On behalf of the Environmental and Water Resources Institute (EWRI) of ASCE conference organizers, sponsors, authors and presenters, we welcome you to the World Environmental and Water Resources Congress 2018.

Schedule at a Glance (Subject to Change)

How will you CUSTOMIZE your Congress experience? DOWNLOAD the 2018 EWRI Congress mobile app or BROWSE the EWRI Congress Itinerary Planner at www.eventscribe.com/2018/asce-ewri.

Saturday, June 2, 2018
8:00 a.m. – 5:00 p.m. Committee Meetings

Sunday, June 3, 2018
12:00 – 6:15 p.m. Registration – Nicollet Promenade
8:00 a.m. – 5:00 p.m. Committee Meetings
8:00 a.m. – 5:00 p.m. AAWRE Panel Exams – St. Croix
12:00 – 1:00 p.m. Membership Meeting – Minnehaha
5:00 – 6:30 p.m. EPANET and SWMM Model Updates – Nicollet Ballroom
6:30 – 8:00 p.m. Exhibit Hall Open – Greenway Promenade
6:30 – 8:00 p.m. Author Appreciation Reception (Ticketed Event) – Greenway Promenade
7:00 – 7:45 p.m. Professional Headshots – Greenway Promenade

Monday, June 4, 2018
7:30 a.m. – 6:00 p.m. Registration (Closed for lunch from 12:30 – 1:45 p.m.) – Nicollet Promenade
8:30 – 10:00 a.m. Welcome & Keynote Lecture – Nicollet Ballroom
10:00 a.m. – 4:00 p.m. Exhibit Hall Open – Greenway Promenade
10:00 – 10:30 a.m. Networking Break – Greenway Promenade
10:30 a.m. – 12:00 p.m. Concurrent Technical Session I
10:30 a.m. – 12:00 p.m. AAWRE Professional Ethics Session – Northstar A
12:15 – 1:45 p.m. Welcome & Awards Luncheon (Ticketed Event) – Nicollet Ballroom
2:00 – 3:30 p.m. Concurrent Technical Session II
3:30 – 4:00 p.m. Networking Break – Greenway Promenade
4:00 – 5:30 p.m. Concurrent Technical Session III
5:45 – 6:30 p.m. Stormwater Quiz Show – Nicollet AB
6:00 – 6:45 p.m. AAWRE Diplomate Induction & Awards Ceremony – Nicollet CD
6:00 – 10:00 p.m. Committee Meetings

Tuesday, June 5, 2018
8:00 a.m. – 4:15 p.m. Registration (Closed for lunch from 12:30 – 1:45 p.m.) – Nicollet Promenade
8:30 – 10:00 a.m. Concurrent Technical Session IV
10:00 a.m. – 4:00 p.m. Exhibit Hall Open – Greenway Promenade
10:00 – 10:30 a.m. Networking Break – Greenway Promenade
10:30 a.m. – 12:00 p.m. Concurrent Technical Session V
10:30 a.m. – 12:00 p.m. AAWRE Panel Discussion on Board Certification Session – NorthStar A
12:15 – 1:45 p.m. Luncheon Choice A: Environmental/Water, Wastewater & Stormwater Council Luncheon & Awards Lecture (Ticketed Event) – Nicollet AB
12:15 – 1:45 p.m. Luncheon Choice B: Hydraulics & Waterways Council/WDSA Luncheon & Awards Lecture (Ticketed Event) – Nicollet CD
2:00 – 3:30 p.m. Concurrent Technical Session VI
3:00 – 6:30 p.m. Technical Tour: St. Anthony Falls Laboratory, University of Minnesota (Ticketed Event)
3:30 – 4:00 p.m. Networking Break – Greenway Promenade
4:00 – 5:30 p.m. Concurrent Technical Session VII
6:00 – 10:00 p.m. Committee Meetings
Schedule at a Glance (continued)

[Subject to Change] For the latest schedule, DOWNLOAD the 2018 EWRI Congress mobile app or BROWSE the EWRI Congress Itinerary Planner at www.eventscribe.com/2018/ASCE-EWRI

Wednesday, June 6, 2018
8:00 a.m. – 5:15 p.m. Registration (Closed for lunch from 12:30 – 1:45 p.m.) – Nicollet Promenade
8:30 – 10:00 a.m. Concurrent Technical Sessions VIII
8:30 – 10:00 a.m. WSP USA Student Design Competition – Lake Shore A
10:00 – 10:30 a.m. Networking Break
10:30 a.m. – 12:00 p.m. Concurrent Technical Sessions IX
10:30 a.m. – 12:00 p.m. AAWRE Expert Witness Session – NorthStar A
10:30 a.m. – 12:00 p.m. Student Poster Competition – Greenway Promenade
12:15 – 1:45 p.m. Luncheon Choice B: Planning and Management Council Luncheon & Awards Lecture [Ticketed Event] – Nicollet AB
12:15 – 1:45 p.m. Student Luncheon (Ticketed Event) – Great Lakes C [4th Floor]
2:00 – 3:30 p.m. Concurrent Technical Sessions X
3:30 – 4:00 p.m. Networking Break – Greenway Promenade
3:30 – 4:00 p.m. Professional Headshots – Greenway Promenade
4:00 – 5:30 p.m. Concurrent Technical Sessions XI
5:00 – 7:00 p.m. Open Mentoring – Nicollet CD
6:00 – 9:30 p.m. Key Social Event at the Mill City Museum [Ticketed Event]
6:00 – 10:00 p.m. Committee Meetings

Thursday, June 7, 2018
8:15 a.m. – 3:30 p.m. Registration (Closed for lunch from 12:30 – 1:45 p.m.)
8:30 – 10:00 a.m. Concurrent Technical Session XII
10:00 – 10:30 a.m. Networking Break – Greenway Promenade
10:30 a.m. – 12:00 p.m. Concurrent Technical Session XIII
12:15 – 1:45 p.m. Luncheon Choice A: Professional Development: Engineer Your Career Luncheon [Ticketed Event] – Nicollet AB
2:00 – 5:00 p.m. Technical Tour: St. Anthony Falls Lock & Dam [Ticketed Event]
2:00 – 5:15 p.m. Technical Tour: CHS Field (Lowertown Ball Park) Sustainability and Water Reuse Tour [Ticketed Event]
2:00 – 6:00 p.m. Technical Tour: Hall’s Island Reconstruction Project & Upper Mississippi River Tour (Ticketed Event)
2:00 – 6:00 p.m. Technical Tour: Village of St. Anthony Sustainability Tour (Ticketed Event)

Maximize your Congress attendance by participating in a free technical workshop taught by a trusted subject matter expert. Technical workshops are listed on the technical program grid and are called out in the listing of Conference highlights on the following pages.
Committee Members

General Chair
Rebecca Teasley, Ph.D., A.M.ASCE

Technical Program Chair
Sri Kamojjala, P.E., D.WRE, M.ASCE

Local Organizing Committee Chair
Brett Staeden, A.M.ASCE

Technical Program Coordinator
Veera Ganeswar Gude, Ph.D., P.E., BCE, M.ASCE

Technical Program Coordinator
Melissa Wetzig, P.E.

EWRI Staff of ASCE

Brian Parsons, M.ASCE, Director
Gabrielle Dunkley, Senior Manager
Barbara Whitten, Technical Manager
Jennifer Jacyna, Manager of Member Services
Mark Gable, Senior Conference Manager
Nicole Erdelyi, Program Coordinator
Susan Dunne, Registrar
Erin Marks, Registrar
Drew Caracciolo, Sponsorship & Exhibit Sales Manager
Conference Highlights

The EWRI Congress 2018 features 13 concurrent technical sessions tracks for the duration of the EWRI Congress covering 20 unique technical areas. Authors will also be displaying their research and practice issues related to their areas of interest in the form of technical posters.

SUNDAY, JUNE 3, 2018

AAWRE Panel Exams
8:00 a.m. – 5:00 p.m., St. Croix

EPANET and SWMM Model Updates
5:00 p.m. – 6:30 p.m., Nicollet Ballroom

Author Appreciation Reception (Ticketed Event)
6:30 p.m. – 8:00 p.m., Greenway Promenade

MONDAY, JUNE 4, 2018

Opening Plenary Session
8:30 a.m. – 10:00 a.m., Greenway Ballroom

Learning and Planning for Resiliency in the Aftermath of the 2017 Extreme Weather Events

Panelists:

Carol E. Haddock, P.E.,
Director of Public Works in the City of Houston

Kent Nelson, P.E.,
Deputy Executive Director and COO Florida Keys Aqueduct Authority

Morris Maslia, P.E.,
Research Environmental Engineer at the CDC National Center for Environmental Health (retired)

Welcome and Awards Luncheon (Ticketed Event)
12:15 p.m. – 1:45 p.m., Nicollet ABC

Keeping the Great Lakes Great: Using Stewardship and Science to Accelerate Restoration

Keynote:
Deborah H. Lee
Director, NOAA Great Lakes Environmental Research Laboratory

Stormwater Quiz Show
5:45 p.m. – 6:30 p.m., Nicollet AB

AAWRE Diplomate Induction Ceremony
6:00 p.m. – 6:30 p.m., Nicollet CD
Conference Highlights (Continued)

TUESDAY, JUNE 5, 2018

Environmental/Water, Wastewater & Stormwater Council Luncheon & Awards Lecture (Ticketed Event)
12:15 p.m. – 1:45 p.m., Nicollet AB

Hydraulics & Waterways Council/WDSA Luncheon & Awards Lecture (Ticketed Event)
12:15 p.m. – 1:45 p.m., Nicollet CD

Technical Tour: St. Anthony Falls Laboratory, University of Minnesota (Ticketed Event)
3:00 p.m. – 6:30 p.m.
Buses will assemble one-half hour prior to departure in front of the Hyatt

WEDNESDAY, JUNE 6, 2018

WSP USA Student Design Competition
8:30 a.m. – 10:00 a.m., Lakeshore A

Irrigation & Drainage Council Luncheon & Awards Lecture (Ticketed Event)
12:15 p.m. – 1:45 p.m., Nicollet CD

Planning and Management Council Luncheon & Awards Lecture (Ticketed Event)
12:15 p.m. – 1:45 p.m., Nicollet AB

Student Luncheon (Ticketed Event)
12:15 p.m. – 1:45 p.m., Great Lakes C

Open Mentoring
5:00 - 7:00 p.m., Nicollet CD

Key Social at the Mill City Museum (Ticketed Event)
6:00 p.m. – 9:30 p.m.
Buses will assemble one-half hour prior to the start of the event in front of the Hyatt, and will continuously loop until 10:00 p.m.
Conference Highlights (Continued)

THURSDAY, JUNE 7, 2018

Watershed Council Luncheon & Awards Lecture (Ticketed Event)
12:15 p.m. – 1:45 p.m., Nicollet CD

Professional Development: Engineer Your Career Luncheon (Ticketed Event)
12:15 p.m. – 1:45 p.m., Nicollet AB

Technical Tour: St. Anthony Falls Lock and Dam (Ticketed Event)
2:00 p.m. – 5:30 p.m.
Buses will assemble one-half hour prior to departure in front of the Hyatt

Technical Tour: CHS Field (Lowerton Ball Park) Sustainability and Water Reuse Tour (Ticketed Event)
2:00 p.m. – 5:30 p.m.
Buses will assemble one-half hour prior to departure in front of the Hyatt

Technical Tour: Hall’s Island Reconstruction Project & Upper Mississippi River Tour (Ticketed Event)
2:00 p.m. – 6:00 p.m.
Buses will assemble one-half hour prior to departure in front of the Hyatt

Technical Tour: Village of St. Anthony Sustainability Tour (Ticketed Event)
2:00 p.m. – 6:00 p.m.
Buses will assemble one-half hour prior to departure in front of the Hyatt
Technical Workshops

SUNDAY, JUNE 3, 2018
Cybersecurity Essentials for Water Engineers and Scientists
Instructor: Amin Rasekh
1:30 p.m. – 5:00 p.m., Lakeshore A

How to Build Reliability in the Results of Numerical Modeling
Instructors: Kaveh Zamani & Fabian Bombardelli
1:30 p.m. – 5:00 p.m., Lakeshore B

Hydrologic Engineering Center Real-Time Simulation (HEC-RTS)
Instructors: Fauwaz Hanbali & Chan Modini
1:30 p.m. – 5:00 p.m., Lakeshore C

MONDAY, JUNE 4, 2018
Guidelines for Controlling Erosion and Sediment
Instructors: Don Baker & Shirley Clark
2:00 p.m. – 5:30 p.m., NorthStar B

Solving Water Treatment Problems with Computational Fluid Dynamics
Instructors: Xiaofeng Liu & Jie Zhang
2:00 p.m. – 5:30 p.m., Lakeshore B

TUESDAY, JUNE 5, 2018
Introduction to EPANET Water Distribution Modeling
Instructors: Arnold Strasser & Walter Grayman
8:30 a.m. – 12:00 p.m., Greenway EF

NOAA Atlas 14: Precipitation Frequency Estimates of the United States
Instructor: Sandra Pavlovic
8:30 a.m. – 12:00 p.m., Lakeshore A

Sustainability and Drinking Water Treatment Issues in the Midwest
Instructors: Anita Anderson, Nathan Casey, Kevin Church, Chad Donnelly, Glen Gerads, Ted Henefin, YiGiola Malca, Enoch Nicholson, and Lee Odell
2:00 p.m. – 5:30 p.m., Lakeshore A

WEDNESDAY, JUNE 6, 2018
Hydrologic Engineering Center’s Meteorological Visualization Utility Engine (HEC-METVUE)
Instructors: Caleb DeChant, Brett Palmberg & Fauwaz Hanbali
8:30 a.m. – 12:00 p.m., Greenway AB

Riverbank Filtration for Water Supply in the United States
Instructors: Chittaranjan Ray & Matthew Reed
8:30 a.m. – 12:00 p.m., Greenway EF

Introduction to the Hydrologic Modeling System (HEC-HMS)
Instructor: Thomas Brauer
2:00 p.m. – 5:30 p.m., Lakeshore A

THURSDAY, JUNE 7, 2018,
Bulletin 17C: Updated Federal Guidelines for Flood Frequency Analysis
Instructor: John England
8:30 a.m. – 12:00 p.m., Lakeshore A

A Practical Field Guide to Open-Source Software Development in the EPANET World
Instructors: Sam Hatchett, Kate Klise and David Hart
10:30 a.m. - 12:00 p.m., Lakeshore C
General Information

ASCE Bookstore
ASCE will operate its popular bookstore at the EWRI Congress. The bookstore is a great opportunity to browse through the many new and classic titles on display covering all topics in civil engineering.

Badge Policy and Ribbons
Your EWRI Congress registration name badge is your admission to the educational sessions. Please wear your badge at all times while in the Hyatt Regency Minneapolis Hotel. Tickets are required for all EWRI Congress events, meals, and special events. Where tickets are required, please be sure to bring your tickets with you to each event as you will not be admitted without a ticket. Ribbons will be available at the Registration Desk. ASCE recommends you remove your badge when leaving the hotel.

Cancellations/Refunds
The deadline to request a refund was Wednesday, May 2, 2018. Written refund requests were to be received by ASCE Headquarters, and were subject to a $100 processing fee. Speaker and author registration fees are also nonrefundable after Thursday, March 1, 2018, due to necessary advance production of the proceedings and the program. Please visit www.ewricongress.org/registration for complete refund policies.

City Information
For more information on Minneapolis, MN, or the surrounding area, please visit the location page on the EWRI Congress website at www.ewricongress.org/location.

EWRI Sustainable Congress Policy Statement
ASCE EWRI is committed to sustainable Congresses in accord with the ASCE policy on The Role of the Civil Engineer in Sustainable Development. ASCE defines sustainability as a set of economic, environmental, and social conditions in which all of society has the capacity and opportunity to maintain and improve its quality of life indefinitely, without degrading the quantity, quality, or availability of natural resources and ecosystems. Sustainable development is the process of converting natural resources into products and services that are more profitable, productive, and useful, while maintaining or enhancing the quantity, quality, availability, and productivity of the remaining natural resource base and the ecological systems on which they depend.
To that end, ASCE EWRI works with hotels and convention centers that strive to make our events green and include amenities such as reusable pitchers and water coolers rather than plastic bottles.

No Smoking Policy
ASCE supports a “No Smoking” policy. Smoking is prohibited in the Hyatt Regency Minneapolis Hotel, and at all indoor venues hosting EWRI events.

On-Site Registration Hours
Sunday, June 3, 2018 12:00 – 6:15 p.m.
Monday, June 4, 2018 7:30 a.m. – 6:00 p.m.
(closed for lunch 12:30 - 1:45 p.m.)
Tuesday, June 5, 2018 8:00 a.m. – 4:15 p.m.
(closed for lunch 12:30 - 1:45 p.m.)
Wednesday, June 6, 2018 8:00 a.m. – 5:15 p.m.
(closed for lunch 12:30 - 1:45 p.m.)
Thursday, June 7, 2018 8:15 a.m. – 1:00 p.m.

Proceedings
As an exclusive benefit for all conference registrants, online access to the complete proceedings will be made available in the ASCE library at http://asce.library.org/page/2018ewricongferenceproceedings for 60 days beginning on the first day of the conference.

Professional Development Hours (PDHs)
You may earn 32.5 PDHs, which are nationally recognized units of record, by attending the EWRI Congress concurrent sessions and other programmed sessions. Please note there are differences from state to state in continuing education requirements for professional engineering licensure. ASCE follows NCEES Guidelines on continuing professional competency. Because continuing education requirements for P.E. license renewal vary from state to state, ASCE strongly recommends that individuals regularly check with their state requirements that affect P.E. licensure and the ability to renew licensure. For details on your state’s requirements, please go to www.ncees.org/Licensing_boards.php.

Program Changes
ASCE reserves the right to cancel programs and/or sessions because of low registration. In the unlikely event of a cancellation, all registrants will be notified and will receive a full refund, if applicable. Programs and sessions are subject to change and ASCE reserves the right to substitute a program, session, and/or speaker of equal caliber to fulfill educational requirements.

Recording of Sessions
Video or audio recording of any educational session is strictly prohibited without prior written permission from both ASCE and the session presenter(s).

Visiting International Fellowship
Each year, EWRI’s International Council (IC) invites applications for Visiting International Fellows from faculty, professionals, and student researchers from developing countries. The fellowships are intended to increase the participation of water resources and environmental professionals from developing countries in EWRI Congress, and promote sustained professional and cultural exchange. Visit www.ewricongress.org/program/visiting-international-fellowship for more information about the Visiting International Fellowship.
**2018 EWRI Congress Committee Meeting Schedule**

**Saturday, June 2, 2018**  
8:00 a.m. - 5:00 p.m.  
EWRI Governing Board  
AAVRE Board of Trustees  

**Sunday, June 3, 2018**  
8:00 a.m. - 12:00 p.m.  
Urban Drainage Standards Committee  
Evapotranspiration in Irrigation & Hydrology  
Renewable Technologies Council  
Disaster Ready Stormwater Management  
Environmental Water Resource Systems  
LID Computation Task Committee  
Professional Practice Council  
Risk Uncertainty Probabilistic Approaches  
Hydraulic Structures  
Journal of Sustainable Water in the Built Environment Editors Meeting  
Land Subsidence Task Committee  
International Participation Committee  
Groundwater Symposium & Continuing Education Committee  
1:00 p.m. - 5:00 p.m.  
International Perspectives on Water and the Environment (IPW)  
Management Practices for Controlling Erosion & Sediment Standards Committee Meeting  
Women's Water Nexus  
Urban Water Resources Research Council  
History & Heritage Committee  
World Water Council Activities  
EWRI Awards Committee  
Two-phase Flow in Urban Water Systems  
Groundwater Management Technical Committee  
Journal of Water Resources Planning & Management Editorial Board  
Use of Recycled Water for Irrigation of Turf & Landscape Plants  
Managed Aquifer Recharge Standards Committee  
Congress Steering Committee  
Water Pollution Engineering Committee  
Remote Sensing of Evapotranspiration  
6:00 p.m. - 10:00 p.m.  
Municipal Water Infrastructure Council  

**Monday, June 4, 2018**  
6:00 p.m. - 10:00 p.m.  
Hydroclimate Committee  
Manual of Practice 77 Update TC  
Groundwater Quality Technical Committee  
Groundwater Hydrology  
Stormwater Media Filtration Committee  
Visiting International Fellow  
Environmental Health & Water Quality  
Atmospheric Water Management  
EWRI 20th Anniversary Planning Task Committee  
New Professionals  
Cybersecurity of Water Distribution Systems  
Communications Council  
Computational Fluid Dynamics Task Committee  
Journal of Hydraulic Engineering Editors Meeting  

**Tuesday, June 5, 2018**  
6:00 p.m. - 10:00 p.m.  
Managing Reservoir Sediment: Technical, Economic & Policy Issues  
Local Activities Council  
Emerging & Innovative Technologies Committee  
Hazardous, Toxic and Radioactive Waste Committee  
SWH-TC  
EWRI TIVDI Analysis & Modeling Task Committee  
Environmental Permitting Committee  
KSTAT Committee  
UWRRRC BMP Database Teaching Tools Task Force  
Hydraulic Fracturing TC & Hydraulic Fracturing: Methods  
River Basin Planning, Policy, & Operations  
Calibration/Verification of Free-Surface Hydraulic Models  
Journal of Irrigation & Drainage Engineering Editorial Board  
Chinese Association of Water Resources Association  
Water Quality and Drainage Committee  

**Wednesday, June 6, 2018**  
7:30 a.m. - 10:30 a.m.  
SWMM Committee  
6:00 p.m. - 10:00 p.m.  
Education Council  
Student Council  
Water Supply and Water Pollution Engineering  
Stochastic Methods for Analyzing Nonstationary Extreme Hydrologic Events  
Water Distribution Systems Analysis (WDSA) Committee  
Watershed Management Technical Committee  
Watershed Approach for Stormwater Management  
Sustainable Stormwater Infrastructure  
Wetland Hydrology Technical Committee  
Sedimentation Committee  
Using Hydroclimatic Prediction for Water Systems Operations & Management  
Sustainability Committee  
Computational Hydraulics Committee  
Stream Restoration  

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Advanced Drainage Systems
www.ads-pipe.com
Advanced Drainage Systems, Inc., the largest manufacturer of HDPE drainage pipe, provides solutions for residential projects to highway drainage. Our focus is on issues critical to the customer including cost-efficiency, installation ease, and performance.

The American Academy of Water Resources Engineers (AAWRE)
www.aawre.org
AAWRE offers a post-license credential providing professional engineers further recognition in water resources engineering and is dedicated to improving practice, elevating standards, and advancing the profession.

The American Society for Engineering Management (ASEM)
www.asem.org
The American Society for Engineering Management (ASEM) offers services to existing and aspiring technical managers. Visit www.asem.org to discover the conference, certifications, partnerships, and more.

Barr Engineering Co.
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With offices in the U.S. and Canada, Barr provides engineering and environmental consulting services to clients throughout the Americas and around the world.

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Bentley is a global leader dedicated to providing engineers, architects, geospatial professionals, constructors, and owner-operators with comprehensive software solutions for the design, construction, and operations of infrastructure.

Contech Engineered Solutions
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Contech Engineered Solutions LLC is a leading provider of site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, retaining walls, sanitary, stormwater, erosion control and soil stabilization products. To contact one of Contech's 50 offices or 300 sales and product professionals nationwide, visit www.ContechES.com or telephone 800-338-1122.

GZA GeoEnvironmental, Inc
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GZA combines geotechnical, structural and civil engineering with coastal and environmental expertise to evaluate, plan, design, permit and construct resilient marine and waterfront facilities.

Solution Blue, Inc.
www.solutionblue.com
Solution Blue, Inc. is a civil engineering, landscape architectural and environmental consulting firm that provides expertise and innovation in sustainable site design, development and water management.

Wexco Environmental
www.wexcoenviro.com
Filtrol 160 – Microfiber water pollution prevention. The Filtrol 160 removes non-biodegradable fibers, like microfibers, from your washing machine discharge. One of the leading causes of pollution in waterways.

WSP USA
WSP USA is one of the world's leading engineering and professional services firms, with 32,000 employees in 39 countries worldwide.