

# INVESTING IN THE FUTURE OF WATER

## 90TH WEFTEC BLENDS INNOVATION, TRADITION

Welcome to Chicago! You are participating in not just a world-class conference and exhibition, but an important milestone in the history of the Water Environment Federation – the 90th WEFTEC®. It is fitting that WEFTEC returns to Chicago – the site of its first meeting in 1928 – to celebrate its longevity and continual growth. As more than 20,000 attendees began to arrive by plane, car, and even canoe (see p. 12), excitement has been building for what is sure to be a memorable event.

Since its debut, WEFTEC has evolved with the needs of water professionals. In terms of size, this year's event offers more than 100 technical sessions, more than 1000



vendors in the 305,000-ft<sup>2</sup> exhibition, and many workshops and plant tours that provide interactive learning opportunities. The program depth has grown over the years too, expanding to include practice areas such as stormwater, water reuse, and resource recovery.

WEFTEC is not the only event marking a major milestone this week. Several WEFTEC programs will be celebrating noteworthy anniversaries as well:

The popular Operations Challenge will begin its 30th competition

*continued on p. 15* ●

### OPENING GENERAL SESSION

8:30 a.m., Room S100



New time and format! Featuring keynote speaker Fredi Lajvardi, followed by a series of "WEFTalks" from influential water leaders. See p. 3 for details.

NO BADGE REQUIRED

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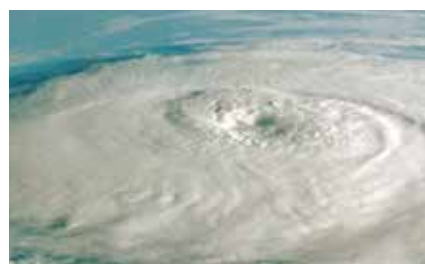
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## Preparing For Nature's Wrath

### PLANNING AND RESILIENCE SESSIONS ADDRESS TIMELY ISSUES

The devastation of Hurricanes Harvey, Irma, Jose, and Maria has underscored the importance of planning for natural disasters. As the Caribbean, Florida, and Texas communities recover from these natural disasters, the water sector is struggling to bounce back as well.

To share the latest knowledge following one of these storms, a speaker from Houston will join this afternoon's climate change session to discuss the city's recent 1000-year flooding event. Session 222 will



discuss how risk assessment, master planning, and green infrastructure can be used to mitigate the anticipated impacts of climate change. Additional speakers include repre-

sentatives from New York City and Washington, D.C., utilities, who will share information about their cities' resilience and mitigation planning, as well as experts on forecasting, water resources planning, and climate change legal liability.

In the face of climate change, there is an increasing call for utilities to look beyond conventional approaches to ensure they can provide reliable, safe water and wastewater services. On Tuesday, a Leaders Innovation Forum

*continued on p. 14* ●

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# MEET FREDI LAJVARDI

OPENING GENERAL SESSION  
KEYNOTE SPEAKER,  
STEM EDUCATOR AND ADVOCATE



**I**n 2004 Fredi Lajvardi led an underdog team of high school students to compete in an advanced robotics competition. His students' surprise win against teams from MIT and Virginia Tech is told in the book and movie "Spare Parts" and the IMAX film "Dream Big." In this morning's Opening General Session, Lajvardi will draw on this experience to share his inspiring message: the importance of mentorship and the need to embrace science, innovation, and diversity.

**Q: How did you instill confidence in your students?**

**FL:** We weren't going for the win; we were just going for the learning experience. We figured, we learned when we failed. We were looking to fail on a large scale so that we could learn on a large scale. We accidentally won on the first try. So, in hindsight, with the lack of pressure to win, the students were free to follow the scientific method as well as trial and error to solve the engineering problems before them. It was this absence of the pressure to win for this particular group of kids that

allowed them to be fully creative and unconventional in their approach to build a successful underwater robot.

**Q: Are there any lessons you learned during the competition?**

**FL:** Hands-on projects are perfect for getting kids inspired and motivated so that they can do incredible things. While they weren't trying to win, the competitive arena triggered a very high degree of commitment on their part. No one wants to be embarrassed when they step up to the plate, so they built a solid robot that functioned better than they imagined.

**Q: What do you think is the biggest challenge in getting young people, especially underprivileged kids, into the STEM fields?**

**FL:** To show students that they can have a successful place in society by focusing on STEM. They can make a difference, and they can't let stereotypes dictate their future. The way to overcome these challenges is to show them that they matter and that they can do whatever they set their mind to. These robotics competitions allow them to see that they can compete with all levels of society and they can overcome any stereotype.

**Q: What advice do you have about mentoring the next generation?**

**FL:** Get involved with hands-on projects and competitions. Give them the encouragement they need to follow their dreams and help them remove some of the obstacles that may get in their way. Develop real, meaningful relationships so that they can see you as role models that they can aspire to be like when they grow up.

*Opening General Session, 8:30 - 10:15 a.m., Grand Ballroom. No registration badge required. Book Signing, 2 p.m. in the WEF Plaza Bookstore, Hall B.*

## The Most Important Part of Your Job

'WEFTALKS' PRESENTERS SHARE MENTORSHIP STORIES IN EXCITING NEW FORMAT

**M**entorship might not be listed on your official job description, but some feel it's the most significant thing the water sector can do to collectively grow the profession.

Making the case for mentoring are four influential water leaders who will present a series of "WEFTalks" following Fredi Lajvardi's keynote in this morning's Opening General Session. Modeled after the popular TED Talks, these informal, engaging talks focus on the human side of the water sector and are designed to give water professionals the opportunity to learn directly from their peers.

Tying into Lajvardi's big-picture message, attendees will hear a series of testimonials about what led their colleagues into the water sector and the ways in which they have benefited from mentorship – both as a mentor and as a protégé – and how to join their efforts to create and support a diverse and unified water workforce.

Tom Ferguson, Imagine H2O, will kick off the talks and share his own story of moving from acting into the water sector. Following him are Joan Rose of Michigan State University; Ifetayo Venner, Arcadis; and Carla Reid, Washington Suburban Sanitary Commission.

*WEFTalks, part of Opening General Session, 8:30 - 10:15 a.m., Grand Ballroom. No registration badge required.*

**IKE** | INTERACTIVE  
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## Where Sundance Meets the Water Cycle

MOVE OVER, ART-HOUSE FILM FESTIVALS. IKES ARE BACK!

**I**magine an all-day screening of indie flicks chosen just for you, where the directors provide the backstory on each scene and answer audience questions. The Interactive Knowledge Exchange (IKE) is kind of like that.

Running most of tomorrow, IKE offers a showcase of short videos designed to educate and engage with audiences. A total of 37 videos will be shown in loops while IKE creators are available to discuss their work, processes, and vision.

This year's videos are grouped into three thematic sessions. The first session, focused on innovation, includes a wide range of topics including energy recovery, watershed management, and streamlining wastewater operations. IKE continues later this morning with management topics, such as workforce diversity and addressing the global water gap. The final session this afternoon presents "Tell It to a 5th Grader" videos



designed to explain technical topics to a younger audience.

*Interactive Knowledge Exchange (IKE), offered in three sessions (popcorn not included).*

*IKE: Innovation (Session 300), Tuesday, 8:30 - 10:30 a.m., Room S402a.*

*IKE: Thought Leadership (Session 329), Tuesday, 10:30 a.m. - 1:30 p.m., Room S402a.*

*IKE: Public Outreach (Session 400), Tuesday, 1:30 - 3:30 p.m., Room S402a.*

**weftec DAILY**

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# Today's Featured Speakers



Dr. Krishna Pagilla will give the keynote presentation, "Recycled Water Use for Potable and Nonpotable Purposes in both Water-Rich and Water-Deficit Regions," at the AAES/AIDIS/WEF Breakfast. Dr. Pagilla is a professor and Environmental Engineering Program director at the University of Nevada–Reno, a board-certified environmental engineer, and a Fellow of both WEF and IWA. He is an associate editor of *Water Environment Research* and is a recipient of WEF's Thomas R. Camp Applied Research Award, Fair Distinguished Engineering Educator Award, and Harrison Prescott Eddy Medal for Outstanding Applied Research on Wastewater Principles and Processes. In his presentation, he will discuss the drivers for and limitations against water reuse in both water-rich and water-deficit regions. The focus will be on regulatory aspects, technical requirements, and triple-bottom-line evaluations of water reuse for both potable and nonpotable purposes.

*AAES/AIDIS/WEF Breakfast (registration required), 7:15 – 8:30 a.m., Room S103c.*



Dr. Nancy Love will provide the AEESP/WEF Master Lecture, "Microbiome of Household Water Systems." Dr. Love is a professor of Civil and Environmental Engineering at the University of Michigan. She has served as chair of the Civil and Environmental Engineering and associate dean in the university's Rackham School of Graduate Studies. Her research uses experimentation and modeling to assess and advance environmental and public health. She has distinct expertise in evaluating the fate of chemicals, pathogens, and contaminants in water; using technologies to sense and remove contaminants; and

advancing technologies that recover useful resources from used water. She is the recipient of the National Science Foundation CAREER Award; the Paul L. Busch Award for Innovation in Applied Water Quality Research, the Harrison Prescott Eddy Medal, the Rudolf's Industrial Waste Management Medal, the Gordon Maskew Fair Distinguished Engineering Educator Award; and the Civil and Environmental Engineering (Virginia Tech) Alumni Teaching Excellence Award. She is a Fellow of WEF, AEESP, and IWA.



Immediately following the lecture, Dr. Charles Bott, director of Water Technology and Research at the Hampton Roads Sanitation District (HRSD), will present a practitioner's perspective and will share his thoughts on HRSD's Vision for Managed Aquifer Recharge in Eastern Virginia: Sustainable Water Initiative for Tomorrow. Dr. Bott manages research and development efforts for HRSD's 13 wastewater treatment plants and collection system. Dr. Bott formerly was an associate professor in the Department of Civil and Environmental Engineering at the Virginia Military Institute and a consulting engineer with Parsons Engineering Science.

*AEESP/WEF Master Lecturer: Nancy Love (Session 101), 10:30 a.m. – 12 p.m., Room S406b.*



Dr. William Cooper will be the keynote speaker at the AEESP Scientists' Luncheon. His presentation, "The Journey: 50 Years of Environmental Science and Engineering 1967-2017: Turning Obstacles Into Opportunities," will share insights he has gleaned from his career. Dr. Cooper is a professor in the Department of Civil and Environmental Engineering at the University of California–Irvine. He recently

completed a 4-year stint as program director, Environmental Engineering, at the U.S. National Science Foundation. He is a Fellow of AAAS and AEESP. His research interests include photochemically mediated carbon cycling in oceanic and fresh waters, the application of free radical chemistry, and advanced oxidation processes. He was also part of a large team studying the use of ozone for ballast water treatment to control of invasive species. His recent studies suggest that constructed wetlands may offer a low-cost, sustainable approach to treating pharmaceuticals and other emerging chemicals of concern.

*AEESP Scientists' Luncheon (registration required), 12 – 1:30 p.m., Room S103c.*



Christine Zimmer will discuss "Moving Beyond Stormwater: Changing Climate, Changing Minds" as keynote speaker at the Stormwater Congress Luncheon. Her presentation will focus on the need to stretch beyond traditional codes and standards, to incorporate social vulnerabilities into capital works and land acquisition priorities, engage nontraditional partners, and change behaviors. Zimmer is the senior manager of Water and Climate Change Science for Credit Valley Conservation, in Ontario, Canada, where she specializes in watershed management, green infrastructure, and stormwater vulnerability analysis. For more than a decade Christine has worked with private and public sector partners, raising more than \$3.6 million to implement and monitor 30 green infrastructure demonstration sites in southern Ontario. She holds seven awards for achievements in watershed and stormwater management, including Ontario's Minister of Environment Award for Environmental Excellence.

*Stormwater Congress Luncheon (registration required), 12 – 1:15 p.m., Room S106b.*

## Commerce, EPA Officials To Open Global Center

Distinguished members of the U.S. Department of Commerce and U.S. Environmental Protection Agency will open the Global Center this morning. Ian Steff, deputy assistant secretary for Manufacturing, International Trade Administration, U.S. Department of Commerce; and Lee Forsgren, deputy assistant administrator, Office of Water, U.S. Environmental Protection Agency, will welcome attendees at



Ian Steff



Lee Forsgren

the Center opening in the WEF Plaza. In past years, approximately 10% of the more than 20,000 water professionals at WEFTEC® traveled to the event from outside of the United States. The Global Center provides these attendees a central location with learning opportunities and other resources that help them get the most from the conference.

Following the official inauguration of the Global Center, there will be a number of presentations and panel sessions today and Tuesday that offer perspectives on water markets and opportunities, and provide a closer look at how various technical, regulatory, and water supply issues are playing out internationally. Some of today's programming highlights include:

"Technology Innovation and Demonstration Hubs Around the World" in which speakers from South Africa, Korea, Canada, China, Singapore, and The Netherlands will provide insights into different approaches for fostering new technology development and deployment, and thoughts about how to advance global innovation to solve critical world water challenges (1 – 2 p.m.).

"Water Reuse: From Restricted to Potable – Global Perspectives," in which a panel of global water reuse experts will share their thoughts on the implementation of indirect and direct potable reuse (3 – 4 p.m.).

"Wet Wipes—Local Solutions for a Global Issue: Australia and the Global Organizations Working Together to Deliver Share Value," which covers the growing problem of wipes in the pipes, rising costs and environmental impacts, and what the water sector can do in the absence of an international "flushable" standard (4 – 5 p.m.).

*Global Center Inauguration, 10:30 – 11 a.m., Hall A. For the full programming schedule, please see the WEF Events Mobile App or the Conference Program & Exhibitor Guide.*

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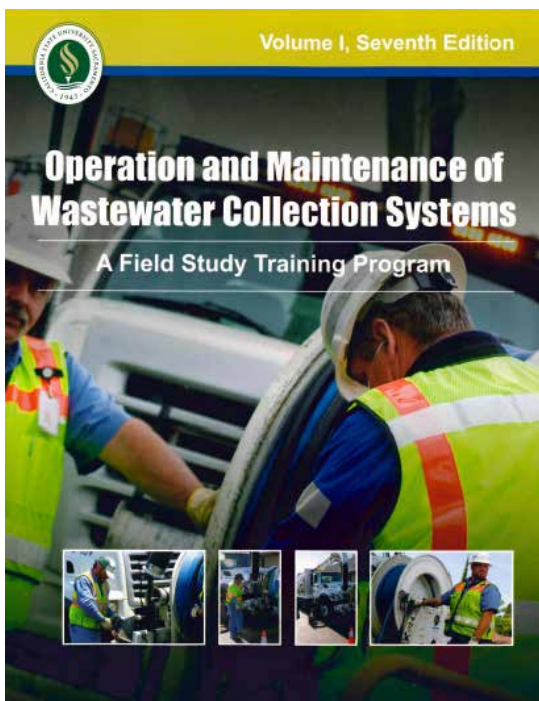


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Harmful Chemical Emissions Found In CIPP Installations by New Study From Purdue University. Independent Specifications are Needed to Safeguard Workers, General Public, & Environment.

### Learn About New Certification Standards At WEFTEC Technical Sessions:

**SFPUC's Use of Innovative Technology To Reduce Salt Water Intrusion**  
By Chuck Hansen & Jamie Johnson of Electro Scan Inc.  
Tuesday, October 3rd at 11:30AM  
Session: 317 Conveyance and Pumping Condition Assessment, Room S403b

**The City of Racine Utilizes New Inspection Technology to Measure Flow Reductions Before and After Rehabilitation**  
By John C. Rooney, P.E., City of Racine & Paul Pasko, P.E., SEH Inc.  
Wednesday, October 4th at 2:30PM  
Session: 610 Emerging Topics and Technologies in the Collection System, Room N426a

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# Water Policy Outlook: What's Next?

POPULAR GOVERNMENT AFFAIRS SESSION TO PROVIDE LATEST INFORMATION ON NEW ADMINISTRATION'S PLANS

Every 4 or 8 years following a change in administration, the direction of U.S. water policy stands to change. The new president's stated interest in revamping environmental programs and policies has left many water professionals uncertain about what the future holds. This afternoon's Water Policy Update, moderated by WEF Government Affairs Committee Chair Rudy Chow, will provide insights



from U.S. Environmental Protection Agency (EPA) officials about the legislative and regulatory outlook for water. Chris Stacklin will serve as assistant moderator.

The update will cover topics such as the Clean Water and Drinking Water

State Revolving Funds, the Water Infrastructure Finance and Innovation Act, the Waters of the United States rule, Great Lakes issues, reused water, stormwater, green infrastructure, and regulatory reform initiatives.

This is your chance to hear directly

from those who work at EPA – from both national headquarters and Region 5 – about proposed updates and new initiatives that could have a significant impact on the water sector. Speakers will include Lee Forsgren, deputy assistant administrator, Office of Water; Jeff Lape, Office of Science and Technology; John Goodin, Office of Wetlands, Oceans, and Watersheds; Andrew Sawyers, Office of Wastewater Management; Jennifer McLain, Office of Groundwater and Drinking Water; and a representative from U.S. EPA Region 5.

*Water Policy Update (Session 200), 1:30 - 5 p.m., Room S504bcd.*

## Meet James Crook



Water reuse historian James Crook, an independent environmental engineering consultant, will cover the history of water reuse and share success stories this afternoon. As part of the fast-paced, "Hot Topics in an Expanding Water Reuse Market," Crook will give one of the session's concise water reuse presentations.

Crook has 45 years of experience in the state government and consulting engineering arenas. He serves on the water reuse committees for the Water Environment Federation, International Water Association, and American Water Works Association. In addition to obtaining a bachelor's degree in civil engineering as well as a master's degree and doctorate in environmental engineering, he is a registered professional engineer in both California and Florida.

**Q: What do you hope that attendees learn during your presentation?**

JC: I will make a short presentation on the history of water reuse, reclaimed water regulations (with an emphasis

on potable reuse), and related public health considerations. The intent is to show we have a long and successful history of water reuse for a wide variety of applications. With our current treatment technology, monitoring capability, and regulatory criteria, reclaimed water can provide a safe, reliable, and sustainable water supply for many beneficial purposes including potable reuse. It should be considered as an option to help meet growing water demands in water-short areas.

**Q: Why is water reuse important?**

JC: It is important to understand that current water reuse practices and controls have evolved for many years. They are based on sound science and assure adequate health protection for a multitude of uses.

**Q: Why should people attend this session?**

JC: This presentation will help attendees understand how water reuse has progressed through the years to where it is today. Experience, research, and regulatory controls have resulted in the safe use of reclaimed water for many applications, including potable purposes. In addition to my presentation, other speakers will address funding opportunities, reuse for expanding agricultural demands, operator certification, and market assessment. There will be a 30-minute question-and-answer period after all the presentations to provide ample time for discussion.

*Hot Topics in an Expanding Water Reuse Market (Session 221), 1:30 - 3 p.m., Room S404c.*

## Proven Strategies for Building Strong Outreach Programs

SPEAKERS WILL SHARE COMMUNICATIONS CASE STUDIES FROM MAJOR WATER CITIES



KC Water

Water professionals, by virtue of their daily work, already have a powerful, positive impact on society. When they can find ways to empower community members to be water stewards themselves, the benefits are amplified. Through effective communication, utilities can build the partnership necessary to grow water literacy, improve working relationships for a better community, and foster trust in their expertise. This afternoon, a geographically diverse group of water utility communicators will talk about public engagement strategies that really worked – and how they implemented them.

The session, "Outreach Success Stories to Build Better Water Communities" will feature utili-

ties such as Kansas City Water Services, which provides a 5-day curriculum for students in 4th, 5th, and 6th grades. Through interactive and fun lessons, students learn how precipitation moves through a watershed, how stormwater becomes polluted by point and nonpoint sources, and how best management practices implemented by the city and in their own backyards improve water quality and reduce the quantity of stormwater that enters local creeks, streams, and rivers.

Presenters from New Orleans, Atlanta, San Francisco, and Japan will round out the session.

*Outreach Success Stories to Build Better Water Communities (Session 218), 1:30 - 5 p.m., Room S403a.*



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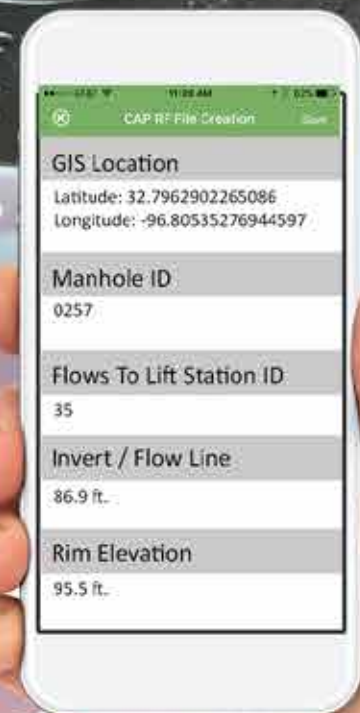
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# We've Seen the Future ... And It Is Disruptive

INNOVATION SHOWCASE HIGHLIGHTS HOW ENTREPRENEURS, INVESTORS, TECHNOLOGY PROVIDERS, AND EVEN CRAFT BREWERS ARE ACCELERATING THE PACE OF CHANGE IN THE WATER SECTOR

While you can find something new and different in just about every square foot of WEFTEC®, there is an especially high concentration of supercharged, future-focused energy in Hall B of the exhibition. The WEFTEC Innovation Showcase features exhibits and programming designed to help the water sector break through technical and regulatory barriers by leaping beyond traditional solutions. Providing a platform for these “disruptive” technologies and ideas, the showcase serves as an incubator to encourage greater dialogue about innovation in the water sector.



The 6th annual Innovation Pavilion co-locates forward-thinking exhibiting companies – including the Water Environment Federation (WEF) Innovative Technology Winners – and offers 3 days of interactive sessions

focused on emerging technologies, ingenuity, and entrepreneurial ideas. The popular “CROC Tank” pitch sessions and reuse-water beer tasting will return to the pavilion

line-up this year. WEF and its innovation partners, BlueTech Research and Imagine H2O, designed the programming to appeal to start-ups, investors, customers, and regulators.

Tomorrow morning BlueTech also

is offering a limited-seating breakfast briefing that will cover their latest research, including reports on stormwater, nanofiltration, advanced oxidation, ultrapure water, brine management, ballast water, and the China power sector.

Two evening receptions offer additional opportunities to converse with fellow disruption-minded attendees.

*Innovation Pavilion, through Wednesday, 8:30 – 5 p.m., Booth 7739, Hall B.*

*BlueTech Research Breakfast Briefing, Tuesday, 7:30 – 9 a.m., registration required; please inquire at Kiosk C, Booth 7739, Hall B.*

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## Ensuring Sustainable Supply of Critical Resources

INDUSTRIAL WATER LEADERS TO TACKLE THE WATER-ENERGY-FOOD NEXUS



Many of our favorite foods and beverages could not be produced without water. As a necessary resource in the water-energy-food nexus, tensions surrounding water supply will continue to grow as populations increase and climate changes.

This morning attendees will have the opportunity to hear ways to help manage the water-energy-food nexus from representatives of the food and beverage, energy, and technology sectors. The session “No Water, No Energy, No Food: Managing the Nexus,” will feature case studies demonstrating how structured water management programs have resulted in improved economic performance and minimized risk across supply chains.

Following the case studies, Mark Knight, assistant moderator, will facilitate a discussion between the speakers and the audience.

Tom Sandy, moderator, will give a

summary at the end of the session.

“Industries will play a major role in balancing tensions within the water-energy-food nexus,” Knight said. WEFTEC® provides a platform to educate about the risks associated with this nexus, to outline opportunities for society and industry to work together managing these risks, and to inspire people to take action with best practices for creating sustainable, long-term solutions, he added.

Knight believes that tensions associated with managing these resources “will become one of the biggest issues of our lifetime,” he said. “We need leaders to step up to take on these issues at the regional, national, and global scale.”

The session is organized in collaboration with The Water Council in Milwaukee. There is an impressive line-up of food, beverage, and energy leaders participating in the session:

David Garman, chief technology

*continued on p. 14*





## Meet Employers Face-to-Face

The Students and Young Professionals Networking and Career Fair is an opportunity for aspiring water professionals to practice interviewing skills and learn more about new job opportunities. Top environmental firms from the United States and Canada will be on hand for informal meetings. The fair will be held today from 1 to 4 p.m. in Room S105b.



## STORMTV VIDEOS HIGHLIGHT BEST PRACTICES

VIDEO PROJECT HIGHLIGHTS WORK OF STORMWATER PROFESSIONALS

Returning to the Stormwater Pavilion is a video showcase that celebrates MS4 professionals who turned fulfilling a requirement – community outreach and education – into an opportunity for excellence.



The StormTV Project began as an informal contest but soon evolved into something more substantial. Today it serves as a video collection of stormwater best practices and is designed to provide inspiration to others. Eligible submissions included short films and public service announcements, training videos, and project documentaries focused on green infrastructure, workforce development, flood mitigation, and many other related topics. There were 40 entries for this year's project.

The Top 10 videos chosen by the judges will be shown throughout the conference in the Stormwater Pavilion. Tomorrow evening, the Water Environment Federation will present the Grand Prize, Filmmaker, and Communicator awards at a reception in the Stormwater Pavilion.

*StormTV Project, through Wednesday in the Stormwater Pavilion, Hall A, Booth 221.*

*Stormwater Pavilion Reception, Tuesday, 5 - 6 p.m.*

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# ONLY IMPROVING WITH AGE

AT 30, OPERATIONS CHALLENGE BOASTS A RECORD NUMBER OF TEAMS AND STILL ATTRACTS A CROWD



When the 30th Operations Challenge kicks off this morning at the center of Hall B, it will celebrate the largest field of competitors in its history. During the next 2 days, 44 teams – including one from Argentina and a new team from Denmark – will compete in five events: Process Control, Laboratory, Safety, Collection Systems, and Godwin Maintenance.

“I think [it] is one of the greatest events that WEF has ever come up with,” said WEF Past President Al Goodman, who helped start the national competition in 1988. “It’s wonderful to see that Operations Challenge has raised the awareness of the operator’s skills.”

The longevity and growth of Operations Challenge demonstrate the need for a fast-paced skills competition in the water sector. Teams vying for the trophy at WEFTEC® already have advanced from regional competitions earlier this year.

“One of the key benefits of Operations Challenge has been to provide an operator with a greater skill set at a time when we’re trying to do more with less,” said Bob Rutherford, who has been involved with the competition since it started.

Both the technology and preparation for the competition have come a long way in 30 years.

During the 1988 meeting, Goodman said, he had to decide “on the fly” which types of gloves were required – latex for the Laboratory Event and leather for the Maintenance Event. Team members rushed out to local stores the day before the competition to purchase the required gloves.

The next year, Collections System Event organizers wanted competitors to replace a section of clay pipe with polyvinyl chloride (PVC) pipe, but the clay-pipe supplier for the event did not agree and threatened to pull the delivery, Goodman said. The compromise: Competitors cut out a section of clay pipe and replaced it with another section of clay pipe. Because the clay was heavier and cost more to ship, organizers opted to use PVC pipe in subsequent years, he said.

Competition organizers also had to decide whether to spend more for stopwatches with a 0.01-second readout or save money on the 0.1-readout models. They chose the more detailed watches, which proved to be a smart investment in the 1989 national competition,

when the difference between first- and second-place teams was just 0.01 seconds, Goodman said.

In the years since its auspicious beginning – inspired by the Olympic Games – Operations Challenge has evolved with the water sector. A given is that at least one element of the competition changes every year, to ensure operators learn new skills and adapt to changing circumstances.

For instance, last year the Process Control Event tested competitors with digital simulation software in addition to the written test. Teams now need to fix pre-programmed operational problems at a simulated biological nutrient removal activated sludge facility, anaerobic digester, and a chlorine-based disinfection system. This notable change gives competitors more hands-on experience that is reflected in higher event scores.

While the competition has experienced many changes in the rules, setting, and equipment since it began, welcoming international teams has been one of the most exciting. Several teams from Argentina and Germany have competed over the years.

And in 2016, Team KSB-USA, an all-star team representing the U.S., competed in the German event, finishing first in the Sewer Professionals division and third in the Wastewater Professionals division.

This year, a new Danish team, The Great Danes, represents three of Denmark’s largest water resource recovery facilities.

Operations Challenge provides the team members with an opportunity to come to WEFTEC and network with U.S. colleagues, said Danes coach Flemming Møller. “I think this is a great way to network and to learn from other great utilities in the states; therefore we said ‘yes’ to the challenge,” he said.

*Operations Challenge XXX. Process Control Event and Laboratory Event, Today, 11 a.m. – 4:30 p.m., Booth 7007, Hall B. Safety, Godwin Maintenance, and Collection Systems events follow tomorrow.*



## OPERATIONS CHALLENGE 2017 TEAMS

Aarhus Vand	Great Danes
AIDIS	AySA Demonios
Arizona Water Association	Arizona Surprise
California WEA	LA Wrecking Crew
Central States WEA	Pumpers
	Shovelers
Chesapeake WEA	Rogue Ops
Florida WEA	Methane Madness
	Fecal Matters
Hawaii WEA	Sewercide Warriors
Illinois WEA	Sewer Rats
Indiana WEA	Mechanical Seals
Louisiana WEA	Water Dawgs
New England WEA	Force Maine
	Franken Foggers
	Ocean State Alliance
New Jersey WEA	Jersey Devils
New York WEA	Brown Tide
	Genesee Valley Water Recyclers
	Jamaica Sludge Hustlers
North Carolina WEA	Operational Hazards
Ohio WEA	Cincinnati Grit
	Columbus Outfalls
	NWSSD Dirty Deeds
WEA of Ontario	OCWA Jets
	Ashbridges High Levels
Pacific Northwest CWA	Poo Fighters
	River Rangers
Rocky Mountain WEA	Commode Commandos
	Elevated Ops
	Heroic Hites
WEA of South Carolina	Blackwater Bruisers
	Controlled Chaos
	Lethal Concentration
WEA of Texas	Aqua Techs
	Central Snappers
	Poseidons
	South Mesquite Rangers
	TRA CREWSers
WEA of Utah	Mountain West Elite
	Wasted Gas
	Wasatch All Stars
Virginia WEA	Team HRSD
	Blue Ridge Brawlers





## Decisions, Decisions...

CONCURRENT FEATURED SESSIONS FOCUS ON HOT TOPICS

Full-conference attendees face a tough choice after the Opening General Session. You'd have to clone yourself several times over to attend all six of this morning's featured sessions, which cover topics from the research, industrial, collection systems, watershed, reuse, and resilience focus areas. Options include:

- **The AEEP Master Lecture** presented by Dr. Nancy Love, followed by a response from Dr. Charles Bott. Dr. Love's topic is "Microbiome of Household Water Systems" (Room S406b; see p. 4).
- **"No Water, No Energy, No Food: Managing the Nexus,"** a panel session examining sustainability of the supply chain (Room N426b; see p. 8).
- **"Private Property I/I in the Collection System,"** which provides a look at programs that have successfully monitored, evaluated, and mitigated infiltration and inflow (I/I) from private property sources. Topics covered include flow monitoring, mitigating rain-driven I/I, and lateral rehabilitation (Room S504d).
- **"How Well Is the TMDL Program Working?"** offers a panel discussion to share diverse perspectives on the Total Maximum Daily Load program's successes and limitations to date, and to perhaps identify opportunities for better results (Room S402b).
- **"Market Pricing To Fund Direct Potable Reuse"** provides insight into funding, per-property treatment cost, and funding for beneficial water reuse options (Room S501d).
- **"Resilience: It Means More Than You Think"** looks beyond the traditional definition of building and improving infrastructure to stand up to extreme situations. This timely panel session makes the case that resilience encompasses financial issues, workforce, community engagement, strategic planning, and innovative thinking (Room 402a).

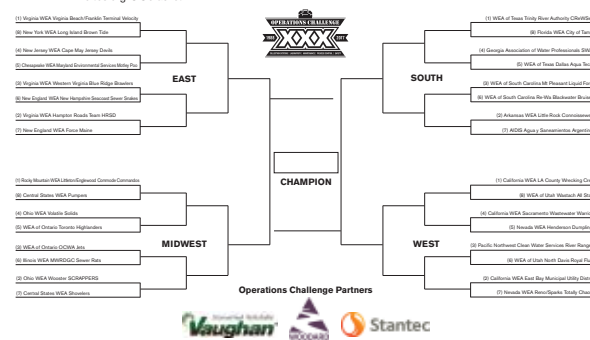
Featured sessions, 10:30 a.m. - 12 p.m.

# Pick the Top Ops Challenge Team

In the past 30 years, hundreds of teams and thousands of competitors have participated in Operations Challenge. To celebrate three decades of pulse-pounding competition by professionals from around the world, we've chosen 32 of the best teams to ever participate in the national contest. Now it's your turn. Tell us who should be named the best Operations Challenge team of all time.

To vote, go to [www.weftec.org/OCbracket](http://www.weftec.org/OCbracket) and fill out a bracket. Participants need to select their entire bracket at once. Votes will be accepted until Nov. 1. The full results will be published in the December 2017 issue of *Water Environment & Technology* magazine.

CHOOSE THE BEST OPERATIONS CHALLENGE TEAM OF ALL-TIME  
[www.weftec.org/OCbracket](http://www.weftec.org/OCbracket)



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## YOUR PLANNING AND ONSITE NAVIGATION TOOL

Make the most of your time in the exhibit hall—bookmark exhibitors, preview their PDF materials, and map a route—even mark exhibitors as visited and add notes.

Scan the QR code or point your mobile browser to [m.core-apps.com/wefevents](http://m.core-apps.com/wefevents) to be automatically directed to the proper app version for your particular device. Once the WEF Events mobile application has downloaded, launch the app and choose “WEFTEC 2017” from the show list.

The WEF mobile app is updated and includes more than ever. WEF Events provides you access to all WEF conferences in one application, including WEFTEC and specialty conferences. As new information becomes available, it will automatically update on your device. If you already have the app, tap on the Exit to Show List icon on the dashboard and select WEFTEC 2017 from the list of events to download and launch the app.



# Paddlers Chart New Course to WEFTEC



**W**atersports enthusiasts take note: Traveling to WEFTEC® by air or land might not be your only options. Just ask Gary and Linda De Kock, who paddled nearly 1200 miles to Chicago in an Old Town Canadienne canoe.

Setting out from Lac Vieux Desert, Mich., in late July, the couple enjoyed nearly 2 months of adventures on the Wisconsin, Mississippi, Illinois, Des Plaines, and Chicago rivers. Despite challenging river conditions, long waits at locks, and a friendly run-in with the law – after he enforced

the “No Trespassing” sign, the officer gladly posed for a photo – they arrived at Chicago’s Navy Pier on Sept. 17, 12 days ahead of schedule.

The trip, dubbed the “Five Rivers Voyage,” is the latest in a series of paddling trips the De Kocks have taken to increase awareness of water issues and raise funds for Water For People. Their first voyage took them nearly 2300 miles to WEFTEC 2014 in New Orleans.

At press time, the De Kocks had exceeded their goal of raising \$10 for every mile paddled.



## Express Yourself!

Are you passionate about the future of water? Make your WEFTEC® experience complete by sharing your thoughts on the #MyWaterLegacy Wall. Answer one of the questions presented, and artists will graphically interpret your words on a large chalkboard display. Together with responses from other attendees, your thoughts will form a living art exhibition that will evolve over the course of the conference. Come and see what develops!

#MyWaterLegacy Wall, Grand Concourse, through Wednesday, 8:30 a.m. – 5 p.m.





SOME OF TODAY'S NEW, LESSER KNOWN, OR OTHERWISE NOTEWORTHY EVENTS

**PUBLIC HEALTH IN THE HEADLINES**

Recent public health issues such as lead contamination, hospital wastewater risks, and direct potable reuse have put the water sector on the front page. Invited speakers from the City of Chicago, Orange County (Calif.) Sanitary District, and Joseph Cotruvo & Associates will talk about stories that present technical as well as public perception challenges.

*Session 212, 1:30 - 3 p.m., Room S402b.*

**DEEP DIVE INTO AERATION**

As the engine of the activated sludge process as well as a prime energy hog, aeration deserves close attention. In this interactive Knowledge Development Forum, expert instigators will engage the audience in an optimization discussion seeded by the latest field research.

*Session 207, 1:30 - 5 p.m., Room S406b.*

**HOP TO IT**

Brewing beer is water-intensive and produces wastewater high in biochemical oxygen demand. Take a tour through the exhibit hall in this 90-minute mobile session that gives you a chance to see potential technical solutions in person.

*Session 232 (Mobile session), 3:30 - 5 p.m., leaves from Grand Concourse.*

**WOMEN IN WATER EVENT**

Hear from a panel of female leaders then enjoy networking time with other water women. Cindy Wallis-Lage, Black & Veatch, and Nancy Love, University of Michigan, are among the panelists. Registration required.

*5 - 6:15 p.m., Room S103c.*

**ABC PINNING CEREMONY**

Get inspired by the newest class of Professional Operators honored by the Association of Boards of Certification in this prestigious awards celebration.

*5 - 6 p.m., Hall B, Booth 7027*

# They Be Jammin'

Saturday night an enthusiastic line-up of water professionals took to the stage at Park West for the fifth annual Jammin'4Water, which drew hundreds of WEFTEC music fans eager to support a good cause. The popular event raises funds for the Water Environment Federation Service Project and a number of charitable organizations working to provide clean water and reliable infrastructure in communities around the world.

Water Charities Fundraising, the 501(c)3 organization responsible for the production of Jammin'4Water, said it had raised more than \$74,000 this year to benefit water-focused charities.



Linda Bond

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# WEFTEC GETS ITS START

On Oct. 16 1928, the Federation of Sewage Works Associations' Board of Control held its first meeting. This meeting, held in Chicago, evolved into what is now known as WEFTEC.

In 2017, WEFTEC returns to Chicago for its 90th meeting.



## Nature

*continued from p. 1*

for Technology (LIFT) session will address the challenge of convincing utility stakeholders to trust, adopt, and invest in “bleeding-edge” technologies. Presenters will describe the tools and resources provided by the LIFT program, including technology scans, and will share the experiences of utilities, such as the LOTT Clean Water Alliance in coastal Washington State, that are successfully moving innovative ideas from concept into practice by managing assets, planning long-term, and spreading costs.

*Preparing for Climate Change: Tools for Resilience and Mitigation (Session 222), Today, 1:30 - 5 p.m., Room S504a.*

*Future Proofing Your Utility: Leveraging Innovation (Session 429), Tuesday, 3:30 - 5 p.m., Room 504a.*



## Automation for a Changing World



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**Sponsor of Innovation Pavilion Reception 5p - 6p**

[www.delta-americas.com/ia](http://www.delta-americas.com/ia)

## Nexus

*continued from p. 8*

officer for The Water Council, will give an introduction and discuss the Energy-Water Nexus Roadmap. He is associate vice chancellor for water, technology, research, and development at the University of Wisconsin–Milwaukee (UWM).

Kim Marotta, global senior director of corporate responsibility for Molson Coors Brewing Co., will discuss the necessity of water to produce beer. She joined the beer business in 2004, and is a member of the board of directors for The Nature Conservancy–Wisconsin.

Mark Yin, senior engineer at Shell Oil Co., will talk about energy. Yin, who has worked for Shell more than 20 years, has extensive experience in water and wastewater treatment in the petrochemical industry.

Paul Bowen, director of sustainable operations at The Coca-Cola Co., will discuss transforming risks into opportunities. He has worked as a technical expert for the company since 1999 and has helped reduce water use in bottling operations by almost 50% since 2002.

Mark Knight, technical specialist for GE Water and Process Technologies, will co-moderate the session. With more than 10 years of experience, he is responsible for improving the economic and environmental performance of industrial clients.

Rowlan Greaves, manager with the Southwestern Energy (SWN) Strategic Solutions team, will present about balancing water use and giving back to the environment. He joined SWN in 2010 as a facilities engineer before moving to strategic solutions in 2013. Prior to SWN, he worked for 10 years supporting the oil and gas industry in a consulting role with an emphasis on water resources.

Steve Gluck, a scientific consultant who provides technical leadership to several organizations including BlueTech Research, will discuss new and emerging technologies within the nexus. He assists companies in a broad range of water and wastewater technology needs. Previously, he was a fellow for Dow Water & Process Solutions, responsible for applications development and technology scouting in the water and wastewater markets.

*No Water, No Energy, No Food: Managing the Nexus (Session 102), 10:30 a.m. - 12 p.m., Room N426b.*



DAVID GARMAN



KIM MAROTTA



MARK YIN



PAUL BOWEN



MARK KNIGHT



ROWLAN GREAVES



STEVE GLUCK



# Welcome

*continued from p. 1*

today, with a record number of teams (see p. 10).

The Student Design Competition celebrated its 15th anniversary with the greatest number of teams in its history.

This year marks the 10th annual WEF Community Service Project, completed Saturday at Manierre Elementary School, and the 5th annual Water Palooza held on Friday.

It's also the 10th anniversary of the official *WEFTEC Daily*.

In parallel to honoring the staying power of WEFTEC and its many traditions, the event is designed to offer the water sector programming that is state-of-the-art in both content and format. You'll find leading-edge research sessions in the technical program, disruptive technologies at the Innovation Pavilion (see p. 8), and a host of just-released products and services on the exhibit floor. In addition to the conventional lectures and

panels, there are mobile sessions to get you on your feet, a full day of Interactive Knowledge Exchange videos (see p. 3), and mini sessions to facilitate learning on-the-go.

There has never been a greater need for inspired and informed water professionals, and WEFTEC aims to deliver on both. Setting the tone for

the event is Opening General Session keynote speaker, Fredi Lajvardi, known best for the major motion picture "Spare Parts." Lajvardi will focus on the importance of mentoring and investing in others to support a diverse, unified water workforce.

At 90, WEFTEC offers a wide spectrum of opportunities to network, find

technical solutions, and exchange knowledge with your peers, so it's possible to tailor the event to your specific needs. Be sure to download the WEF Events Mobile App from [weftec.org](http://weftec.org), to navigate your best course and customize your WEFTEC experience.

## Support Hurricane Relief Efforts



After coordinating with its Member Associations in the affected areas, the Water Environment Federation is encouraging donations to reputable national organizations such as the American Red Cross, or to the Water Environment Association of Texas, which is accepting donations for Texas WARN. Donation links are available on the WEF Events Mobile App, as well as via the E-Services computer stations located in the Grand Concourse.

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### Telog, A Trimble Company

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immediate notification of surcharge events. RTUs can store data internally for many months and can wirelessly transmit on a defined schedule or in response to alarms, delivering advance warning of overflows and blockages, and helping to manage and reduce CSOs, SSOs, and flooding incidents.

### RODI Systems Corp.

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### Madison Company

Booth 3555

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#### Continuous-Level Radar Sensors

Continuous-level radar sensors from Madison Company provide non-contact continuous-level measurement of difficult liquids and solids that cannot be measured with ultrasonic technology. Madison radar sensors are unaffected by sludge and biomass, dust, foam, oil, grease and other coatings, uneven surfaces, turbulence, pressure and vacuum, and provide accurate level sensing over larger ranges. Madison will recommend the appropriate radar sensor based on fluid type, chemical compatibility, container size and shape, agitation and by-products (foam or vapor), level range, and required third-party certification.

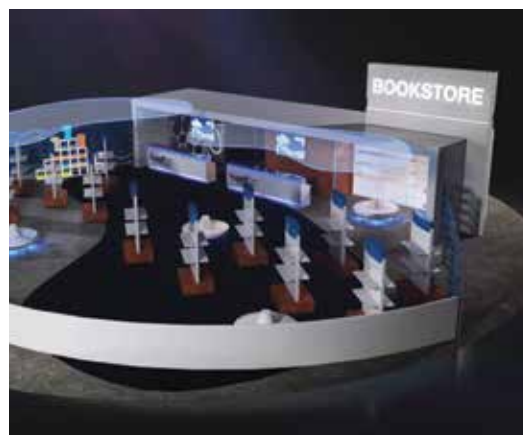


## WEF PLAZA

The newly designed Water Environment Federation (WEF) Plaza is located on both sides of the Grand Concourse, connecting the two exhibit halls. The Plaza offers access to WEF's educational and membership resources, as well as plenty of seating and workspace where you can network and recharge. Here's what you'll find.

### WEF BOOKSTORE

Pick up the just-released *Manual of Practice 8* and the other new titles, update your WEFwear, and enter daily "Spot the Croc" drawings to win a Kindle.



### MEMBERSHIP CENTER

WEF members, enjoy refreshments and a place to recharge your device (and your feet). Not a member yet? Learn more about WEF and join today!



### WEF AWARDS

Get inspired by this year's awardees and find out more about their work in this new, multimedia display that honors WEF's best and brightest.



### GLOBAL CENTER

Learn about international water challenges and opportunities, access translation and exhibitor matching services, and network with other attendees.



# Congress Provides Insights On Weathering The Storm



## STORMWATER MANAGEMENT SESSIONS GAIN ATTENTION AS COMMUNITIES GRAPPLE WITH VOLATILE WEATHER

Whoever coined the phrase “right as rain” probably didn’t have to manage huge volumes of stormwater during a significant wet weather event. The Stormwater Congress, a mini-conference within WEFTEC®, brings together those who share this responsibility.

Offering the Congress at WEFTEC provides stormwater professionals from around the world the chance to gather in one location, at the largest water quality conference and exhibition in the world, to learn from the very best thought-leaders in the stormwater sector. And it also provides other attendees the chance to familiarize themselves with unfamiliar terminology and technology. Attendees may devote their time completely to stormwater-focused programming, or take advantage of other WEFTEC® sessions in the Watershed, Collections, and Utility Management focus areas.

The technical program includes 15 technical sessions and workshops tailored specifically for stormwater professionals. It covers all pressing aspects of stormwater management, including climate resilience and flooding, MS4 strategies and innovations, best management prac-

tice research, real-time control for stormwater, permeable pavement performance monitoring, and pre-construction stormwater pollution prevention plans.

The Stormwater Pavilion on the exhibit floor brings together relevant product and service providers, in addition to a theater offering 15-minute sessions. Networking receptions will be held in the Pavilion Monday and Tuesday evenings.

This afternoon’s keynote speaker at the Stormwater Luncheon, Christine Zimmer, will discuss “Moving Beyond Stormwater: Changing Climate, Changing Minds” (see p. 4).

The Stormwater Congress is a part of the Water Environment Federation Stormwater Institute, which serves as a hub for stormwater information, publications, education, and policy.

*Stormwater Congress, through Wednesday; check WEF Events App for specific sessions and events.*

*Stormwater Pavilion, 100/200 and 300/400 aisles, Hall A.*

*Stormwater Congress Luncheon (registration required), 12 - 1:30 p.m., Room S106b.*



## Help Us Celebrate!

Get out your selfie sticks! We’re excited about the 10th anniversary of the official WEFTEC Daily, and we know you are too! Tweet a photo of you holding the official #WEFTECDaily at the conference or elsewhere in Chicago, and we’ll select the best photos to share each day. Extra points for unusual locations, group photos, and shots with mascot Niles the Crocodile!

## Call for Papers

# Rethink REINVENT Redesign

Our robust educational program provides opportunities to share your knowledge and solutions with more than **3,500 water and wastewater professionals** at the 2018 Florida Water Resources Conference. Join industry experts dedicated to the improvement and sustainability of Floridas waters.

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## Quotable

“When everyone is sweating and covered in dirt it doesn’t matter if you’re the president of the company or an undergraduate student, you hand the person a shovel. It’s a great way to collaborate and realize that we’re all here for the same reason ... Collectively, we’re in this industry because we care about water and we care about the world that the water is in.”

Natalie Cook, vice chair of Saturday’s Community Service Project




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## What are you looking forward to most at WEFTEC?



“I’m working with the Student Design Competition this year, and I’m looking forward to making the students feel comfortable, because I was there once and I remember feeling really scared. It was very overwhelming. Also, I’m going to participate in some technical sessions assisting the moderator and also as an audience member for professional growth, as a learning experience and to take what I learn back to my job.”

**Maria Reed**  
Brown and Caldwell  
Tampa, Fla.



“Since I’m a student and graduating soon, I’m looking for job opportunities, and networking is the thing I’m most looking forward to. I performed in Jammin’4 Water, and I’m heading to a committee meeting on public health and water, so I’m excited about that. And there’s a career fair. It all falls under the networking umbrella.”

**Jessica Chepp**  
Master’s in Public Health student  
University of Illinois at Chicago





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# SCAVENGER HUNT

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Engage with us on social media for more opportunities to win!

**#WEFTEC-Hunt**

## The Hunt Is On!

Participate in the WEFTEC® Scavenger Hunt for a chance to win some great prizes, including gift cards and an Amazon Echo. Pick up a play card in the Membership Center, visit all the all the listed exhibits to collect stamps, and return your completed card for a daily drawing.

While supplies last, super-eager attendees who post their Hunt shenanigans on social media with the tag #WEFTEC\_HUNT will receive an additional prize. Eligible posts include a photo of you getting your play card stamped; a photo of you, your play card, and WEF mascot Niles the Crocodile; and a testimonial about why you love being a WEF member.

---

*WEFTEC Scavenger Hunt, through Wednesday. Stop at the WEF Membership Center, Hall B, to get started.*

## Today's Interactive Knowledge Exchange includes public education videos that explain complicated topics at a fifth-grade level.

How would you explain your job to a fifth-grader?



"When you open your kitchen faucet to get tap water, that's clean, drinkable water. That goes through a water treatment process, and before that, there's a wastewater treatment process. So we take the dirty water and we treat it to a standard that's higher than the receiving water – say you put it into a lake. Then the water treatment plant would pull water from that lake and put it through the water treatment process, so when you open your tap to get a glass of water, you can drink it."

**Adam De Leon**  
City of Austin, Texas



"I design things that will change people's lives and make their lives better. Engineers identify the problem, they come up with a solution, and then they implement the system to make life easier for others."

**Ron Patel**  
Dallas Water Utilities, Texas



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VARIABLE FLOW RATE	✓ .03-58 GPH (.11-219.6 LPH)
VARIABLE WORKING PRESSURE	✓ Up to 145 psig (10 bar)
SMOOTH CHEMICAL DOSING	✓ No Pulsation Dampener Needed
EASY ORDERING	✓ Single Model Number Handles All Your Needs
DIAFLEX® EQUIPPED	✓ A Blue-White® Exclusive
PATENTED	✓ Multiple U.S. and International Patents Pending



## ProSeries-M<sup>®</sup> **M-3** PERISTALTIC METERING PUMP

**BUILT RUGGED ENOUGH TO HANDLE THE MOST DEMANDING MUNICIPAL WATER AND WASTEWATER TREATMENT ENVIRONMENTS.**

The M-3 provides smooth, quiet low velocity pumping action at feed rates up to .0002 to 33.3 GPH / .0007 to 126 LPH. M-3 Benefits Include:

- 10,000:1 Turndown Ratio with high resolution motor speed adjustment – Highest Turndown Ratio in the Industry!
- 4-20mA, 0-10Vdc, and Pulse inputs for remote external or batch control and 0-30 VDC/ contact closure remote start/stop.
- Scalable 4-20mA or Pulse, one 250V/3A relay and three 115V/1A contact closures assignable to monitor various pump functions including.
- Exclusive, patented and Built-in Tube Failure Detection System.

### Multi-Tube Technology

#### HEAVY-DUTY PERISTALTIC PUMP TUBING

Multi-Tube is a multi channel pump tube assembly designed exclusively for ProSeries-M® Peristaltic Metering Pumps. Multi-Tubes are engineered for optimum performance, including up to four times longer service life than other pump tube assemblies.



PRECISION CHEMICAL METERING FOR OVER 60 YEARS

# Blue-White®

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