design to increase their long-term success.

A Proactive Examination of Maintenance during Green Infrastructure Design
Alysondria Eason, Hazen and Sawyer
This presentation will share a variety of observed long-term aesthetic, maintenance, and performance challenges and how proactive consideration of those challenges can inform the design process to better weigh the risks and rewards of design decisions.

How Does Your Post-Construction Program Measure Up?
Brent Eysenbach and Carla Regener, Cuyahoga SWCD
Long-term operations and maintenance programs are as varied as the number of MS4 communities. Regulations requiring adequate programs provide minimal direction. This presentation will examine the state of LTOM programs of the past, the present, and possibilities for the future. Real word examples of maintenance issues will be covered.

Prioritized Catchment-Based Approach to Ongoing Surveillance of MS4 Outfalls
Kate Moran, CDM Smith
Knowledge gained from 10 years of conducting traditional dry weather outfall screening for thousands of outfalls in a large, co-permittee MS4 was used as the basis for creating an adaptive and prioritized catchment-based ongoing outfall screening program.

Storm Outfall Inspections and Testing, Lessons Learned, Changes Made
Joseph Reitz, City of Avon Lake
Maintaining, monitoring, and managing storm outfalls is a challenge every community faces. Learn how the City of Avon Lake has taken on the task of identifying, monitoring, and managing these critical pieces of our MS4 system that has a direct and immediate impact on Lake Erie.

Neglected Drainage Systems—Where to start?
Mark Delisio, CT Consultants, Inc.
Jason Loree, ABC Water & Stormwater District
Stormwater system infrastructure O&M is often a low priority for elected officials until flooding occurs. When local leadership realizes there is a problem, systems are often so dilapidated that communities do not know where to start. Discussion will include budgeting considerations, inspection, condition assessment, and actionable steps to improve system performance.

Using Trash Trappers for a Cleaner Toledo
Edith Preciosa Kippenhan and Julianne Badreddine, City of Toledo
The City of Toledo, funded by a GLRI Trash-Free Great Lakes grant, installed multiple devices in spring 2020 to capture trash before getting to Lake Erie, expanded recycling events and sponsored education events in adjacent areas. This presentation will discuss the device selection process and initial results of the project.

PFAS in Stormwater: The What, How, and Why of Testing
Taryn McKnight, Eurofins Environment Testing America
In the absence of federal regulation or promulgation of analytical methods, we see growing variation in approaches across the state with emerging focus on how to address PFAS in stormwater. This presentation aims to provide clarity around the mountain of analytical options and growing regulations as they impact stormwater.

Winter Floods: Know Your Risk
Sarah Jamison, National Weather Service Cleveland
Learn how to evaluate snow and river ice conditions in the cold season that can influence your flood risk. Attendees will learn how to take measurements and share reports with the NWS forecasters who will use the information to evaluate the potential for flooding.

Proactive Data Collection for Flood Warning
Chuck Kozora, OTT HydroMet
Urban flooding and the value of data collection for flood warning and protection will be discussed. Together, we will examine what an ideal flood warning system might look like in your community and how data can help convince your community about the importance of being prepared for flooding.

Development and Implementation of a Statewide Dam Construction Monitoring Plan
Chad Davis, HDR, Inc
Jacob Bench, Ohio Department of Natural Resources
One of the highest risks for a dam owner is a dam under construction. To better manage those risks, owners should consider the development of Construction Monitoring Plans that clearly define critical information and are visually oriented through color coding to ease field implementation.

Framework for Managing Stormwater Infrastructure
Lauren Van Meter, HDR
Peter Littleton, Corvias Infrastructure Solutions
The management of stormwater infrastructure is a time-consuming process. Formalizing this process with a standard framework can prove very beneficial. This presentation will describe components of a framework implemented through a Community-Based Public-Private Partnership model in Chester, Pennsylvania and how to incorporate lessons learned into your own framework.

Project Management Solutions for Integrating Asset Tracking and Inspections
Olivia Devereux, Devereux Consulting, Inc.
The Asset Tracker application will be presented. It synchronizes disparate systems including review of sediment and stormwater plans in the office, inspections in the field, reporting, and communication. The single system makes information readily available for all staff through the life cycle of plan submittal to post-construction maintenance and reporting.

Designing Manufactured Treatment Devices (MTDs) with Maintenance in Mind
Dana Hinaman, Contech Engineered Solutions
As our industry evolves, civil engineers are placing more importance on the long-term maintenance costs associated with MTDs. Better understand how to design MTDs with maintenance in mind, the integration of O&M information into the BMP selection process, and the factors that impact MTD maintenance cost.

Increasing the Life Cycle of SCMs with Preventative Maintenance
Jeffrey Urban, AQUALIS
Examining case studies on the impacts of preventative maintenance on local watersheds and improvements that can be made to extend the life cycle of stormwater control measures (SCMs) with minimal budget allocation. Solutions include preventative maintenance procedures, emerging technology, and material advancements.

Watershed Planning and Restoration

Getting it Funded: Grant Resources for Watershed Restoration
Betsy Ehler, Burgess & Niple
Eric Saas, Ohio Department of Natural Resources
Steve Ferryman, Ohio Emergency Management Agency
Steven Malone, Ohio EPA
Plan, design, and build resilient projects through a better understanding of available grants. Learn about Ohio's grant resources and critical strategies from ODNR, OEPA, and Ohio EMA leaders on funding from H2Ohio, the Water Resource Restoration Sponsor Program (WRRSP), Ohio 319, and Hazard Mitigation Assistance grants.

Restoring the Black: Capping off a Decade of Restoration
Kate Golden, City of Lorain
A.J. Gutz, Coldwater Consulting
Learn about a decade-plus journey of restoration in the Black River Area of Concern. Highlighting the story is how large-scale stormwater management on a former industrial site yields impressive results and directly addresses major watershed stressors. The theory behind this restoration project is simple, but execution was far from it.

The Power of Coalition Building in Watershed Restoration
Marissa Lautzenheiser and Shana Angel, Rural Action
Rural Action recently expanded their work to the Walhonding River watershed with the creation of the Greater Walhonding Conservation Alliance. Coalitions of partners lead to larger impacts and better-maintained watershed improvements. Learn about the consideration, challenges, and benefits of collaborative watershed management while listening to real-world examples of successful projects.

No (Elevation) Relief in Sight: Olmsted Township's Stormwater Master Plan
David Gleason, Stantec
Craig Nauman, Cuyahoga County Department of Public Works
Olmsted Township, Ohio (on the western edge of Cuyahoga County) suffers from severe drainage issues. Cuyahoga County Department of Public Works is working to address these problems by extending regional SWMM models into the local stormwater system and developing alternatives that will solve longstanding problems in the area.

A Practitioner's Overview of a Developing Water Quality Trading Market
Erin Delawalla and Michael Sachs, Resource Environmental Solutions, LLC
RES will present an overview of water quality compliance options for WWTPs in Wisconsin, one state within the region which has developed a framework for nutrient trading. This discussion includes the application of an innovative full-delivery approach to off-site projects that generates tradeable credits and long-term certainty of compliance.

Leveraging the Digital Data Toolbox to Address Urban Flooding
Christian Heller, Wade Trim
Analyzing and communicating flooding risks in highly urbanized areas can pose unique challenges in trying to identify and prioritize cost-effective solutions. This presentation will give an overview of how the Chagrin River and Lake Erie Direct Tributaries Stormwater Master Plan team addressed these challenges using available data and software tools.

Creating a Stream/Wetland Complex with Sand Seepage Berms
Kevin Grieser and Suzanne Hoehne, Biohabitats
One of the ways streams and floodplain connectivity can be restored is by raising the invert of the stream through a unique technique called sand seepage berms. This session describes what sand seepage berms are, provides a recent local example, and demonstrates their ecological benefits.

Sustainable Watershed Planning Guidebook
Bob Hawley, Katie MacMannis, and Nora Korth, Sustainable Streams LLC
We will present an overview of the Sustainable Watershed Planning Guidebook (Sustainable Streams and US Fish & Wildlife, 2020). From modeling to implementation, the step-by-step manual showcases cost-effective strategies (e.g., detention basin retrofits and floodplain wetlands) to restore a more natural flow regime and induce geomorphic recoveries in formerly degraded streams.

Moments in the Marsh: Restoring and Protecting a Coastal Gem
Sally Gladwell, The Mannik & Smith Group, Inc.
Eric Kraus, Standing Rush, LLC
This presentation will focus on the various projects completed, underway, and planned for the several-hundred-acre coastal Standing Rush Marsh located in Erie County. Included will be an interactive version of our own "Marsh Jeopardy" game to invite the audience to reflect what they learned about Standing Rush Marsh.

You Caught the Fish…Now What?
Suzanne Hoehne and Jim Favret, Biohabitats, Inc
The process to develop a concept and a cost estimate for a successful grant application is complicated. As many grant writers have limited backgrounds with estimating and designing projects this presentation will provide some guidance.

Widening the Viewpoint: Building NPS-IS for Near-Field and Far-Field Goals
Deanna Bobak, Civil & Environmental Consultants, Inc.
A Nonpoint Source-Implementation Strategy (NPS-IS) can outline objectives to address water quality impairment for local aquatic communities (near-field) and those of end-receiving waterbodies (far-field). This presentation provides successful examples and tools for integrating near-field and far-field water quality goals during NPS-IS development to drive eligibility for project implementation funding.

Stream Restoration and Infrastructure Protection: North Branch Sycamore Creek
Amy Schultz and Chuck Davis, Beaver Creek Hydrology
The North Branch Sycamore Creek Stream Restoration Project, developed by Beaver Creek Hydrology for the Village of Indian Hill in Cincinnati, OH, utilized natural channel design principles to restore 640 linear feet of stream habitat while simultaneously preventing continued erosion along the Weil Road embankment.

Penn 7 Maumee River Wetland Restoration: Planning and Construction Overview
Ryan Darnton, NOAA Restoration Center; ERT Contractor
Eric Ellis, Great Lakes Commission
Phil Hicks, Hull & Associates, LLC
The City of Toledo's 59-acre Penn 7 property, a former CDF on the lower Maumee River, is the site of a major GLRI-funded wetland restoration. Speakers will share project details, insights, and lessons learned from initial studies through construction completion that created valuable habitat in a dynamic and disturbed system.

Rooting for Stable Streambanks—NEORSD SWIM Root Cause Failure
Christina Silea and Anne Roberto, Northeast Ohio Regional Sewer District
Sediment accumulation along the District's Regional Stormwater System (RSS) has a direct impact on Regional Stormwater Management Program maintenance costs. The NEORSD SWIM department implemented Root Cause Failure Analysis methodology to estimate rates of erosion and volume of sediment accumulation within the Cuyahoga River and the Doan Brook watersheds.

Resolving a "Stickney" Situation
Derek Vogel and Jaime Hain, Northeast Ohio Regional Sewer District
The Stickney Creek Stream Restoration and Utility Relocation Project successfully repaired and relocated a portion of a failing combined sewer while restoring a portion of the adjacent Stickney Creek, after the creek had exposed the sewer through streambank erosion. This presentation will cover the hurdles and successes of the project.

Restoring Part of Toledo's Urban Wetland Puzzle at Detwiler Marsh
Alexandria Peters, The Mannik & Smith Group, Inc.
Shawna Towns, City of Toledo, Division of Environmental Services
We will present the Detwiler Marsh stream and wetland Restoration Project and how its implementation will help reduce nutrient and sediment loading to Lake Erie and improve aquatic habitat in Northwest Ohio.

Lick Run Valley Conveyance System Construction and Lessons Learned
John Lyons and Mike Ellerbrock, Strand Associates, Inc.
The Lick Run Valley Conveyance System is a massive stormwater separation and conveyance project benefiting CSO reduction and revitalization of a blighted urban area. This presentation highlights the final stages of construction and lessons learned associated with building a 100-year stormwater conveyance system in a dense urbanized area.

Green Infrastructure

Evaluation of Sewershed Scale Hydrological Responses to Retrofitted Green Infrastructure
Kathryn Boening, The Ohio State University
This study was one of the first to evaluate the impact of green infrastructure (GI) stormwater control measures (SCMs) on sewershed-scale runoff hydrology. Over 200 GI SCMs in central Ohio were found to decrease observable runoff depths (35%) and peak flow rates (40-58%) at the sewershed scale.

The Impact of Sewershed-Scale Green Infrastructure on Stormwater Quality
Joseph Smith, The Ohio State University
Green infrastructure (GI) has been shown to be effective at improving water quality at site scale, but few sewershed-scale studies exist. Changes in water quality were quantified in treatment and control sewersheds (>10 ha) in Columbus, Ohio. Results demonstrate sewershed-scale GI reduces nutrients, sediment, and heavy metals.

Parking Reserved for GI: Hydrologic Performance of Commercial Stormwater Retrofits
Andrew Tirpak and Ryan Winston, The Ohio State University
Two stormwater control measures were assessed for runoff mitigation in a commercial parking lot. The bioretention cell provided substantial hydrologic mitigation, due in part to adjacent subsurface infrastructure. Conversely, the permeable pavement provided no hydrologic benefit; the high run-on ratio and lack of maintenance should be avoided in future retrofits.

Designing Floating Treatment Wetlands to Improve Pond Performance: A Meta-Analysis
Andrew Tirpak and Ryan Winston, The Ohio State University
A meta-analysis of eight international performance studies of floating treatment wetlands (FTWs) was performed to identify critical design elements that influence performance. Models indicate that while features of the FTWs provide some role in treatment, retention pond (e.g., depth) and watershed (e.g., imperviousness) characteristics were most influential to performance.

Engaging the Public with Green Stormwater Infrastructure

Sara Guiher, Toledo Metropolitan Area Council of Governments
Students and adult mentors participated for two years in a public outreach and education program focused on green stormwater infrastructure. This developing program presents an opportunity for communities to engage residents in the expansion of stormwater management efforts.

Innovative Green Infrastructure Beneath Milwaukee's Marquette Interchange
Anna Sunderland, Strand Associates, Inc.
The Milwaukee Metropolitan Sewerage District and City of Milwaukee partnered to use the area beneath Milwaukee's Marquette Interchange to install innovative solutions for storing and treating stormwater runoff from the interchange. This presentation highlights the project's unique green infrastructure elements and extensive planning process that revitalized this underutilized space.

Headwater Stream Restoration Provides Stormwater Storage and Improved Habitat
Kaley Donovan, Davey Resource Group, Inc.
Josh Myers, Chagrin River Watershed Partners
A case study of a restoration project located in South Russell demonstrates design approaches used to achieve the project goals, which included flood reduction. Several restoration techniques were implemented to restore 375 LF of headwater stream and riparian area to mitigate localized flooding, increase habitat, and improve water quality.

Finding the Right Mix: Bioretention Media Effects on Water Quality
Ryan Winston, The Ohio State University
Bioretention media is the single largest factor in determining the water quality performance of this stormwater control. We performed a literature review and meta-analysis to (1) understand the worldwide state of the science on bioretention media design and (2) quantify the performance of various media amendments to augment pollutant removal.

Green Infrastructure at Wissinoming Park: Maximizing Treatment in Unique Setting
Andrew Birmingham and Tyler Charles, Johnson, Mirmiran & Thompson, Inc.
The Green Infrastructure at Wissinoming Park project is one-of-a-kind for the City of Philadelphia Water Department (PWD), providing sewer separation and runoff reduction for over 40 impervious acres. The presentation will highlight site history, project constraints, design challenges, adaptive management approach, and lessons learned during design/construction.

Permeable Paving and Ground Stabilization
Doug McCluskey, Everett J Prescott
This course examines the benefits of permeable pavements related to our environment, specifically, rainfall intensity, erosion, and contaminated water bodies. Product selection, durability, and maintenance requirements will also be reviewed.

Urban Green Infrastructure Design in Baltimore—Lessons Learned
Andrew Sankowski, Straughan Environmental, Inc.
Urban green infrastructure projects face many challenges to implementation and achievement of project goals. This presentation provides a case study of a large scale urban green infrastructure restoration and lessons learned that can be applied for better planning and design of urban stormwater projects in Ohio's cities with similar constraints.

Follow the Drop: Building Water Security and Resiliency
Lauren Roth Venu, 3Rwater, Inc.
Follow the Drop mobile app and data platform is a new innovative tool designed to support stormwater utility green infrastructure incentive programs and city resiliency programs. The tool provides both a bottom-up and top-down solution to capture stormwater.

Stormwater Practices and BMPs—Planning and Design

Maintaining Sediment and Erosion Controls in the Urban Environment
Kelly Parker and Megan Smith, Cuyahoga SWCD
Sometimes urban environments make implementing routine sediment and erosion controls difficult. Cuyahoga SWCD will share examples of battling the urban environment during construction and showcase creative solutions to unique and difficult situations.

Revisions to Rainwater and Land Development Manual
Justin Reinhart, Ohio EPA
This presentation will discuss on-going work to revise the Rainwater and Land Development Manual. Discussion points include the plan for revising the design manual and technical updates to specific post-construction and erosion and sediment control standards, both recent and planned.

Stream Bank Stabilization Techniques: Improve Water Quality and Protect Assets
Brian Tornes and Matt Kestner, Burgess & Niple
How do you balance asset protection with water quality improvements? Applying more than 30 combined years of environmental engineering experience, we will demonstrate how to select the most effective stream bank restoration technique: natural channel design, traditional engineering, or a combination of the two.

Dam or Filter—What's the Difference?
Craig A. Shultz, American Excelsior Company
Today a plethora of sediment control products exist to choose from. How are they different and how are they the same? What really matters when it comes to sediment control products? This webinar will answer these questions about sediment control products.

Green Infrastructure Planning Approach Adopted for Stormwater Authority of Chester
Aaditya Pise, HDR
Peter Littleton, Corvias Infrastructure Solutions
Planning is the most important step in the implementation of a GI program. Municipalities can benefit from adopting screening and prioritization factors that align with programmatic goals and stakeholder needs. The Chester, PA, Community-Based Partnership focuses on the revitalization of community spaces to demonstrate social and environmental benefits of GI.

Anionic PAM Logs for Turbidity Removal and Water Clarification
Kyla Iwinski Wood, Applied Polymer Systems
Anionic polymer-based treatment systems that are safely and effectively used in construction, development, and stormwater treatment will be discussed. The adaptability and effectiveness of PAM treatment systems will be highlighted, and participants will gain applicable knowledge of PAM log treatment systems and how they may be applied for water treatment.

How to Prioritize, Fix, and Fund Our Drainage Infrastructure Problems
Brandon Vatter and Samantha Brown, Raftelis
Stormwater programs face aging infrastructure and regulatory challenges; many also compete for local government funds, making it difficult to prioritize and shift to proactive planning. This presentation reviews practices to address these demands and provide an increased level of service. It also introduces strategies for funding a stormwater program.

Regional Offsite Mitigation in an Urban Environment
Chad Boyer and Anil Tangirala, ms consultants, inc.
This presentation will investigate one approach to meeting critical storm requirements, water quality requirements, and situating stormwater management throughout an urban environment where regional opportunities are available to be used when needed on projects that are not able to meet the stormwater management within the project corridors.

BRIC by BRIC, A Real-World Guide to FEMA Grants
Kari Mackenbach, ms consultants, inc.
Building Resilient Infrastructure and Communities (BRIC) is a new FEMA program that can help with your flooding and stormwater needs.

Hybrid Stormwater Infrastructure: Addressing Tomorrow's Challenges Through Creative Design
Chris Allen and Jacob Dorman, Contech Engineered Solutions, LLC
We may hear the term resiliency and think stormwater management practices need to be bigger or greener to tackle the dynamic challenges of climate change. However, a hybrid combination of green and grey infrastructure can be another useful tool to help communities build a more resilient future. Here's how.

An Odyssey of Artful Stormwater Design in Wheeling, WV
Gabe Hays, WallacePancher Group
The goal of this presentation will be to show the successes and lessons learned in an Appalachian setting where progressive stormwater strategies are being implemented for the first time. The talk will highlight economic drivers, regulatory drivers, and design drivers for success as well as the challenges faced.

A Turnkey Stormwater Solutions Operation
Mike Massonne, Structure Point
The $37 million annual Stormwater Program for the City of Indianapolis involves planning and implementing a stormwater master plan and capital improvement plan in a manner that moves the City's stormwater infrastructure investments forward. The results have improved quality of life, driven economic growth, and produced increased neighborhood vitality.

Legal Issues in Stormwater and Watershed Management

Ohio Water Law 101
Louis L. McMahon, McMahon DeGulis LLP
Curious about the underlying legal principles that drive stormwater planning? This presentation will review the basics surrounding the multiple sources and regulators of water law in Ohio. Highlights include common law property and tort doctrines, local authority, state regulation, and federal jurisdiction.

Ohio Water Law 102: Basic Legal Issues
Louis L. McMahon and Erin M. McDevitt-Frantz, McMahon DeGulis LLP
An overview of the nuts-and-bolts legal issues often encountered by stormwater utilities. The presentation will touch on specific issues, including ditch law, the examination of the practical implications of Sovereign Immunity, citizen suit protections available under the CWA, and flood insurance/flood mapping issues.

Legal Hot Topics and Stormwater Litigation
Wendlene M. Lavey and Megan E. Goedeker, McMahon DeGulis LLP
A change of administration often drives technical priorities and can require stormwater professionals to shift priorities and change programmatic focus. Get informed on this, the latest stormwater-related litigation, and other timely, legal hot topics.

Conservancy Districts and Flood Retention: The Good, Bad, and Ugly
John M. Hoopingarner, McMahon DeGulis LLP
A lessons-learned approach that will appeal to water managers and stormwater utilities alike. This presentation will focus on the successful formation and operation of the Muskingum Watershed Conservancy District and its watershed management practices, reviewing the challenges of funding the operation and maintenance of dams and reservoirs.

Effective Stormwater Controls for Reducing Nutrient Impairments in an Urban Watershed
Stephen Haughey, Frost Brown Todd, LLC
Stormwater capture/control design and O&M practices adversely impacts nutrient loading, resulting in biological impairment in urban watersheds. Improvements in design, O&M, and training will be presented. A summary of local regulations across Ohio and model ordinance language recommended for local stormwater authorities will be provided.

Maui Ruling Impacts on Stormwater Discharges to Groundwater
Adrienne Nemura, Geosyntec Consultants
This presentation will describe possible impacts from the U.S. Supreme Court's 2020 ruling on the Maui case and present methods to mitigate compliance risk for groundwater discharges that may be functionally equivalent to a surface water discharge.

Could a General Nutrient Permit Help the Lake Erie Basin?
Nathaniel Morse, Vorys, Sater, Seymour and Pease LLP
A general nutrient permit is a regulatory alternative that has been implemented in other watersheds to protect polluted waters. Using case studies, what could a nutrient general permit look like for Lake Erie? What would be the benefits and possible drawbacks?

Modeling and Research

2D Modeling Concepts for Dams, Streams, and Wetlands in Ohio
Matthew Marquis, Hull & Associates, LLC
This presentation will demonstrate advances in 2D hydraulic modeling and how the latest updates and capabilities in the HECRAS software are used to support engineering design and restoration work. The presentation will focus on recent projects related to dams and stream and wetland restoration in Ohio.

Climate Change Impacts on Urban Streamflow: Implications for Stormwater Management
Zia Ul Hassan and Anne Jefferson, Kent State University
Climate change may increase urban flooding and reduce effectiveness of existing stormwater controls. We quantify climate change effects on flow in West Creek (Parma, Ohio) using PCSWMM and four regional climate models. As precipitation intensity increases, all flows will increase, with the biggest change occurring for moderately high flows.

Integrated 1D-2D Modeling for Flood Hazard Delineation
Dustin West and Chris Reichle, Hazen and Sawyer
This presentation will describe the development, application, and benefits of an integrated 1D/2D SWMM model to delineate a flood hazard boundary and flooding impacts to homes within MSDGC's service area.

Proper Sizing of Stormwater Control Measures
Greg Williams and Dan Fajman, StormTrap LLC
Attendees will learn about different ways to model rainfall, runoff, and removal to predict the performance of stormwater control measures (SCMs). The strengths and weaknesses of different methods will be discussed. This will help planners understand and optimize the cost and performance of SCMs.

Watershed Surface Coefficient Assessment with Unified Runoff Time Implications
Ken Kagy, City of Milton
The presentation attempts to standardize the watershed runoff coefficients applied among other time of concentration equations. The evaluations produce a comparison of empirical equations with conventional velocity estimations. An alternative is presented for estimating the time of concentration in small watersheds.

Biomimicry as Nature-Based Methodology for Coastal and Stormwater Infrastructure Design
Elena Stachew, Biohabitats and The University of Akron
Biomimicry is the conscious emulation of natural forms, processes, and ecosystems to create sustainable designs. This presentation highlights how biomimicry informs green coastal infrastructure design for Lake Erie, with emphasis on the beginning steps of biomimetic design. Suggestions are offered on how to apply biomimicry to stormwater infrastructure design.

Dam Breach and Inundation Mapping
Patrick McMahon and Salley A. Reamer, S&ME
The development of multiple dam breach and inundation analyses for reservoirs in central Ohio will be reviewed. The tools and approaches used in the analyses and the virtues and challenges of performing these analyses in one versus two dimensional models will also be discussed.

Stormwater Retrofits

Build It and They Will Come
Gregory Kacvinsky, OHM Advisors
A successful $7.4 million flood control project in Ann Arbor, Michigan, leveraged FEMA grant funding to decrease the floodplain elevation nearly seven feet in a commercial/residential area near downtown while enhancing pedestrian access to key destinations.

City of Avon Lake Stormwater Infrastructure Update
Joseph R. Reitz, City of Avon Lake
Jennie S. Celik and Douglas Mohn, HDR, Inc.
The City of Avon Lake will provide an update of their planning, design, and construction of stormwater infrastructure upgrade projects. Since 2017, the City designed or constructed a total of 19,600 LF of stormwater pipe, which includes unique inverted pavement design and permitting for stormwater outfall replacements along Lake Erie.

Getting Rain Gardens Built without Lifting a Shovel
Susan Bryan, Washtenaw County Water Resources
Elizabeth Hiser, Cuyahoga County SWCD
Laura Bonnell, Chagrin River Watershed Partners
Natalie Gertz-Young, Lake County SWCD
Learn about a training program for residents and landscape professionals that yields 80 rain gardens a year, known as the Master Rain Gardener Certification class. This program fulfills permit requirements for pollution reduction and public education, and results in rain garden retrofits, grassroots political support, and trained maintenance volunteers.

What to Do When Your Project Has Topsoil Replacement/Restoration
Chris Vasco, Cuyahoga County SWCD
Ohio EPA's Provisional Practice Standard of Soil Management is another way to reduce stormwater runoff from a site. In construction, areas deemed as Topsoil Replacement or Soil Profile Restoration are to follow the requirements within the Provisional Practice Standard. Learn how to properly implement these practices to ensure compliance.

Curb and Gutter Modifications as Pretreatment for Green Infrastructure
Alec Grimm, The Ohio State University
Road sections were constructed of EPS foam in the lab and alterations were made to both the curb and gutter to create roughness. Simulated stormwater passing over this roughness was assessed for sediment capture. Designs that implemented combined curb and gutter roughness could serve as effective pretreatment for green infrastructure.

Retrofitting Green Stormwater Infrastructure to Sustainably Address Changing Storms
Matthew Jones and Lisa Jeffrey, Hazen and Sawyer
An analysis of changes in storm characteristics and typical hydrologic impacts of green stormwater controls reveals circumstances where green stormwater infrastructure can support climate resiliency and broader sustainability objectives.

The Evolution of Turf Reinforcement Mat Technology
Timothy Lancaster, GrassWorx LLC
This presentation discusses the evolution of turf reinforcement mat (TRM) technology, with emphasis on the latest innovations known as hybrid-turf instant armor mats. These products enable the use of vegetation in place of hard armor materials such as rock riprap in high flow channel, steep slope, levee, and shoreline applications.

Industrial Compliance and Stormwater Management

Industrial Stormwater: Defining, Monitoring, and Managing Water under NPDES
Julie Morelli, POWER Engineers, Inc.
Industrial sites may generate process water. Processes may come into contact with stormwater. Stormwater may come into contact with industrial activities. Learn how to define water sources at industrial sites, monitor them in accordance with the Clean Water Act, and streamline your permitting and management approaches.

Industrial Stormwater: Not Just Your Father's Stormwater
Gary Lohse, Hydro International
This paper provides a detailed overview of industrial stormwater from various types of industries, the permits which may be required, the various pollutants which will typically have to be removed, and a comparison of different types of treatment associated with these pollutants.

Navigating Industrial Stormwater NPDES Permits: SWPPPs, BMPs, and Benchmarks
Jennifer Conroy, Brian Tornes, and Brian Yates, Burgess & Niple
Stormwater permits for industrial facilities can be a challenge: designing the BMP, managing quality and quantity of stormwater, developing the SWPPP, collecting stormwater samples, and meeting permit benchmarks.

Roundtable Discussions

Transportation Roundtable
Jonathan Prier, Ohio Department of Transportation
Mark McCabe, WallacePancher Group
Open discussion of current topics associated with managing stormwater on transportation projects including updates on design guidance, regulatory, research, and erosion and sediment control.

Ohio EPA Roundtable
John Matthews and Jason Fyffe, Ohio EPA

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