

2018 Annual Meeting
and Trade Show

**MINNESOTA
ASSOCIATION OF
WATERSHED
DISTRICTS, INC**



Land and Water Shall be Preserved



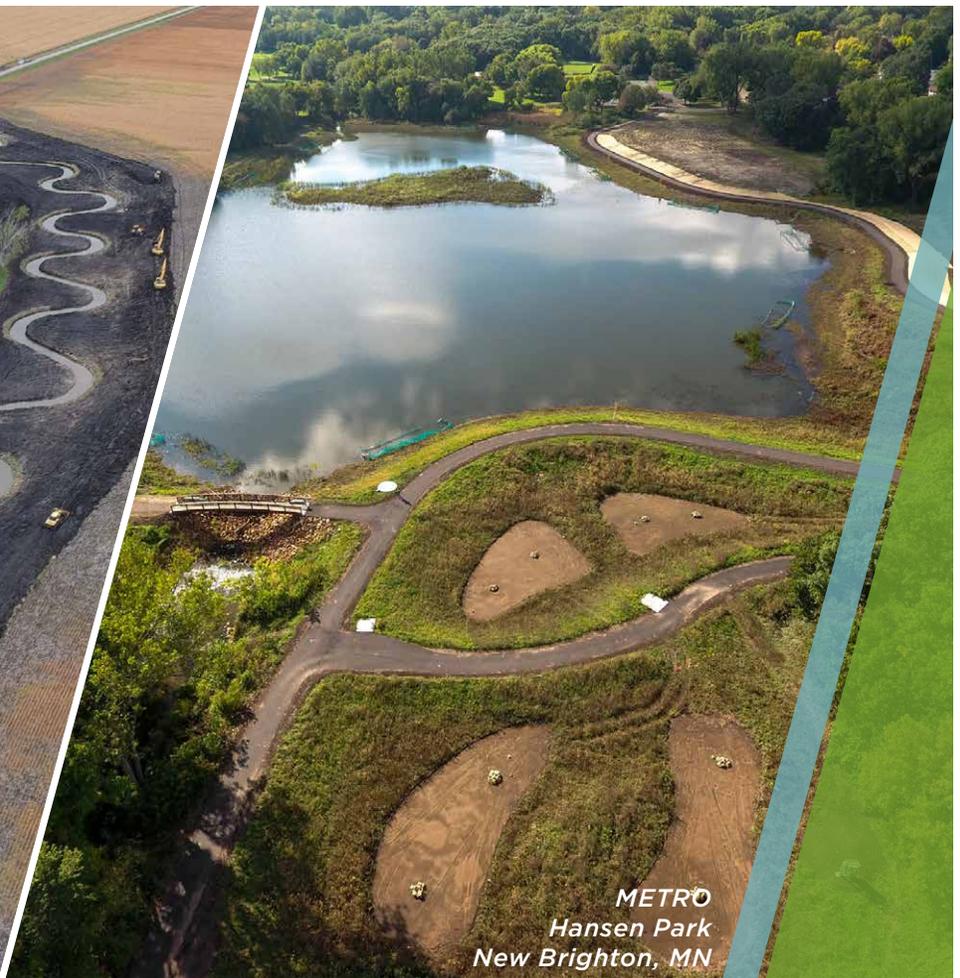
November 29 - December 1
Arrowwood Conference Center
mnwatershed.org

#MAWD18





RURAL
Wolverton Creek
Near Comstock, MN



METRO
Hansen Park
New Brighton, MN

Bridging the Rural/Metro Divide

Houston Engineering, Inc. (HEI) has long partnered with Minnesota watershed districts to manage one of our most precious resources: water.

For more than 50 years, we have complemented traditional water resources engineering and environmental science with innovative technology to create impactful solutions serving watersheds in rural and metro areas from flood control and drainage to stormwater management and more.

Stop by our booth and check out our presentations to learn how we're applying innovative technology and our award-winning expertise to help watersheds across Minnesota bridge the rural/metro divide.

Proud Platinum Sponsor of MAWD



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HEI & Partner Presentations

Friday, November 30

Concurrent General Session V: 2:00 – 2:45 pm

Bridging the Rural/Metro Divide: Flood Control

Corey Henke (Buffalo Creek WD) and Chris Otterness (HEI)

New Treatments and Technology

Kyle Axtell (Rice Creek WD) and Dennis McAlpine (HEI)

Bridging the Rural/Metro Divide: Models for a Successful Implementation

Robert Sip (Red River Watershed Management Board) and Jerry Bents (HEI)

Concurrent General Session VI: 2:45 – 3:30 pm

Bridging the Rural/Metro Divide: Flood Control

Phil Belfiori (Rice Creek WD) and Chris Otterness (HEI)

Concurrent General Session VII: 3:30 – 4:15 pm

Bridging the Rural/Metro Divide: Flood Control

Bruce Albright (Buffalo Red River WD) and Erik Jones (HEI)

Bridging the Rural/Metro Divide: Models for Successful Implementation

Drew Kessler (HEI), Mitch Enderson (Lac Qui Parle-Yellow Bank River WD), Margaret Johnson (Middle Fork Crow River WD) and Cris Skonard (North Fork Crow River WD), (Co-Author – Buffalo Red River WD)

We're glad you're here

Thank you for joining us this year at the 2018 MAWD Annual Meeting and Trade Show in Alexandria, MN. The Annual Meeting provides an opportunity for watershed district managers, staff, and key partners to join each other in professional development and training seminars. It also provides opportunities for watershed officials and staff to meet vendors, consultants, and state and federal agencies from across the country at the Trade Show.

We would like to thank our Events Committee for their work and dedication in assisting with the development of our program this year, as well as to those who submitted an abstract and agreed to present at our workshops on Friday, November 30th. Finally we want to thank our exhibitors and annual sponsors for their financial contributions and the excitement they bring to our Annual Trade Show.

In this packet you will find more details about the programming and events included in the Annual Meeting agenda.

New activities and programs for this year include:



Night at the Movies

Each Watershed District has been invited to submit their best video highlighting their district to be played Thursday night. The “Best Picture” award will be presented at the Friday night banquet.

Annual Sponsorship Levels

We have created four sponsorship levels for our exhibitors to select from which will grant them registration to our Annual Conference and Trade Show, our Summer Tour, and ongoing promotions throughout the year.



Watershed District Outreach and Education Award

All attendees will have access to vote for the WD with the best Outreach and Education Program on the Trade Show floor. There will be a row of Watershed District booths set up to showcase their work and attendees will have a ballot to vote. A winner will be announced and awarded a traveling trophy during Friday's banquet.



President's Report

By Ruth Schaefer, MAWD President

Welcome to the 2018 MAWD Annual Meeting & Trade Show. You will notice many changes to this annual event, now 40+ years old. Thank you to Annual Meeting Committee and our Program Manager who have been working on this event since this summer. Many of these changes were based on your recommendations. We appreciate our member contributions!

This year marks the first year that MAWD has a full time Executive Director. Emily Javens has taken us all into new directions and increased our presence with state agencies and other partners in water management. Her energy and knowledge will serve us all well.

The MAWD website has undergone tremendous change. See the MAWD Updates section for important topics of: Administration; Education & Events; Legislative Activities for specific House and Senate bills; and Communication and Advocacy.

Our Strategic Plan has been successful in accomplishing many of the goals members identified as high priorities. 2019 will be the last year of our current strategic plan. The Board will appoint another MAWD Strategic Plan Committee for development of the 2020-2022 plan.

Our board accepted the recommendation of the Governance Committee to ask members whether Watershed Management Organizations (WMOs) should be allowed to become full voting members of MAWD. Their unique perspective will provide our organization with a stronger and larger presence. This combined presence at the capitol will help us legislatively be a stronger voice of land and water protection and preservation.

The MAWD Legislative Breakfast was attended by many members and is our formal opportunity to meet with our legislators. On-going contact throughout the year is key to keeping our message out front and center. There is power in numbers though, so if you missed last year's event, please consider attending the 2019 event.

The Summer Tour was hosted by Riley Purgatory Bluff Creek Watershed District and Lower MN Watershed District along with the Carver Water Management Organization. Highlights of the event were the barge tour down the Minnesota River, a bus tour and leadership training for staff and managers. Thank you to the MAWD Summer Tour Committee for their time and commitment to our association.

I would like to express my sincere thank you to Craig Leiser, our current long time treasurer. He is stepping down from the MAWD Board at the end of this year. Craig has been a thoroughly active board member and treasurer. Craig chaired the Bylaws and MOPP committees and was actively involved in the Transition Committee. Craig has always been 110% involved in MAWD. If you see Craig at the Annual Meeting please give him your greeting and thank him for his years of service to MAWD. We will miss his presence on the Board. Thankfully, he will still remain an active manager.

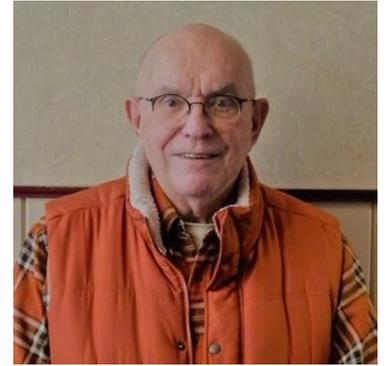
2018 MAWD Board Members



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MAWD Proposed Budget - FY 2019 DRAFT
October 1, 2018 - September 30, 2019

	FY2019	FY2018	FY2018	FY2017	FY2016
	Oct '18-Sep '19	Oct '17-Sep '18	Oct '17-Sep '18	Nov '16- Sep '17	Nov '15-Oct '16
INCOME	Proposed BUDGET	Last Year's BUDGET	FY2018 ACTUAL	FY2017 ACTUAL (11 months)	FY2016 ACTUAL
Dues - Watershed District Members	216,600	225,000	218,421	117,590	121,412
Dues - Associate Members (WMOs)	2,500	2,500			
Annual Convention					
Annual Meeting Registrations	55,000	55,000	59,129	52,068	49,390
Annual Trade Show	25,000	13,000	21,655	22,250	11,495
Pre Conference Workshop: Drainage	6,500	5,000	6,800	5,595	9,010
Pre Conference Workshop: Administration	2,400	600	2,550	775	600
Pre Conference Workshop: Managers	2,400	2,500	2,295	2,950	4,250
Legislative Day at the Capitol	9,000	9,000	8,185	8,325	7,450
Summer Tour	17,500	17,500	18,891	21,469	14,390
MAWD Workshops	2,500	2,500	0	2,720	3,000
Interest	100	100	66	111	241
TOTAL	339,500	332,700	337,992	233,853	221,238
EXPENSES					
Administration & Program Management					
General Administration - Staff	70,000	90,000	70,747	62,311	81,345
Benefits /Taxes for Salaried Employees	30,000	30,000	15,069		
General Administration - Contract	12,000				
Communications, Conferences - Contract	36,000	48,000	48,835	33,750	10,000
Legislative Affairs					
Lobbying - Staff (includes Administrative Lobbying)	24,500				
Lobbying - Contracted Services	40,000	35,000	48,251		
Lobbyist Expenses	1,000	1,000	1,395	3,647	1,754
Professional Services					
Legal Fees	2,000	2,000	1,377	1,308	
Accounting and Audit Fees	6,000	5,000	4,650	4,100	3,550
Liability Insurance	1,800	1,700	1,645	1,645	1,551
Office Expenses					
Rent	3,600	3,000	2,400		
Mileage and General Office Expenses	11,250	7,200	11,965	4,257	3,994
Dues, Other Organizations	500	500			
Memorials	250	250	50		
Board and Committee Meeting					
Per Diems and Expenses - Directors	20,000	34,000	16,448	22,092	26,400
Board and Committee Meeting Expenses	1,500	1,500	1,081	1,440	1,471
Special Projects					
WD Handbook, Surveys, etc.	1,600	1,500		1,361	7,250
Education and Events					
Annual Convention					
Annual Meeting	40,000	40,000	45,073	39,208	37,079
Annual Trade Show	8,500	9,000	8,631	6,322	9,569
Pre Conference Workshop: Drainage	2,500	2,000	2,871	1,817	2,993
Pre Conference Workshop: Administration	1,000	500	587	339	
Pre Conference Workshop: Managers	1,000	2,500	1,754	580	2,288
Legislative Breakfast	5,500	7,500	6,246	7,045	7,177
Summer Tour	12,500	20,000	9,483	16,000	14,402
Credit Card Processing Fees	3,500	3,500	3,020	3,323	2,791
Special Workshops	2,500	2,500		2,271	
Partner Event Participation	500				1,153
TOTAL	339,500	348,150	301,578	212,816	214,767
STATEMENT OF NET POSITION					
Assets, Cash and Equivalents, actual			217,693	154,113	140,033
Deposits received, deferred				(4,799)	(11,385)
Liabilities, accounts payable, taxes payable			(34,352)	(2,387)	(2,760)
ENDING NET ASSETS			183,341	146,927	125,888

2018 MAWD Accomplishments



MAWD's Road Map to the Future!

2016-2019 Strategic Plan Update

In 2016, MAWD set out to make the following changes by the end of 2019. Here is an update on completed, ongoing, and remaining tasks:

COMPLETED ACTIVITIES

- ✓ **Approved bylaws changes to allow for the hiring of staff and split Ray's duties into two positions: Executive Director and Lobbyist.**
- ✓ **Contracted for services to run the following events: Annual Meeting and Trade Show, Summer Tour, Legislative Breakfast, Training Events Solely Sponsored by MAWD.**
- ✓ **Contracted for services for a new website and ongoing website maintenance and social media outreach.**
- ✓ **Determined and implemented a new dues structure that would provide enough revenue for the "New MAWD".**

INCREASED AND ONGOING ACTIVITIES

- * **Provide a regular presence at the Capitol and with state agencies, both in and out of session.**
- * **Provide regular communications on session and state agency activities.**
- * **Communicate and provide more training opportunities throughout the year.**

FUTURE ACTIVITIES

- ⇒ **Establish a formal MAWD office.**
**Note: In January 2019, MAWD will be co-located with Capitol Region Watershed District.*
- ⇒ **Contract for hire for administrative services.**
**Note: In January 2019, MAWD will have a small contract with Capitol Region Watershed District to provide some support services.*
- ⇒ **Expand membership to include water management stakeholder organization and other service providers.**
- ⇒ **Apply for training grants.**

Program Schedule Overview

WEDNESDAY, NOVEMBER 28

Arrowwood Resort and Conference Center
Alexandria, MN

9 A.M.-2 P.M.	MN Association of Watershed Administrators (MAWA) Meeting
5 P.M.-7 P.M.	MAWA Social Hour and Reception

THURSDAY, NOVEMBER 29

PRE-CONFERENCE SESSIONS

8 A.M.-9 A.M.	Registration
9 A.M.-4 P.M.	Basic Watershed Management Workshop
9 A.M.-4 P.M.	Minnesota Drainage Seminar
9 A.M.-4 P.M.	Human Resources and Personnel Management Workshop
12 P.M.	Lunch

ANNUAL MEETING

4 P.M.-6 P.M.	MAWD Board of Directors Meeting
6 P.M.-9 P.M.	Registration, Trade Show Opening and Welcome Reception
7 P.M.-8:30 P.M.	Night at the Movies

FRIDAY, NOVEMBER 30

7 A.M.-9 A.M.	Breakfast - Trade Show Floor
8 A.M.-10:45 A.M.	MAWD Business Meeting and Resolutions Hearing
8 A.M.-8:40 A.M.	Concurrent General Sessions I
9 A.M.-9:40 A.M.	Concurrent General Sessions II
10 A.M.-10:40 A.M.	Concurrent General Sessions III
11 A.M.-11:40 A.M.	Concurrent General Sessions IV
11:15 A.M.-12 P.M.	Regional Caucuses
12 P.M.-2 P.M.	Luncheon Keynote Speaker: Jeff Strock, Professor and Soil scientist, University of Minnesota DNR Watershed District of the Year BWSR Watershed District Employee of the Year Awards
2 P.M.-2:45 P.M.	Concurrent General Sessions V
2:45 P.M.-3:30 P.M.	Concurrent General Sessions VI
3:30 P.M.-4:15 P.M.	Concurrent General Sessions VII
5 P.M.-6:30 P.M.	Social Hour and Live Music
6:30 P.M.-8 P.M.	Dinner and Awards Watershed District Program of the Year Award Watershed District Project of the Year Award MAWD Convention Award - Night at the Movies "Best Picture" MAWD Convention Award - Best Education and Outreach Program Booth

SATURDAY, DECEMBER 1

7 A.M.-9 A.M.	Last Chance Networking Breakfast
9 A.M.-11 A.M.	MAWD Board of Directors Meeting

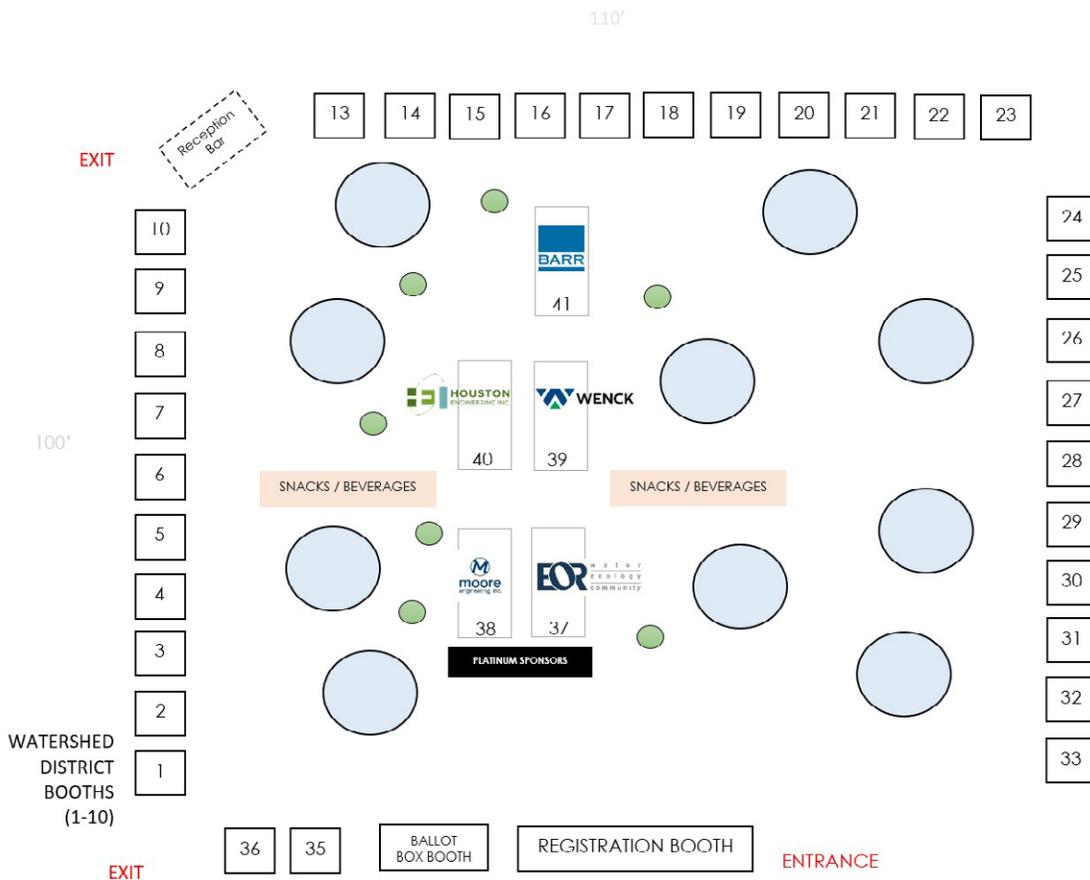
2018 Trade Show Floor

Booth Company Name

40	Houston Engineering
39	Wenck
37	EOR
38	Moore Engineering
41	Barr Engineering Co.
13	Widseth Smith Nolting
17	RESPEC
16	HDR Inc.
15	HAB Aquatic Solutions
14	ISG
18	HR Green, Inc.
19	Carp Solutions LLC
20	SRF Consulting Group, Inc.

Booth Company Name

21	TCIC, Inc
22	RMB Environmental Laboratories, Inc
23	MN Department of Natural Resources
24	LimnoTech
25	Pace Analytics
26	Red River Watershed Management Board
27	WSB
28	SC Recon
29	Red River Retention Authority
30	UMRSWPP
31	Tech Sales Company
32	Bio Clean, a Forterra Company
33	Prinsco



PLATINUM SPONSOR – 2 (6' TABLES) + 2 CHAIRS
 ALL OTHER BOOTHS (6' TABLES) + 2 CHAIRS

● HIGH TOP TABLES
 ○ DINING TABLES TO SEAT 10

Introducing our



BOOTH

CONTACT

COMPANY INFO

37



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A water resource-based engineering and environmental consulting firm that specializes in: water resources engineering, watershed planning and modeling. Environmental compliance, biological surveying, and restoration. Sustainable site design, planning and landscape architecture.

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A civil engineering consulting firm owned entirely by its employees. Over the past half century, our work in water resource management has contributed greatly to the growth and sustainability of our region. We are specialists in watershed hydrology, flood risk reduction, agricultural drainage and floodplain issues. We serve over 13 watershed and water resource districts across two states.

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Wenck provides engineering, environmental, construction, and response services to deliver single-source real estate solutions for our clients.

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HEI a multidiscipline consulting firm whom clients rely on across the nation for infrastructure, environmental, planning, and technology solutions. With offices across North Dakota, Minnesota, South Dakota, and Iowa, HEI has been able to serve clients for more than 50 years thanks to the efforts of our exceptional staff and by complementing standard practices with the latest ideas and technologies. When our clients are successful, we are successful.

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Barr provides engineering and environmental consulting services to clients across the Midwest, throughout the Americas, and around the world. We have been employee owned since 1966 and trace our origins to the early 1900s. Working together, our 750 engineers, scientists, and technical specialists help clients develop, manage, process, and restore natural resources.

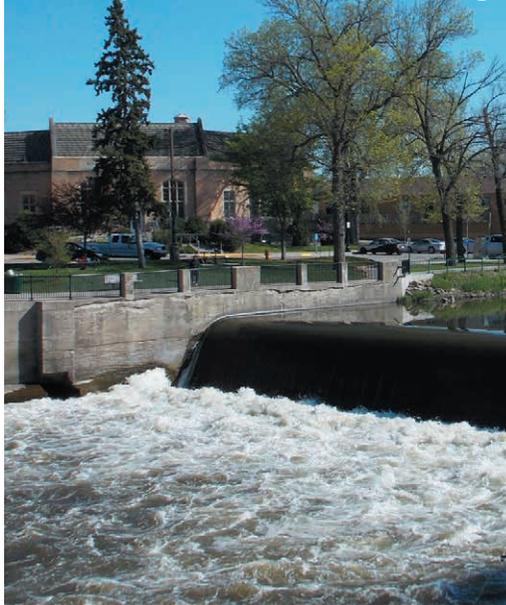


water
ecology
community

Private buy-in via creative integration and realization of benefits



Assisting Watersheds & LGU's in complex watershed planning



Ensuring the protection of MN's most precious resource



Leapfrogging stream evolution to lesson pollutant loading

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Phone: 651.770.8448

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Let's welcome our



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Clean water, good roads, safe bridges, dynamic spaces, and robust communities are central to our quality of life. WSN supports our communities through engineering, architecture, land surveying, and environmental services for public and private clients throughout the Upper Midwest.

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Julie Blackburn
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A global leader in water science, geoscience, engineering, and data and Internet technology, RESPEC has a 48-year reputation of technical excellence.

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Nate Dalager
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The water cycle is a beautiful force. One we all depend on and influence. HDR's professionals work with clients to restore and sustain water resources across the world. Consistently ranked among Engineering News-Record's Top 10 Water Design firms, we approach project work from an integrated perspective.



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- Hydrologic and hydraulic modeling
- Stream and shoreline restoration design
- Floodplain evaluation and mapping
- Green and gray infrastructure
- Low impact development
- Wetland delineation, restoration, mitigation
- Construction administration and observation
- Water quality modeling and sampling
- Environmental compliance and permitting
- MS4 support services



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WATER MANAGEMENT SOLUTIONS

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Advancing Rapidly

We're a University of Minnesota startup company that specializes in developing and applying innovative tools & strategies for common carp management

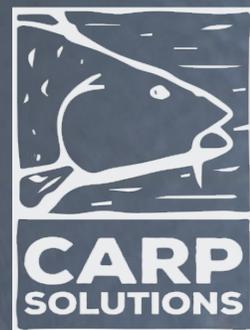


Photo: David Hansen
University of Minnesota

- Citizen-Aided carp management
- Portable, low-voltage electric barriers
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Your Vote Counts



**VOTE FOR THE WATERSHED
DISTRICT WITH THE BEST
OUTREACH AND EDUCATION PROGRAM**

Located on the west side of the Trade Show Floor you will find all the Watershed District tables showcasing their best Outreach and Education ideas. Use the voting ticket you received in your nametag holder to cast your vote. The winning WD will be announced at the Banquet and Awards reception on Friday night.



2017 Award Winners



Watershed District of the Year



Cedar River Watershed District has taken an accelerated implementation effort in the past decade to establish goals and start implementing strategies to address those goals. The Cedar River Watershed District is in south-central Minnesota, primarily in an agricultural watershed, with small communities that make up parts of the district's overall 435 square miles of land.

For more information on the awards please visit our website mnwatershed.org



Watershed District Employee of the Year

Phil Belfiori, District Administrator for the Rice Creek Watershed District (RCWD), maintains a focus on outcomes for district projects, which mirrors the long-term view he and his team take with project development.



This approach has helped Phil position the district as an innovative leader and is one reason why Phil has been named the Minnesota Association of Watershed Districts (MAWD) 2017 Outstanding Watershed District Employee of the year.



2017 Award Winners

Watershed District—Program of the Year

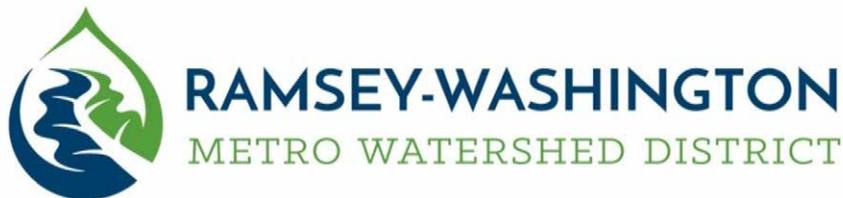


Tintah River Watch Program

River Watch is a citizen monitoring program of the International Water Institute (IWI) which involves students and teachers in certified collection of water quality data, analysis and presentation of that data, group leadership, grassroots community activism, and state level environmental activism. The Campbell-Tintah River Watch program has participated and excelled in all of these areas.

For more information on the awards please visit our website mnwatershed.org

Watershed District—Project of the Year



Keller Golf Course ecological restoration work. The course boasts 26 acres of high-quality restored natural areas, the most of any golf course in the Twin Cities. It is a nationally certified Audubon Cooperative Sanctuary, and more than 110 bird species have been identified on its grounds. A mix of native prairie, wetland and woodland habitat also provides home to deer, foxes, pollinators and other wildlife.





For more than a century, HR Green has been dedicated to providing services that our clients need to achieve success and protect water resources, critical infrastructure, and public/private property. Join us at our booth to learn more about our solutions for:

- Stormwater studies and master plans
- Comprehensive watershed analysis and planning
- FEMA coordination and mapping
- Stormwater BMP design and optimization
- Flooding analysis and solutions
- Storm sewers and pumping systems design
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▷ St. Paul, MN
Phone 651.644.4389

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TRANSPORTATION + WATER + GOVERNMENTAL SERVICES + LAND DEVELOPMENT + ENVIRONMENTAL + CONSTRUCTION

ISG

COLLABORATION + INGENUITY

ISG recently partnered with the Heron Lake Watershed District to help obtain funds for the Toe WMA wetland enhancement project. In addition, ISG is collaborating with the DNR, drainage authority, and land owners to ensure success for a sustainable water quality project.

ARCHITECTURE + ENGINEERING + ENVIRONMENTAL + PLANNING



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CONFERENCE WORKSHOPS

Concurrent General Session I ◦ Friday, November 30 ◦ 8 A.M.-8:40 A.M.

Research, Analysis, and Planning	WD Programs: Permitting and Education	Data Management
<p>Harmful Algal Bloom Management in Minnesota Watersheds: Risks, Monitoring, and Controls. Watershed Districts spend countless hours and millions of dollars every year reducing phosphorus loading to combat eutrophication and nuisance algae blooms in their lakes. Yet little attention is paid to the risks and monitoring of these potentially toxic Harmful Algal Blooms (HABs). This presentation will provide guidance to watershed managers for risk assessment, sampling plan development and cost-effective control strategies. We will discuss potential risks faced by Minnesota Watershed Districts, selection and optimization of HAB monitoring programs throughout the watershed and alternatives for control strategies for the diverse waterbodies. HABs are a timely water quality issue that must be addressed on a watershed scale. It is critical for watershed managers to understand risk factors, sampling protocols and effective control strategies before a HAB occurs to minimize ecologic and public risk.</p> <p>Anne Wilkinson-Wenck, Joe Bischoff-Wenck, Claire Bleser-Riley Purgatory Bluff Creek WD</p>	<p>When Solar Comes to Town: The community solar garden industry is booming in Minnesota and projections indicate this trend will continue. Solar gardens are typically sited on rural parcels used for crop production or otherwise undeveloped land. Land for solar gardens is leased for 25+ years, after which the site may be decommissioned and returned to its former use. Installation of a solar garden is a change of land use that requires a host of regulatory approvals. The roads, equipment and solar panels are considered impervious and therefore require stormwater management. MPCA provides guidance to meet state standards but this guidance does not necessarily translate to watershed district standards. This talk provides valuable insights into stormwater management and will discuss potential benefits and issues related to vegetation, wildlife, soils, and water quality for an industry that may soon be (if not already) in your watershed.</p> <p>Jim Shaver-Carnelian Marine St. Croix WD, Kristine Maurer-EOR</p>	<p>The Metro Stormwater Geodata Project: At present, no data standard has been developed or adopted for the efficient translation and aggregation of geospatial data representing stormwater assets in Minnesota. In spring 2018, the MetroGIS collaborative, in partnership with private interests and public-sector agencies in the metro region have begun to document the specific business needs for, uses of, and needed contents and details for developing a data standard to help bridge this gap. This presentation will outline the benefits of developing this resource, its progress to date, and the anticipated steps toward its completion and implementation as a resource for the mapping, flow modeling and engineering interests that would make use of it in bringing data together.</p> <p>Geoffrey Maas, GISP-MetroGIS/Metropolitan Council</p>

Concurrent General Session II ◦ Friday, November 30 ◦ 9 A.M.-9:40 A.M.

Research, Analysis, and Planning	WD Programs: Permitting and Education	Data Management
<p>Does year-round aeration improve lake water quality? 3D modeling results are convincing Lake aeration is largely a misunderstood process. For 40 years Sweeney Lake homeowners have operated an aeration system year-round—intending to oxygenate the water, improve conditions for native fish and reduce the buildup of phosphorus and harmful algal growth in the impaired deep lake. While the TMDL study established a path toward better water quality, there was still a question about whether the lake’s aeration system is part of the problem or the solution. As a result, the Bassett Creek Watershed Management Commission (BCWMC) initiated a study that employs three-dimensional water quality modeling to simulate sediment phosphorus release and phytoplankton/zooplankton dynamics, with and without aeration, under different management efforts and climatic conditions. Temperature and dissolved oxygen outputs identified the best habitat for desired biota. This presentation will illustrate how animated modeling results improve our understanding of the problem and convince lake users that recommended management actions will meet the goals.</p> <p>Greg Wilson-Barr Engineering Company</p>	<p>Army Corps Regulatory Program Hot Topics: Permits, Jurisdiction and Policy Changes. In the past two years, the Army Corps St. Paul District’s Regulatory program has streamlined the suite of general permits available to authorize projects with no more than minimal adverse effects, has been subject to various national legal decisions on jurisdiction, and has worked on numerous internal and external aquatic resource mitigation policy updates. This talk will cover the District’s goals for these efforts and provide an overview of new permits, policies, and jurisdiction-related topics.</p> <p>Jill Bathke-St. Paul District Army Corps of Engineers</p>	<p>Development of a GIS-Based Water Quality Model for the City of Minneapolis: The City of Minneapolis needed a decision-making tool developed to identify, analyze, and prioritize water quality areas of concern to inform a variety of City initiatives. A key initiative is to incorporate water quality BMPs into planned City capital projects to best maximize City resources. To meet the City’s goals, Barr Engineering Co. developed a citywide geographic-information-system-based (GIS-based) water quality (WQ) model to (1) quantify runoff and associated pollutant loading (i.e., total phosphorus (TP) and total suspended solids (TSS)) generated from various land uses (roadways, housing areas, industrial areas) and (2) estimate the runoff and pollutant removal that occurs at stormwater best management practices (BMPs) such as ponds, swales, and rain gardens. As a planning-level tool, the model will be used by City staff for big picture analysis of opportunities to improve the quality of stormwater being discharged through the municipal system into the lakes, creeks and the Mississippi River.</p> <p>Michael Brice McKinney - Barr Engineering Co., Nicolas Cantarero-City of Minneapolis</p>

CONFERENCE WORKSHOPS

Concurrent General Session III ◦ Friday, November 30 ◦ 10 A.M.-10:40 A.M.

Research, Analysis, and Planning	WD Programs: Permitting and Education	Data Management
<p>Watersheds Role in AIS: From Committee Concepts to Rapid Response. Like many watershed organizations, the Bassett Creek Watershed Management Commission (BCWMC) found it difficult to know their role in aquatic invasive species (AIS) management. The BCWMC convened an Aquatic Plant Management/Aquatic Invasive Species (APM/AIS) Committee that included BCWMC and city staff, lake groups, park districts, Hennepin County, Met Council, and the MnDNR. The committee identified activities needed to address AIS, identified the entities already filling all or parts of those roles, and determined how they could augment those activities. The committee recommendations included a new APM/AIS budget and development of an AIS rapid response plan for key AIS species in priority lakes. The plan was developed after discussions with various organizations and is the first of its kind to involve multiple partners. It outlines the actions required to address new AIS infestations and defines the roles of the BCWMC and partners so they can efficiently and effectively address new infestations.</p> <p>Laura Jester- Bassett Creek Watershed Management Commission, Margaret Rattei-Barr Engineering Co., Karen Chandler-Barr Engineering Co.</p>	<p>The Carrot and Hammer: Picking up where last year's permit-enforcement session left off, three experienced enforcers will describe and demonstrate legal tools available for ensuring compliance with watershed district permits, orders and rules. Enforcement efforts can be costly in terms of both staff resources and outside support, so the presenters will review ways to efficiently scale your efforts with real-world scenarios to illustrate best practices. The presenters encourage you to bring your own trials and tribulations with ne'er-do-wells for some collaborative problem-solving.</p> <p>Maggie Karschnia-Prior Lake Spring Lake WD, Forrest Kelley-Capitol Region WD; Michael Welch-Smith Partners PLLP</p>	<p>Monitoring Program Evolution: Capitol Region Watershed District (CRWD) established a monitoring program in 2004 to collect data on the water resources of the District. The goals of the program are to identify water quality problem areas, quantify runoff and pollutant loading, and promote understanding of District water resources. As the monitoring program expanded, the ability to effectively collect and use data was hampered by inefficient methods and limited staff time. CRWD has been able to optimize efficiency and accuracy by automating manual tasks, reducing time spent in the field by implementing telemetry, and developing a web data portal for user-generated reports. The monitoring program has been further optimized by tailoring monitoring site selection, equipment selection and sampling frequency to specific end goals. These increases in efficiency have allowed CRWD's monitoring program to continue to expand without increasing staffing or compromising data quality. CRWD hopes to share its solutions to some common inefficiencies.</p> <p>Joe Sellner-Capitol Region WD, Britta Belden-Capitol Region WD</p>

Concurrent General Session IV ◦ Friday, November 30 ◦ 11 A.M.-11:40 P.M.

Research, Analysis, and Planning	WD Programs: Permitting and Education	Data Management
<p>Grassy and Woody Riparian Shade Analysis and Implications for Restoring Biotic Health in an Urbanizing Coldwater Stream: Rising water temperatures in urban and farmed watersheds threaten the survival of coldwater biota. Managing baseflow, channel morphology, and riparian vegetation can lower temperatures, however there is limited research quantifying shade provided by grassy vegetation along narrow streams. Hemispherical photographs (HPs) were analyzed using WinSCANOPY to compare grassy and woody riparian shade along Brown's Creek, a small trout stream in Stillwater, Minnesota impaired by high temperatures and turbidity. The HP analysis results were extrapolated using LiDAR. Solitary trees were found to increase shade above 80% while grassy riparian shade ranged from 10% to 61% with an average of 34%. Implementation of a targeted shade restoration plan could reduce monthly mean stream temperatures in the summer by 0.16 to 0.52°C based on CE-QUAL-W2 model scenarios. Other strategies will be needed to address high temperatures in Brown's Creek. Targeting shade restoration will limit detrimental impacts of dense forest canopy on bank stability.</p> <p>Karen Kill-Browns Creek WD, Olivia Sparrow -U of M, Camilla Correll- Emmons & Olivier Resources, Inc.</p>	<p>River of Dreams Education Program: Most citizens are largely unaware of their local river's origins and where it travels downstream. The River of Dreams (ROD) program seeks to increase watershed understanding and sense of place among elementary students, making the next generation more aware of connections within their watershed to other rivers, lakes, oceans, and the people who utilize them. ROD is a fun and impactful education experience that gives participants a better understanding of their local rivers geography. Students are exposed to watershed concepts multiple times in ways that leave a lasting impression through writing activities, virtual tours, and a canoe launch event at a local river.</p> <p>Andrew Ulven-International Water Institute, Asher Kingery-International Water Institute, Danielle Yaste-International Water Institute</p>	<p>Minnesota's New & Improved Wetland Inventory: The Minnesota DNR is releasing the final phase of a statewide update of the National Wetland Inventory for Minnesota in the fall of 2018. The wetland inventory for Minnesota has been completely remapped using the latest GIS technology including lidar and high-resolution aerial imagery, making it the most comprehensive, current, and accurate inventory of wetlands in the country. More than just an improvement in the mapping accuracy, the new wetland inventory enhances the database to include additional wetland classification data to predict wetland functions. These data will improve our ability to support wetland management, land use planning, environmental impact assessment, and natural resource conservation and will benefit users spanning all levels of government, academia, private industry and non-profit organizations. This presentation provides an overview of the new wetland inventory along with information about how to access the data. Important features will be discussed and several example applications of the data will be highlighted.</p> <p>Steve Kloiber-Minnesota DNR</p>



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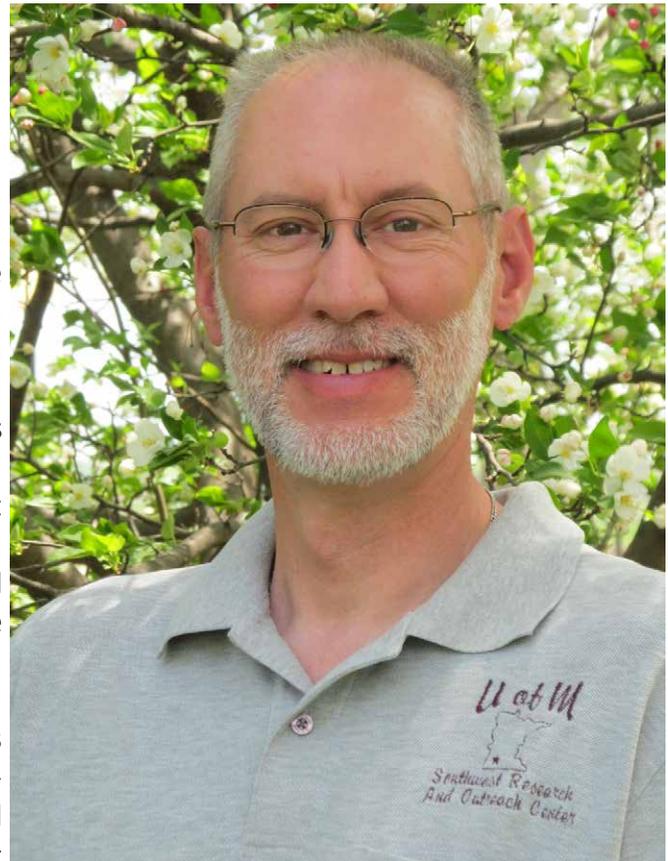
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Meet our Keynote Speaker

Jeff
Strock



Dr. Strock is a Professor and Soil Scientist in the Department of Soil, Water and Climate. He has been a member of the Faculty at the University of Minnesota since 1999 and is located at the Southwest Research and Outreach Center, near Lamberton, MN. Dr. Strock's research and outreach/education program focuses on agricultural drainage and water and nutrient management in agricultural systems, addressing production needs, and quantifying/mitigating negative off-site environmental impacts. Research includes testing and improving drainage water management practices (e.g. controlled drainage; bioreactors; vegetated, managed ditches; constructed wetlands; cover crops) to reduce nitrogen and phosphorus mobility; improving nitrogen management and understanding its storage, transformation and losses; and developing new, innovative agronomic management

practices to improve crop yield and water and nutrient use efficiency (e.g. nitrogen mineralization, supplemental irrigation). Dr. Strock's experience in these areas spans a number of states and other countries. He has a successful history of collaborating with agencies, non-profits and the broad agriculture community and he has demonstrated a strong ability to work among groups with diverse perspectives.

Friday ◦ 12 p.m. ◦ Lake Darling Ballroom

Integrated Landscape Management for Agricultural Production and Water Quality

The Minnesota Department of Agriculture (MDA) selected two projects to receive Clean Water Fund research contracts in 2017. One project, titled "Integrated Landscape Management for Agricultural Production and Water Quality" was awarded to Dr. Jeffrey Strock and colleagues at the University of Minnesota Southwest Research and Outreach Center, Lamberton. This project established a small watershed scale site where the water quantity and water quality impact of multiple, best management practices (BMPs) were measured. Research will be used to identify in-field, edge-of-field and in-stream BMP strategies for achieving improved water quality in the Cottonwood River Watershed. The project aims to demonstrate the ability to meet the dual goals of maintaining farm productivity while improving watershed conditions and water quality. Information from this project will inform farmers and state agencies on the cumulative impacts of multiple, integrated BMPs in order to meet nutrient load reduction goals.



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CONFERENCE WORKSHOPS

Concurrent General Session V ◦ Friday, November 30 ◦ 2 P.M.-2:45 P.M.

Planning and Adaptive Management	Bridging the Rural / Metro Divide: Flood Control	Bridging the Rural / Metro Divide: Models for a Successful Implementation	New Treatments and Technology
<p>Moody Lake: Using Diagnostic Monitoring and the Pareto Principle to Rapidly and Economically Meet State Water Quality Goals. Moody Lake is currently on the impaired waters list for eutrophication due to excess phosphorus, but not for much longer. The CLFLWD is in the final stage of a multi-year, multi-phase, adaptive management approach to cost-effectively reduce phosphorus loads to Moody Lake. This project utilizes the Pareto Principle (a.k.a 80/20 rule) by identifying and addressing the highest phosphorus loads using the most effective BMPs. Project effectiveness monitoring shows progress made toward reducing watershed phosphorus loads to Moody Lake. This year we will complete the remaining watershed BMPs and begin the whole-lake alum treatment using a split treatment method this fall and next year. The combination of these projects are calculated to result in Moody Lake reaching a summer average phosphorus concentration of 40 ug/L, down from a previous summer average of more than 160 ug/L. Total estimated implementation cost is ~\$1,000,000. Total lifetime phosphorus load reduction is 19,000 pounds (\$53/lb).</p> <p>Mike Kinney-Comfort Lake-Forest Lake WD, Meghan Funke-Emmons & Olivier Resources</p>	<p>Buffalo Creek WD: Basic Water Management Projects: A Watershed-City Partnership. Flooding, drainage, and water quality issues often cross municipal boundaries, even within rural watershed districts. Further complications may be introduced when issues are located along private drainage systems with no managing authority which connect to downstream municipal storm sewer. Collaboration between cities and watershed districts is necessary to solve these water issues; however, without a clear and deliberate process, navigating this relationship has the potential to become adversarial. Through the petition process in MS 103D.605, the Buffalo Creek Watershed District (BCWD) and City of Glencoe embarked on two basic water management projects that forged a new relationship, gained the trust of adjacent landowners, and provided benefits to a wide range of stakeholders. These projects also bridge the city/county divide, solving an extensive range of water issues. This presentation will include a discussion on key steps in the process, facilitating discussions with project partners, and approaching the most contentious question: "Who pays?"</p> <p>Corey Henke-Buffalo Creek WD, Chris Otterness-Houston Engineering, Inc.</p>	<p>Red River Watershed Management Board: 40 Years of Flood Damage Reduction and Continued Water Management Efforts. The Red River Watershed Management Board (RRWMB) has been in existence since 1976. The RRWMB assists its member watershed districts in addressing flooding and water management issues. The RRWMB also works across state lines with its North Dakota counterpart, and both of these entities comprise the Red River Retention Authority (RRRA). The RRRA, recently secured a Partnership Agreement with NRCS through the Regional Conservation Partnership Program (RCP) to provide funding for the development of watershed protection projects in the Basin. Currently, 20 individual sub-watershed plans are being developed throughout the basin to that will provide a wide range of benefits including Flood Prevention, Watershed Protection, Public Recreation, Public Fish and Wildlife Habit Improvement, and Agricultural Water Management. This presentation will give an overview of RRWMB governance and ongoing RCP efforts in the Basin.</p> <p>Robert Sip-Red River Watershed Management Board, Jerry Bents - Houston Engineering</p>	<p>Improving Water Quality, Flood Storage and Habitat Diversity in New Brighton's Hansen Park. Seeking to remedy declining water quality in downstream Pike and Long Lakes and reduce the risk of severe flood damage, the RCWD completed the Hansen Park Comprehensive Water Management Project, funded in part by a 2014 BWSR Targeted Watershed Demonstration Program grant. The project is expected to reduce the annual phosphorus load downstream by 150+ pounds per year, provide an additional 27.4 acre-feet of new flood storage within the park, and re-establish native habitats within the park. Learn about what made this project so ambitious, most notably a first-of-its-kind pump-controlled Iron-Enhanced Sand Filter system that uses multiple filter beds, automated valve controls, real-time water level monitoring, customizable user interface logic and remote real-time cellular control. The IESF system was designed to provide unrivaled operational and maintenance efficiency. This presentation will also touch on the site history, regulatory challenges, engineering solutions and construction procedures that contributed to the project's success.</p> <p>Kyle Axtell-Rice Creek WD, Dennis McAlpine, P.E. -Houston Engineering, Inc.</p>

Concurrent General Session VI ◦ Friday, November 30 ◦ 2:45 P.M.-3:30 P.M.

Planning and Adaptive Management	Bridging the Rural / Metro Divide: Flood Control	Bridging the Rural / Metro Divide: Models for Successful Implementation	NEW Treatments and Technology
<p>Using GRAPS in Watershed Planning In this interactive 90 minute training session, you will learn how to integrate groundwater information presented in the Groundwater Restoration and Protection Strategy (GRAPS) report into the One Watershed, One Plan (1W1P) planning process. Using actual watershed examples, participants will work in small groups to: become familiar with the GRAPS report content, utilize GRAPS maps and groundwater condition summary to identify and target groundwater issues to be addressed in the 1W1P process, establish measurable goals, and identify appropriate actions to achieve restoration or protection goals.</p> <p>Carrie Raber-Minnesota Department of Health, Annie Felix-Gerth-Board of Water and Soil Resources</p> <p>THIS IS A 90 MINUTE SESSION.</p>	<p>Rice Creek WD: Using Technology and Partnerships to Manage Stormwater in the Ag/Urban landscape. As one of the most rapidly developing areas in the state, the Rice Creek Watershed District (RCWD) uniquely bridges the gap between agricultural land use and an established urban landscape. The evolving landscape requires a corresponding evolution in how runoff is managed, as increased volumes challenge the existing conveyance systems. This presentation will describe how the RCWD has utilized technology to provide a "crystal ball" into the future of stormwater management needs, and illustrate how collaborations with municipal partners address both short term and long term challenges.</p> <p>Phil Belfiori - Rice Creek Watershed District, Chris Otterness - Houston Engineering, Inc.</p>	<p>Minnehaha Creek WD: Model for Successful Implementation: Partnership, Focus, and Flexibility The Minnehaha Creek Watershed District (MCWD) is finding success in its innovative approach to water resource management by moving away from the traditional regulatory paradigm to partner with the land use community to align plans and investments to maximize economic, social, and environmental benefits for the communities it serves. The MCWD will share its approach which centers around three guiding principles:</p> <ol style="list-style-type: none"> 1.Partnering with public and private entities to integrate goals, plans, and investments to maximize public benefit 2.Prioritizing and focusing in areas of highest need and opportunity to achieve significant, measurable results 3.Remaining flexible and responsive to opportunities created through coordination with land use planning. The presentation will include real world examples demonstrating the success of this approach and how it can be applied in other watersheds. <p>Becky Christopher-Minnehaha Creek WD</p>	<p>Hydrologic Impacts of Corn Production Systems with and without Subsurface Drainage: Alterations of land use and management for agriculture have been implicated in surface and groundwater quality and quantity concerns. What remains poorly understood, however, is the influence of agricultural management practices on the landscape-scale water budget. In particular, conversion of perennial to annual vegetation, agricultural intensification, and installation of subsurface drainage systems have been implicated in changing water yield from farms in a manner that can result in increased incidence of flooding and more erosive rivers, potentially linking basin-scale water quality problems to farm-scale changes in the water budget. The goal of this project was to quantify all aspects of plot and field-scale water budgets for corn production systems (both with, and without subsurface drainage) and compare them against water budgets of sites with perennial vegetation. Results from this work will provide important information that will allow farmers to design water management infrastructure in a way that is both effective for production and environmentally responsible. Jeff Strock-Professor and Soil Scientist - Department of Soil, Water and Climate, U of M</p>

CONFERENCE WORKSHOPS

Concurrent General Session VII ◦ Friday, November 30 ◦ 3:30 P.M.-4:15 P.M.

Planning and Adaptive Management	Bridging the Rural / Metro Divide: Flood Control	Bridging the Rural / Metro Divide: Models for Successful Implementation	New Treatments and Technology
<p>THIS IS A 90 MINUTE SESSION, CONTINUED FROM THE 2:45 P.M. TRACK.</p> <p>Using GRAPS in Watershed Planning In this interactive 90 minute training session, you will learn how to integrate groundwater information presented in the Groundwater Restoration and Protection Strategy (GRAPS) report into the One Watershed, One Plan (1W1P) planning process. Using actual watershed examples, participants will work in small groups to: become familiar with the GRAPS report content, utilize GRAPS maps and groundwater condition summary to identify and target groundwater issues to be addressed in the 1W1P process, establish measurable goals, and identify appropriate actions to achieve restoration or protection goals.</p> <p>Carrie Raber-Minnesota Department of Health, Annie Felix-Gerth-Board of Water and Soil Resources</p>	<p>Using Technology and Partnerships to Formulate Flood Retention Strategies in Northwest Minnesota. As the second largest Watershed District in Minnesota, the Buffalo-Red River Watershed District (BRRWD) has formed a way to use technology and partnerships to develop comprehensive water resource management projects that not only benefit citizens of the District, but the Red River Basin of the North. This presentation will discuss why flood damage reduction (fdr) projects are needed, use of the Mediation Agreement, fdr types, project financing, and the use of new tools to develop fdr goals for a 1,785 square mile area. The BRRWD has successfully used these tools and strategies to develop projects such as the Wolverton Creek Restoration, Whisky Creek Tributaries, and the award winning Manston Slough Restoration.</p> <p>Bruce Albright, Buffalo Red River WD, Erik S. Jones, P.E. - Houston Engineering, Inc.</p>	<p>Various WDs: Setting Goals and Targeting Measurable Solutions for "Altered Hydrology" Across the State, "Altered Hydrology" is being cited as a stressor to biological impairments. However, measurable goals and targeted solutions for addressing this stressor are typically lacking. This presentation will cover approaches for setting measurable hydrology goals, targeting conservation to address "altered hydrology", estimating progress towards goals, and developing rapid concept designs that position practitioners to implement solutions. Case studies will be presented for the Buffalo-Red River, Lac Qui Parle-Yellow Bank River, Middle Fork Crow River, and North Fork Crow River Watershed Districts. The results put local conservation practitioners in a position to begin implementing targeted conversation practices that will provide both water quantity and quality benefits. The presentation will show how the targeted solutions can be incorporated into local watershed plans, grant applications, and outreach information to landowners.</p> <p>Drew Kessler-Houston Engineering, Inc., Mitch Anderson - Lac Qui Parle-Yellow Bank River WD, Margaret Johnson-Middle Fork Crow River WD, Cris Skonard-North Fork Crow River WD. Co-Author- Buffalo Red WD</p>	<p>Chasing the Silver Bullet: Adventures in Alternative Stormwater Filtration Media (Iron Enhanced Sand and Spent Lime) Today's stormwater practitioners are desperate for sustainable solutions that will filter stormwater to bind and remove pollutants in a cost-effective way. Where infiltration is impossible, we search for improved methods to remove particulate and dissolved phosphorus, metals and other pollutants from stormwater to meet permit requirements and improve the quality of downstream waterbodies. In addition, the stormwater community has great interest in putting byproducts, such as iron (as elemental iron) aggregate and spent lime, to good use in stormwater filters. There are some exciting recent advances in using these materials as stormwater filtration media. However, every success story has a cautionary backstory that has informed its success. This presentation will present these stories, including highlighting best practices in the design, implementation, monitoring and maintenance of Iron Enhanced Sand and Spent Lime Media filters.</p> <p>Erin Anderson Wenz, PE, ENV SP-Barr Engineering Company, Keith Pilgrim, PhD-Barr Engineering Company, Paige Ahlberg-Ramsey-Washington Metro WD</p>



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Alum floc formation during application on Rice Marsh, Chanhassen, MN. September 2018



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