SPRING
2020

The Official Publication of the Water Environment Association of Utah

DIGESTED news

Celebrating 50 Years of Clean Water

Per and Polyfluoroalkyl Substances (PFAS) in Water

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INSIDE:

2020 WEAU Annual Conference ■ States and EPA Coordinating on Best Approaches to Nutrients Permitting

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On behalf of the WEAU

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2020 Annual Conference On Its Way

Giles Demke

With the Mid-Year Conference now behind us, I would like to express my thanks to all those who participated and made the event a great success. This includes the Conference Committee – chaired by James Dixon – for their hard work in pulling the event together. Thanks also goes out to Rebecca Yoo and the YP Committee for once again offering 'Candygrams', where the proceeds were sent to Water For People. Thanks to Chris Reilley and James Dixon for the time spent pulling together the tremendously popular 'Kahoot' competition, a new addition to the Conference this year, held during the lunch hour. The winners were Mike Foerster and Clint Rogers. Congratulations to both on their extensive knowledge of all things wastewater and other important trivia.

With the changing of the seasons, all thoughts for WEAU move to the next major event: The 2020 WEAU Annual Conference. This annual event held in St. George, UT is recognized at the national level of WEF as one of the leading MA conferences.

> "This event is a great opportunity to network and catch up with old acquaintances, or to attend one of the many technical sessions presented by members of the wastewater community.

Each year there are over 300 attendees and 70 exhibitors. This conference is a showcase for the Operators Challenge competitions where seven to eleven teams compete for bragging rights and the opportunity to represent WEAU at the national event held as part of WEFTEC®. This event is a great opportunity to network and catch up with old acquaintances, or to attend one of the many technical sessions presented by members of the wastewater community.

I would also remind all WEAU members of the upcoming WEAU Board general elections. Please remember to cast your vote. Also, if you are interested in volunteering on one of the many committees please contact one of the WEAU Board Members. We are always looking for people to help in various positions. As WEAU is a volunteer organization, we can't function without volunteers. I, myself, have been involved for over nine years and the opportunities to network and get to know others in our industry has been a tremendous asset to my career. It has allowed me to form a network of people who I can call to ask for advice or to ask a question. Now that I have put in my plug for future volunteers, I would sincerely like to express my thanks to all who are currently serving in positions this year. It's because of you that our organization is so very successful in all that it does. Thanks again and I look forward to seeing you in St. George. dn

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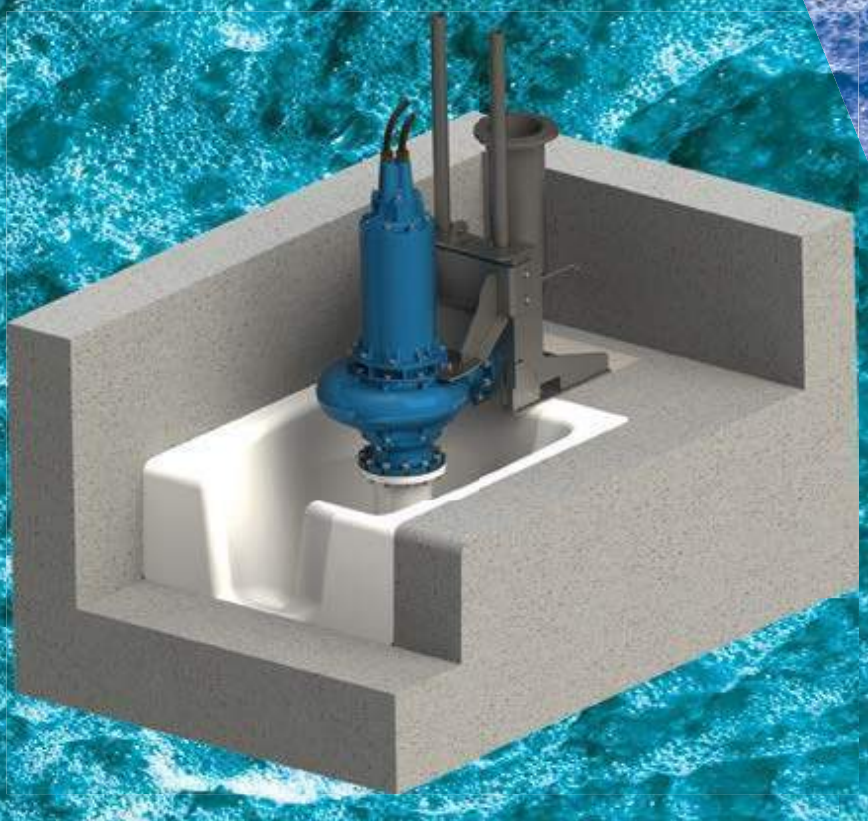

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Default Dictatorship

Bryan Mansell

Have you ever opened the settings app on your smartphone to make a change suggested by a complete stranger on a random forum you found using Google? I have. You probably have too. As you shuffle around in the settings, you realize there are so many you'd like to change beyond the one you were looking for; but until now, you didn't bother and just lived with the default settings.

Each smart device you own, from your phone and PC to your thermostat and microwave, has a host of default settings, most of which you will never think to change. Like the quiet hum of technology, those defaults are everywhere. As well, every time you add an app to your smartphone you add more default settings. We certainly don't have to and may not agree with all default settings; but most people go along with them anyway and relinquish trying to adjust them all to their liking. To some extent, you will never have enough free time to customize all the settings in all the apps on all your devices exactly to your liking. Besides, your setting preferences are moving targets as aspects of your life change. So, default settings dominate your technology and yield daily habits that someone else chose for you.

In this age of political unrest, please find some consolation and fresh perspective in the realization that politicians have a relatively minuscule impact on your day to day life when compared to the default settings that impact nearly every action you take as well as how you go about taking it. It isn't the oligarchs, prime ministers, and presidents that really shape our modern world, but those that determine what the default settings are for each of the billions of devices around the world. Maybe those are the folks that corrupt lobbyists should be trying to win over. If I were an ambitious sociopath aspiring for world domination, I think I would start by first paying off those in control of default settings.

Now, instead of declaring a war on defaults, I suggest we start with small steps. For example, at the upcoming Annual Conference in St. George we can climb out of our typical conference default-mode habits and change things up a bit. Stop and visit with someone we don't already know. Take notes in a different way than we usually do. Figure out a way for it to be a more meaningful experience than it normally is. Come Friday afternoon, we may feel ready to take another step towards living less complacently under the rule of default dictatorship. DN

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Water and Environment Heroes

By Clay Marriott, PWO Representative

Fellow wastewater professionals, I want to thank you. Thank you so much for allowing me to have the privilege to work with so many of you over the last several years. I am truly grateful to all of you for allowing me to serve you in this position. I am grateful to see your dedication to such a wonderful organization and the greater good of all. You are all truly water environment heroes. I can't say thank you enough. I have been able to go places and meet people from all steps of life because of the opportunity you have given me as the PWO Representative of WEAU.

I'm glad to be part of the upcoming Annual Conference in St. George. I hope that you will be able to attend this April. The Operations Challenge is looking to be a great one this year with ten (yes, ten!) teams participating. Thanks for all the support from everyone involved and for committing to such a great, educational event. We have a few different changes to the events this year. The safety event is totally new and redone for WEAU and WEFTEC® by our very own Marlo Davis. It's going to be good. The laboratory event is also new for St. George this year. So, come and get a little rowdy showing your support. Good luck to all the teams! We'll see you in St. George.

Pump Up Your Knowledge

1. **What are the two types of pump cavitation? (Choose two)**
   A. Vane tip B. Lateral
   C. Eye D. Venturi

2. **Gate valves in lift stations are mainly used as _____ valves.**
   A. Heade B. Check
   C. Isolation D. Diversion

3. **To distribute seal water in the stuffing box a _____ is used.**
   A. Impellor
   B. Lantern ring
   C. Mechanical distributer
   D. Diffuser

4. **What should be checked first before entering an underground lift station?**
   A. Wet well
   B. Breaker box
   C. Air blower
   D. Perimeter fence

5. **The elevation difference between the water in the wet well and point of free fall on the discharge is known as?**
   A. Head pressure
   B. Total dynamic head
   C. Potential pressure
   D. Kinetic pressure

6. **The lowest level a wet well should be pumped down to, is either half way on the Volute or _____ creation.**
   A. Cyclone B. Venturi
   C. Cyclical D. Vortex

7. **A chart that shows the efficiency ranges of a given pump system at various pressures and GPM is known as a pump _____.**
   A. Plan B. Curve
   C. Cap D. Dimension

8. **This equation $V = \frac{b}{n} R_h^{2/3} S^{1/2}$ is known as?**
   A. Einstein' B. Paul's
   C. Manning's D. Bernoulli's

9. **A wet well measures 8' X 8' X 15' deep. The pump kicks on at 11' and off at 3'. The pump capacity is 1 cfs. Inflow to wet well is 49 GPM. What is the cycle time?**
   A. 18 min B. 16.5 min
   C. 14 mi D. 9.5 min

10. **How pumped did you get about the quiz?**
    A. Totally
    B. This is the only one I got right
    D. It hurt my brain
    D. My kid could write a better quiz

ANSWERS: 1-A&C, 2-C, 3-B, 4-C, 5-A, 6-D, 7-B, 8-C, 9-D, 10-A.

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A Bear of a Quiz – Test your Knowledge on Disinfection

1. **The genus of bacteria that are fermented at 44.5O Celsius are:**
   A. Citrobacter B. Enterobacter
   C. Escherichia D. Klebsiella

2. **Which one of these have the greatest disinfection potential?**
   A. HOCl B. OCl-
   C. $NHCl_2$ D. NCl_3

3. **Which one of these have the least disinfection potential?**
   A. HOCl B. OCl-
   C. $NHCl_2$ D. NCl_3

4. **When ammonia combines with chlorine what is the ultimate reaction form?**
   A. NH_3 B. NH_2Cl
   C. $NHCl_2$ D. NCl_3

5. **Which of the following is a common de-chlorination agents?**
   A. Ferric sulfide
   B. Sulfur dioxide
   C. Hydrogen sulfide
   D. Ferric chloride

6. **Ozonation disinfects approximately how many times faster than chlorine?**
   A. 3. B. 32
   C. 320 D. 3200

7. **How does ozonation disinfect?**
   A. Cell Hydrolysis
   B. Cell Lysis
   C. Cell Mitoses
   D. Cell Reproduction

8. **Which amino acid does ultraviolet disinfection effect?**
   A. Adenine B. Cytosine
   C. Guanine D. Thymine

9. **Cellular DNA absorbs Ultraviolet light in which range?**
   A. UV-A B. UV-B
   C. UV-C D. UV-V

10. **Which chemical will affect Ultraviolet disinfection?**
    A. Alum B. Chlorine
    C. Ferric D. Sulfide

ANSWERS:
1-C, 2-A, 3-D, 4-D, 5-B, 6-D, 7-B, 8-D,9-C, 10-C

Recognizing 40 Years of Service

Please join us in extending best wishes to Kirk Tolbert, who is retiring from Mt Olympus Improvement District on March 25, 2020. Kirk has been a valued employee for 40 years, and will be greatly missed. Kirk joined Salt Lake City Suburban Sanitary District No 1 back on March 25, 1980 at the age of 18.

His dedication and work ethic will be sorely missed and impossible to replace.

We want to wish Kirk the best as he starts this new chapter in his life. We know he is eager to spend more time with his family and get out and do more hunting, camping, four-wheeling, his beloved yard work and washing his truck.

New Year for Young Professionals

Jazz Game

This January started off with a fun night with the Jazz' victory over the Charlotte Hornets. We had a full house with 78 WEAU attendees at this year's game. Thanks to all who came and see you next year!

Annual Conference YP Events

Join the YP events at the annual conference this April! With a BBQ on Wednesday night, Blood Drive on Thursday morning, and an adventurous hike on Thursday afternoon. There will be plenty of opportunities to get connected. Stay tuned by checking the conference program.

Quarterly Meetings and Looking Forward

Join the YPs at quarterly meetings in 2020. During every meeting, YPs discuss a new topic, plan upcoming events, and connect over lunch. If you'd like to join, drop us a note at *ypweau@gmail.com.*

WEAU Scholarship Application

The WEAU Scholarship Award is available to individuals serving in Utah's Wastewater field. All applications are reviewed by a WEAU Board appointed panel. The scholarship funds are intended to be used towards the applicants education, trade school classes, education books or student loans. WEAU reserves the right to follow up with the applicant to find out how the funds helped further advance their career goals. The applicant may be requested to write a brief summary of their experience in the *Digested News*.

Application Requirements and Criteria:

1. Member of Water Environment Association of Utah (WEAU)
2. Currently working/serving in Utah's Wastewater field
3. Complete and submit the application to *weauscholarship@gmail.com*

Application Deadline:
October 31, 2020

Award Announcement:
WEAU Mid-Year Conference

Questions contact:
weauscholarship@gmail.com

Application is also available at *www.weau.org.*
Click 'Announcements' under Quick Links

Application Date _____

First Name _____ **Last Name** _____

Phone Number _____ **Email** _____

WEAU Membership Years _____ **WEAU Membership Number** _____

WEAU Involvement (such as what committees have you served on or events have you helped with)

_____

_____

_____

_____

Education/Certification

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☐ Collections I	☐ Collections II	☐ Collections III	☐ Collections IV
☐ Trade School	☐ Associates	☐ Bachelors	☐ PE

Current Employer _____ **Hire Date** _____

Current Position _____

Responsibilities _____

_____

_____

_____

_____

_____

continued on page 18

WEAU Scholarship Application *continued*

Previous Employment or Experience _____ **Years** _____

Position _____

Responsibilities _____

_____

_____

_____

Desired use of scholarship fund _____

Amount of funds requested _____

Briefly describe how this scholarship would benefit you at your current job _____

_____

_____

_____

How will you continue to be involved in WEAU? _____

_____

_____

_____

Comments _____

_____

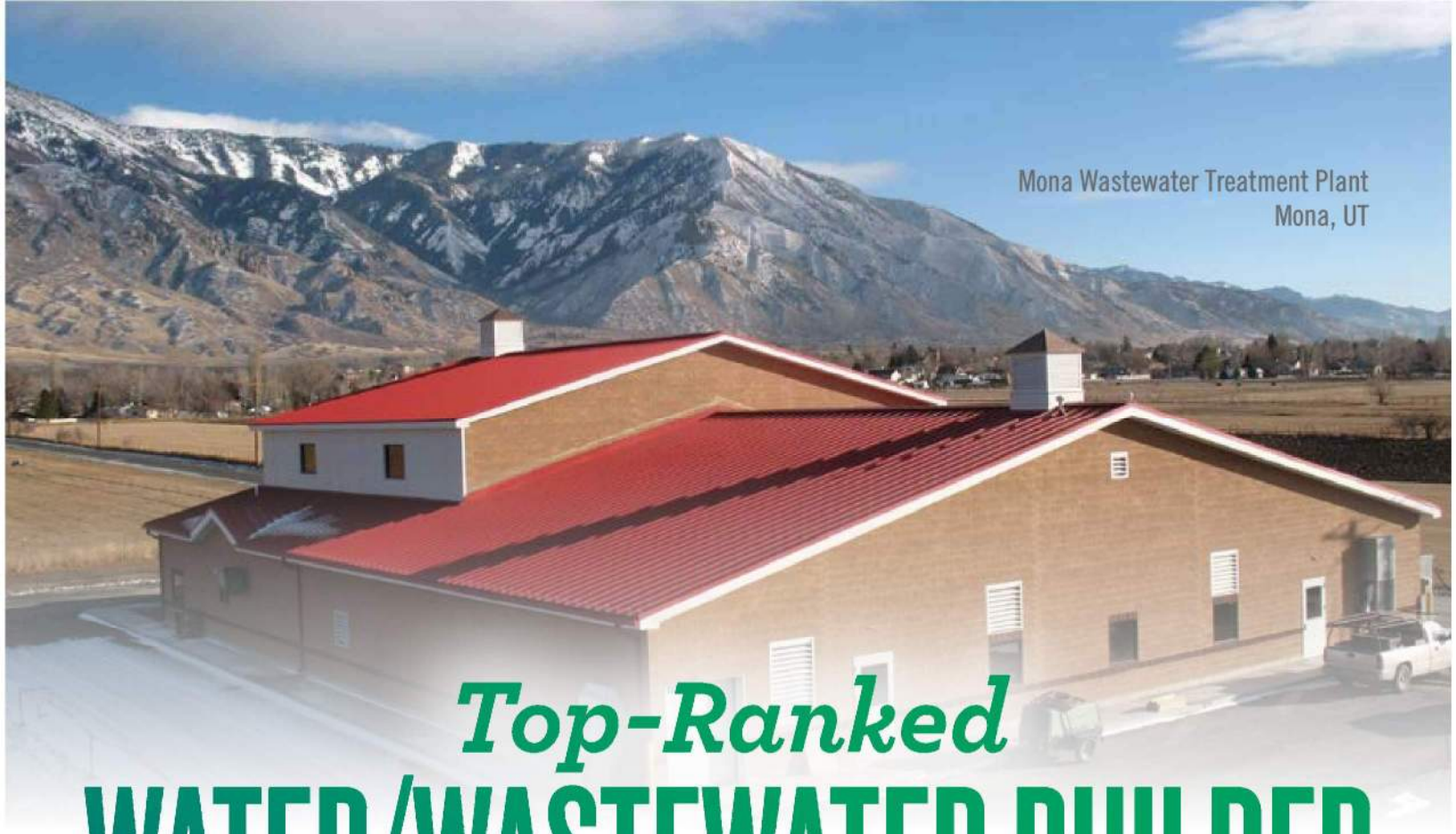
_____

Applicant Name _____

Applicant Signature _____ **Date** _____

Manager Name _____

Manager Signature _____ **Date** _____



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ANNUAL CONFERENCE

Tuesday, April 13 - Friday, April 17, 2020

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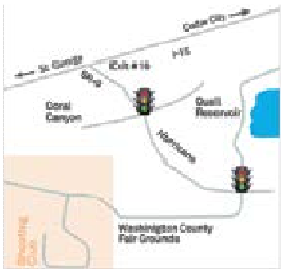

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2020 WEAU Annual Golf Tournament

Format: Four-person scramble

When: Tuesday, April 14, 2020 | Shotgun start at 1:30 pm

Where: Sunbrook Golf Course, St. George, Utah

Green Fees: $50.00 per person (includes cart and lunch)

Lunch: Box lunches & drink provided (available at 12:00 pm)

Contact: Jeff Beckman, Bowen, Collins & Associates
154 East 14075 South, Draper, UT 84020
801.495.2224 | *jbeckman@bowencollins.com*

Register online at *www.weau.org* or by returning this registration form to Jeff Beckman (see above) along with a check payable to WEAU Golf Tournament.

Contact Jeff Beckman at (801) 495-2224 with questions. We will match single players to fill foursomes.

REGISTRATION FORMS AND FEES ARE DUE BY MARCH 31st, 2020.

Name	Phone

2020 OPERATIONS CHALLENGE COMPETITION

What is Operations Challenge? Every day operators and technicians must operate treatment facilities, problem solve, respond to emergencies, and perform analyses related to wastewater treatment and the collection system. Few know about the behind the scenes work performed everyday by our state professionals. The WEAU Operations Challenge is an excellent avenue to cultivate new skills, hone current ones, increase operational knowledge, improve confidence, increase morale and build camaraderie in a safe, fun and competitive environment.

We request your support in cheering on these teams and supporting their hard work. Colleagues, Board Members, Engineers, Managers, Students and Families are all invited to attend this great experience. This will also be a terrific opportunity to network and socialize with professionals from other entities.

When: Wednesday, April 15, 2020, starting at 8:00 am

Where: Dixie Convention Center, 1835 South, Convention Center Drive, St. George, UT 84790. The competition will be held at the East end of the Exhibit Hall.

For further questions, contact Tom Anderson at 801-546-8506
Hadley Gunn at 801-633-4374

TECHNICAL PROGRAM SCHEDULE

Wednesday, April 15

Time	Entrada A	Entrada B	Entrada C	Sunbrook A	Sunbrook B	Sunbrook C	Exhibit Hall
8:00–8:30	REGISTRATION AND CONTINENTAL BREAKFAST						
8:30–12:00	Visit Conference Exhibitors (Special raffle for early attendees)						Operator Challenge
12:00–1:30	LUNCH						
Topic	Asset Management	Wastewater Facilities	Nutrient Removal	Residuals and Biosolids	Miscellaneus Topics	Water Reclamation and Reuse	
1:30–2:05	Effective Sewer Condition Assessment and Rehabilitation Programs *Mitch Dabling, PE - Jacobs Engineering, Inc.*	Provo Area Regional Wastewater Treatment Feasibility Study *Richard Noble - Hansen, Allen & Luce, Inc.*	ABCs of BNR: An Introduction and Evolution of Biological Nutrient Removal *Brian Mitchell - WesTech*	PFAS for POTWs *Chris Bittner - Utah Division of Water Quality*	Biomonitoring: What the Heck is This? *Sherry Sheffield - South Valley Water Reclamation Facility*	An Overview of Reuse Outside of Utah: What is Happening In Other States? *John Richardson - Brown and Caldwell*	Exhibits Open
Topic	Assett Management	Wastewater Facilities	Nutrient Removal	Residuals and Biosolids	Miscellaneus Topics	Water Reclamation and Reuse	
2:10–2:45	Just Because You Can't See It, Doesn't Mean It Is Not There *Dan Olson - Snyderville Basin Water Reclamation District*	A Low P WWTF *Christina Osborn - J-U-B Engineers, Inc.*	Provo City's Advanced Wastewater Treatment Process Selection and Modeling: A Pathway to Future! *David Kopychynski, PE, PhD - Water Works Engineers*	PFAS in Wastewater and Biosolids… What is a Manager to do? *Todd Williams - Jacobs*	Troubleshooting Biomonitoring at SVWRF *Sherry Sheffield - South Valley Water Reclamation Facility*	Shafdan Water Resource Recovery Facility *David Parry - Jacobs*	Exhibits Open
2:45–3:30	BREAK						
Topic	Asset Management	Wastewater Facilities	Nutrient Removal	Residuals and Biosolids	Utility Management	Water Reclamation and Reuse	
3:30–4:05	Digitalization And Remote Monitoring:The Future of Water Treatment and Distribution is Here *Jack Roushey - Siemens Inc.*	From Lagoons to a Mechanical BNR Plant, Lessons Learned *Mitch Hogsett - Forsgren Associates*	Lagoons and Ammonia: Meeting Federal and Municipal Toxicity Requirements *Dalen Crouse - Nexom*	How PFAS May Impact NPDES Permit Holders and Biosolids *Allegra da Silva - Brown and Caldwell*	Cathodic Protection Design Fundamentals *Erik Snyder - J-U-B Engineers, Inc.*	Sulfurous Acid Pre-Treatment Improves Reverse Osmosis Filtration *Marcus G. Theodore - Earth Renaissance Technologies, LLC*	Exhibits Open
Topic	Safety and Security	Wastewater Facilities	Nutrient Removal	Nutrient Removal	Nutrient Removal	Utility Management	
4:10–4:45	Know What's Below: Call 811 Before You Dig!!! *Spence Felsted - Blue Stakes of Utah 811*	NDSD New Outfall: Update and Design Approach *Kevin Cowan, PE - North Davis Sewer District*	Upgrading Lagoon Based Treatment Systems to Meet More Stringent Limits for BOD, TSS and Nutrient Removal *Tom Birkeland - Lemna Environmental Technologies, Inc.*	The Selection of Advanced Biological Nutrient Recovery (ABNR TM) for Phosphorus Compliance at Two Wisconsin Facilities *Jordan Lind - CLEARAS Water Recovery*	Granular Sludge Process: Next Step in Activated Sludge Process Innovation *Aditi Podder - University of Utah*	Whose Plan is it Anyways? *Chris Cleveland - Brown and Caldwell*	Exhibits Open

Thursday, April 16

Time	Entrada A	Entrada B	Entrada C	Sunbrook A	Sunbrook B	Sunbrook C	Exhibit Hall
8:00–8:30	REGISTRATION AND CONTINENTAL BREAKFAST						
Topic	Collection Systems	Operations	Nutrient Removal	Residuals and Biosolids	Water Quality		
8:30–9:05	Collection System Modeling Lessons Learned *Andrew Fugal - Brown and Caldwell*	Utah's Wastewater Characteristics *Paul Krauth - Statepoint Engineering*	Process Intensification for Enhanced Nitrogen Removal in Existing Basins at WRFs *Raj Chavan - Stantec*	Polymer 101: Chemistry, Handling, Activation/ Mixing, and Optimization *Yong Kim - UGSI Solutions, Inc.*	An Update on the Utah Lake Water Quality Study (ULWQS) *Mitch Hogsett - Utah DWQ and Forsgren Associates Inc.*		Exhibits Open
Topic	Collection Systems	Operations	Nutrient Removal	Residuals and Biosolids	Water Quality		
9:10–9:45	Lessons Learned from Lift Station Evaluations *Devan Shields - Sunrise Engineering, Inc.*	Preliminary and Primary Treatment Operation *Staff - Central Valley Water Reclamation Facility*	Design and Operation of Biological Nitrogen Removal Systems at High Flows *Rick Kelly - Brown and Caldwell*	Optimizing Polymer Mixing and Activation: Following the Science *Jeff Rhodes - UGSI Solutions*	Air Deposition of Nutrients: Big or Small Problem *Theron Miller - Wasatch Front Water Quality Council*		Exhibits Open
9:45–10:30	BREAK						
Topic	Collection Systems	Operations	Nutrient Removal	Residuals and Biosolids	Water Quality		
10:30–11:05	Cured-In-Place Pipe Inspection *Cedar Daniels - Bowen, Collins & Associates*	Let's Talk Dirty: Basic Digesters/Bioreactors/ Biological Nutrient Removal *Chad Burrell - Snyderville Basin WRD*	Achieving Stringent Nutrient Requirements for the New Silver Creek WRF *Craig Ashcroft - Carollo Engineers*	Evolution of Anaerobic Digestion Systems in the US *Steve Krugel - Brown and Caldwell*	WWTP Phosphorus Reduction to Date: Utah Lake Response *LaVere B. Merritt - Brigham Young University*		Exhibits Open
Topic	Collection Systems	Operations	Nutrient Removal	Residuals and Biosolids	Water Quality		
11:10–11:45	Acoustic Assessment of Collections Systems *Jon Borden - RH Borden and Company, LLC*	Electrical Basics For Wastewater Treatment Facilities *Tom Anderson - North Davis Sewer District*	Anaerobic Ammonia Oxidation: A Wonderful Innovative Tool to Manage Nitrogen Cycle in Wastewater Treatment Plants *Soklida Hong - University of Utah*	Optimizing Two-Stage Anaerobic Digestion via Recycle from an Aerobic Digester *Justin Wippo - Thermal Process Systems*	Phosphorus Fluxes Between Sediments and Water Column of Utah Lake-implications for Point Sources *Hanyan Li - The University of Utah*		Exhibits Open
12:00–1:30	LUNCH						
Topic	Collection Systems	Operations	Nutrient Removal	Residuals and Biosolids	Water Quality		
1:30–2:05	Doing Hard Time at the New Prison: Update on the Sewer Conveyance Systems in the Flat Northwest Quadrant of Salt Lake City *Mark Atencio - Horrocks Engineers*	Drones and Their Many Uses Throughout the Plant *Kevin Gallagher - Central Valley Water Reclamation Facility*	Fundamentals of Enhanced Biological Phosphorus Removal: Past, Present and Future *Bishav Bhattarai - University of Utah*	Considerations for Land Applying Your Biosolids Locally *Bill Fasth - Brown and Caldwell*	Ecological Health of Utah Lake in Relation to Cyano-HABs and Nutrients *David Richards - OreoHelix Ecological*		Exhibits Open
Topic	Collection Systems	Operations	Nutrient Removal	Residuals and Biosolids	Water Quality		
2:10–2:45	How Do We Get There From Here? Salt Lake City MP12A 700 South Sewer Force Mains *Brandon Wyatt - Bowen Collins & Associates*	Optimizing Nutrient Removal, Part 1: Montana Story *Grant Weaver - CleanWaterOps*	Can Wetlands Really Help Meet Low TP Limits? *Richard Mickelsen - Timpanogos Special Service District*	Struvite Control and Phosphorus Reduction in Water Reclamation Facilities with Anaerobic Digestion *Kelsey Wagner - Water Works Engineers*	The Jordan River: What Have We Done and What Can We Do *Theron Miller - Wasatch Front Water Quality Council*		Exhibits Open
2:45–3:30	BREAK						
Topic	Collection Systems	Operations	Nutrient Removal	Miscellanous Topics	Water Quality		
3:30–4:05	Sewer Self-Cleansing: Tractive Force Methodology *LaVere B. Merritt - Brigham Young University*	Optimizing Nutrient Removal, Part 2: Nitrogen Science & Technology *Grant Weaver - CleanWaterOps*	Phosphorus and Struvite Control Issues at Central Valley WRF *Phillip Heck - Central Valley WRF*	Chlorine and Peracetic Acid Disinfection of Antibiotic Resistant Bacteria in Wastewater Effluent *Sierra Quinn Sahulka - University of Utah*	Upgrading Lagoon Based Treatment Systems to Meet More Stringent Limits for BOD, TSS and Nutrient Removal *Tom Birkeland - Lemna Environmental Technologies, Inc.*		Vendor Breakdown
Topic	Public Outreach/Involvement	Operations	Nutrient Removal	Water Quality	Water Quality		
4:10–4:45	Flushable Wipes Don't Belong in Sewer Pipes *Jill Jones - Central Davis Sewer District*	Optimizing Nutrient Removal, Part 3: Nitrogen Case Studies *Grant Weaver - CleanWaterOps*	Emerging Technologies to Achieve Low Effluent Phosphorus in WRFs *Raj Chavan - Stantec*	On-Site Sodium Hypochlorite Generation: A Safe and Reliable Disinfection Alternative to Bulk Sodium Hypochlorite and Gas Chlorine *Jeff Rhodes - UGSI Solutions*	EPA's Role in Utah Water Quality Standards and Effects on UPDES Permit Limits *George Parrish - US Environmental Protection Agency, Region 8*		Vendor Breakdown

TECHNICAL PROGRAM SCHEDULE continued

Friday, April 17

Time	Entrada A & B	Entrada C	Sunbrook A & B	Sunbrook C	Exhibit Hall
8:00–8:30	REGISTRATION AND CONTINENTAL BREAKFAST				
Topic	Miscellanous Topics	Process Control	Sustainability		
8:30–9:05	Review of Operator Challenge Process Test *Paul Krauth - Statepoint Engineering*	Adaptive Mixing Leads to Better Biological Nutrient Removal *Michele Braas - Xylem Inc.*	Reclaim60: Projecting Utah's Water Quality Costs for the Next 40 Years *Leland Myers - Wasatch Front Water Quality Council*		-
Topic	Operations	Wastewater Facilities	Financing/Rate Studies		
9:10–9:45	Laboratory Basics for the Operator Certification Exam *Sherry Sheffield - South Valley Water Reclamation Facility*	Environmental and Economical Opportunities Made Possible by Advanced ATP Monitoring *James Brady - ATS*	Utah State Revolving Fund Outlook Update for 2021-2025 *John K. Mackey - Utah Department of Environmental Quality, Division of Water Quality*		-
9:45–10:30	BREAK				
Topic	Kahoot Quiz	Wastewater Facilities	Safety and Security		
10:30–10:05	Kahoot Quiz Game	Wastewater Headworks Screening for Smaller Installations *Dave Barkey - JWC Environmental*	How to Fix your Workers Compensation Program *Brian Child - Olympus Insurance*		-
Topic	Student Desgn	Wastewater Facilities	Project Delivery		
11:05–11:45	Student Design	Get Those Brush Aerators Out of Here: Retrofitting Oxidation Ditches *Jacob Baer - Carollo Engineers*	Are You Ready? Hurdles to Navigating Your Organization from 2D CAD Basics to Implementing BIM *Adam Odell - Stantec*		-
12:00	CONFERENCE END				

PRICING

Pre-Conference Workshop (Tuesday)		$105/Person
Conference Registration	Early Bird discount available before Midnight on March 20	
WEAU Life Member	Full Conference	$0/Person
WEAU Member Registration	Full Conference (Early Bird)	$285/Person
	Full Conference (Regular Pricing)	$385/Person
	Single Day (Early Bird)	$185/Person
	Single Day (Regular Pricing)	$195/Person
Guest Registration	Full Conference (Early Bird)	$330/Person
	Full Conference (Regular Pricing)	$430/Person
	Single Day (Early Bird)	$200/Person
	Single Day (Regular Pricing)	$210/Person
Student Registration		$0/Person

OTHER

Golf Tournament	Single Registration	$50/Person
	Foursome Registration	$200/Team
Ops Challenge Registration		$200/Team
Sporting Clay Event		$20/person
Additional Pricing	Additional Lunch Attendee	$25/Person
	Additional Banquet Attendee	$25/Person

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Per and Polyfluoroalkyl Substances (PFAS) in Water

By Ken Burgener

In a recent email from the Water Environment Federation (WEF) members were asked to vote against two amendments that concerned an up and coming issue, Per and Polyfluoroalkyl Substances (PFAS). For those unaware of what these substances are, they include the general items listed in the graphic to the left. In general chemicals that make things slick or water resistant, firefighting chemicals, etc. contain these "forever chemicals". They are considered carcinogenic.

"Perfluoroalkyl and polyfluoroalkyl substances, or PFAS, are dangerous byproducts of industrial waste and household chemicals – non-stick Teflon coating, firefighting foams, carpeting, and fast food wrappers being some of the major catalysts for these **carcinogenic compounds**." (See *www.brondell.com* on page 30.)

Now, the water and wastewater industries are coming under increased scrutiny and are being blamed again for these chemicals that we receive but do not generate. Nonetheless, there is real concern for the future of the current biosolids disposal systems that are in place around the country. All beneficial use may be in danger and our industry may be required to clean up any locations where we have disposed of the biosolids because of the presence of PFAS. The complete WEF email notification has been included below.

The Water and Environment Association of Utah also sponsored an all-day seminar on January 15, to discuss these matters. Please consider exploring them and speaking up, because your voice matters.

What are PFAS?

- Poly- and per-fluoroalkylated substances, or PFAS, are a group of **man-made chemicals** that have been used in many industrial and consumer products.
- Perfluorooctanoic acid (**PFOA**) and perfluorooctane sulfonic acid (**PFOS**) are PFAS.
- PFAS are present in **coatings**, rubber and plastics, carpet, apparel, **textiles**, paper, cleaning products, and **fire-fighting foams**.
- PFAS are persistent in the environment and in people.
- PFAS are recognized as a source of environmental concern in communities throughout the US.

(Text on *www.linmo.com* reference on page 30.)

Email from WEF:

Ask Your House Member to Vote Against Two Concerning PFAS Amendments

Washington, DC, July 10, 2019 -

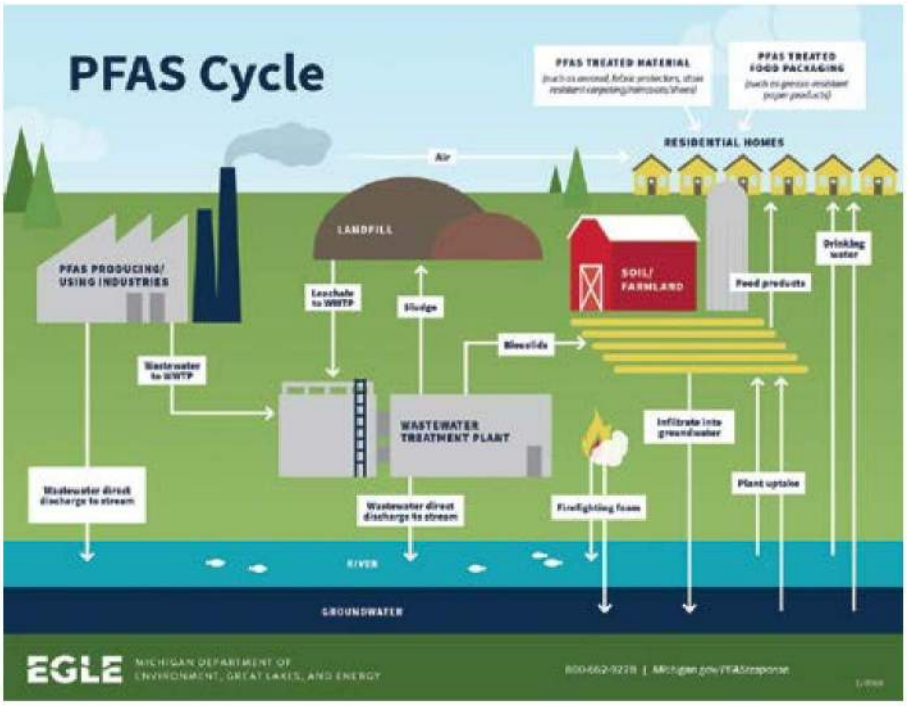
UPDATE:

Thanks to everyone who contacted Congress in opposition to the Dingell PFAS amendment. Unfortunately, it was ruled in order by the Rules Committee and will be on the House Floor for a vote sometime this week. Additionally, another PFAS amendment was ruled in order and it's equally problematic for the wastewater and drinking water sectors. Please send another letter to your Member of Congress opposing the new amendment and Dingell amendment.

In recent months the issue of per and polyfluoroalkyl substances (PFAS) in water has become an area of interest on Capitol Hill and many states. PFAS are a class of roughly 5,000 man-made chemicals of which only a handful have been studied. PFAS chemicals are used in a wide array of consumer products such as non-stick cookware, firefighting foam, and water-repellent clothes. These chemicals may not breakdown in the natural environment and can be inhaled, consumed, or absorbed by humans. Some PFAS chemicals are toxic at levels of a few drops in an Olympic size swimming pool.

The Senate has incorporated a number of PFAS requirements in S. 1790, *the National Defense Authorization*

(See *www.crccare.com* reference on page 30.)



Act (NDAA). It would mandate that EPA issue national regulations for two PFAS compounds: perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) within two years of enactment. It has a number of other mandates related to drinking and wastewater water as well, but avoided including PFAS regulation under *the Clean Water Act* (CWA) or CERCLA law, a.k.a. Superfund.

The House is considering the annual NDAA with some defense-related PFAS provisions. However, an amendment (# pending) by Representative Debbie Dingell (D-MI) would mandate additional PFAS regulation for water under CERCLA. This has the potential to be very problematic for wastewater utilities. Biosolid management in particular could be made subject to the Superfund law, which could place PFAS remediation costs on utilities and ratepayers. PFAS industrial producers and industrial users should be responsible for remediating it in our environment, but CERCLA's strict and retroactive liability requirements could place the burden on PFAS "receivers", such as wastewater and drinking water agencies.

Additionally, **amendment #48** by Rep. Chris Pappas (D-NH) would mandate the EPA to develop effluent standards and pretreatment standards for PFAS under *the Clean Water Act* by January 1, 2022. With limited research into the health effects of the 5,000 PFAS compounds and no established analytical methods and treatment methods for wastewater effluent, this amendment is bad policy.

Furthermore, congressional committee staff has determined under the Representative Pappas amendment the CERCLA law would also be triggered because PFAS would be designated a hazardous substance under the CWA.

WEF is requesting that members contact their Members of Congress to request that the Representative Dingell amendment and Representative Pappas amendment #48 be voted against and excluded from the NDAA. Please send a letter to your member of Congress today because the bill will be on the House floor this week."

References

www.brondell.com/healthy-living-blog/rid-your-water-of-pfas-carcinogens--the-forever-chemicals

www.crccare.com/knowledge-sharing/pfas-practitioner-guide?currentPage=2

www.limno.com/portfolio-posts/characterization-and-management-of-pfas-pfoa-pfos-contamination DH

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LAKESIDE Screw Pumps Bring Peace

It's oh-so-quiet at the Mahanoy City Wastewater Treatment Plant in Pennsylvania.

Unless you'd been told otherwise, you wouldn't know that close by, a 36-inch diameter pump is operating night and day in a giant concreted basin.

And even when one of the two larger screw pumps (84-inch diameter) is also being put through its paces, remarkably there's still a kind of a hush.

With the town's school district just 300 feet away, this very well-run treatment plant is a good neighbour.

Today's calmness though is quite an altogether different story from previous dramas experienced at Mahanoy City WWTP. The original 36-inch diameter raw sewage enclosed screw pump, which had become increasing unreliable, failed twice, ultimately giving the plant operators no option but to look for a more sturdy and efficient alternative. The heavy-duty enclosed Type C screw pump from Lakeside Equipment Corporation was chosen – a design with two convoluted flights that are welded to the rotating outer tube, with the lower bearing mounted above water level.

'Intelligently designed'

Mahanoy WWTP's Assistant Chief Operator, Josh Ball, commented: "Through Lakeside's representative Doug McCord in Exton, PA, we'd always had a very good relationship - and with this new enclosed Type C screw pump we immediately benefitted from an intelligently designed and very well engineered product."

Two years later though, one of the original 84-inch diameter enclosed internal-lift type screw pumps suffered a catastrophic failure, forcing the operators to introduce a temporary (three-month) bypass system.

"At the time, this was pretty nerve-wracking," added Josh Ball. "The bolts on the stainless steel ring, on which the vast majority of the weight rests, simultaneously broke, causing the structure to break in half. It was scary."

For storm events, the town has to have sufficient back up capacity, so the decision was taken to replace both of the larger pumps – and Mahanoy City had little hesitation in deciding to replace the old units with two brand new 84-inch diameter enclosed Type C screw pumps to line up alongside the 36-inch diameter pump that had been working without any issues for the past 24 months.

The two new larger screw pumps, utilized alternately during heavy rainfall, have so far only been needed for flow rates of two million gallons per day, though they can handle a total of 50 million gallons per day. Installed in the wet well at an angle of 38 degrees, these larger pumps sit next to the workhorse 36-inch diameter pump that on average handles 850,000 gallons per day, but can go up to 1.38 million gallons per day.

Lakeside's enclosed screw pump (left) and its twin screw pumps used for storm duty.

Designed for trouble-free operation, with options for either an open or enclosed design, the new Screw Pumps lift large quantities of water or wastewater at low heads for applications such as return activated sludge or storm water pumping. The Open Design consists of the spiral screw, upper and lower bearings and a drive arrangement, using a tube and spiral flights set in an open, inclined trough that permits both simplicity and reliability.

Lakeside's Enclosed Screw Pumps utilize the same operating principles, but are encased within a tube and use either rotating or stationary outer tubes inclined at up to 45 degrees, allowing the shortest horizontal space required for a given lift.

The enclosed Type C 84-inch diameter screw pumps, which were a drop-in replacement for the failed original internal-lift type pumps, have allowed the plant to get back to normal for the 4,000 residents of the town (plus 2,800 at a local state prison).

Once at the heart of the coal industry, Mahanoy City's wastewater that goes through to the combined sewer overflow is all from domestic use.

'It is only stainless steel that ultimately survives'

"In this volatile environment, it is only stainless steel that ultimately survives", added Josh Ball, who has been working at the plant since he was a teenager almost two decades ago.

Doug McCord added: "We aimed to bring about the best and most long-lasting solution for Mahanoy City. This scale of pump installation is a significant investment and needs to be applied with the utmost precision. Lakeside used all of its vast engineering, fabrication, machining and aligning experience to bring about a truly first class job".

"The difference between how the old pumps used to sound is like night and day – and we've also seen a big improvement in reliability."

Lakeside's screw pumps in Pennsylvania.

The smaller of the pumps, which is installed in the deeper part of the wet well, has required only minimum maintenance since its installation – a weekly treat of oil and grease, plus a change of oil just twice per year. For the two new larger screw pumps, an oil change is required just once per year.

"We do of course carry out regular visual inspections", continued Josh, "but all three enclosed Type C pumps are extremely reliable. Doug and Lakeside are helpful as well as consistent, and always apply common sense.

"Compared to the previous cross-start motors on the old pumps, the Type C's are also more efficient, using far less energy. When needed, the capability of these pumps also gives us the advantage of being able to clean out the well without going over the bearings. The power is there to bring it down to operating levels very quickly".

He added: "We have a new soft start-up with 200 HP motors, but it is incredible that the Lakeside pumps are so quiet. In fact, when we first had them installed, we couldn't hear anything, so we had to go outside to check that they were running! If we'd had loads of noise from the start-ups and constant humming, it could have led to possible complaints from the school district that's so close to us, but because of the very high quality work by Doug McCord and Lakeside, everything is running smoothly and quietly. The difference between how the old pumps used to sound is like night and day – and we've also seen a big improvement in reliability."

For more information, visit *www.lakeside-equipment.com.*

States and EPA Coordinating on Best Approaches to Nutrients Permitting

By Mark Patrick McGuire and Katie Foreman

For the past two years, the Association of Clean Water Administrators (ACWA; Washington, DC) and the Water Environment Federation (WEF; Alexandria, VA) have been working closely with the US Environmental Protection Agency (EPA) to meet and discuss a broad range of nutrients permitting issues. Beginning in December 2017, a diverse group of representatives from state clean water programs involved in managing nutrient pollution and EPA headquarters and regional staff have been tackling this topic. These meetings will continue through 2021 as part of a cooperative agreement with EPA.

To date, ACWA, with support from WEF and EPA, have hosted four workshops with an additional three set for 2020 and 2021. The workshops' purpose is to help achieve several environmental outcomes by bringing together state, tribal, territorial, federal, and other stakeholders to identify challenges and barriers to nutrient permitting program implementation, highlight opportunities for program improvement and enhancement, showcase innovations and achievements, and identify and attempt to solve the most intractable issues.

Workshop Topics

The first workshop, held in Boise, ID, in December 2017, was a broad overview of topics regarding nutrients permitting. More than 50 individuals from the states and EPA participated, with presentations given on technologies, permitting flexibilities and innovations, the interrelation of permitting for nutrients and other pollutants, and other issues. A group of attendees also visited the Dixie Drain project in Parma, ID.

The second workshop, held in Columbus, OH, in June 2018, focused on the relationship between wastewater technologies and nutrient permitting. More than 40 individuals from the states and EPA participated, with presentations given on specific types of technology, optimization and alternative approaches to nutrients removal, costs analyses, operator training, small systems, and more. Also, attendees visited two facilities in the greater Columbus area to learn about treatment processes and technologies.

The third workshop, held in Gulfport, MI, in November 2018, focused on the connection between nutrient permitting and total maximum daily loads (TMDLs). More than 60 individuals from the states and EPA participated, with presentations and discussions focusing on breaking down barriers between TMDL and permitting programs, confined animal feeding operations (CAFOs) and municipal separate storm sewer systems (MS4s), reassessing and reevaluating TMDLs, politics and public perceptions of TMDLs and permits, small systems, variances and compliance schedules, and water quality trading.

The fourth and most recent workshop, held in Alexandria, VA, in November 2019, focused on identifying challenges and building solutions regarding water quality standards and permitting for nutrients. More than 70 individuals from the states and EPA participated, with presentations and discussions focusing on numeric and narrative nutrient criteria, the interaction between technology limits and water quality standards when permitting for nutrients, small systems, and staff coordination. A group of attendees also toured the Alexandria Renew Enterprises facility to learn about innovative treatment processes and technologies.

Each of the four meetings was live-streamed for individuals who could not attend in person.

> "ACWA and WEF hope to continue to work toward solutions to one of the nation's greatest environmental challenges."

Workshop Themes

Through the four workshops some themes have emerged, such as the need for permitting flexibilities, improving communication, working with nutrients criteria, and dealing with small systems criteria.

Regarding permitting flexibilities, state representatives have shared their experiences using watershed-based permits (such as North Carolina

and Virginia), water quality trading (Connecticut), and integrated planning (Ohio). States see permitting flexibilities as a suite of tools to help reduce nutrient pollution state waters in a more efficient and cost-effective manner.

Communication between state programs and between states and the federal government has been a constant theme. Attendees have expressed that to be successful state permit writers need to have open communication with modelers, TMDL writers, standards and criteria developers, EPA headquarters and regional staff, and outside stakeholders. Breakdowns in communication are one of the main impediments to progress on nutrient pollution reduction.

States such as Missouri and Montana have developed and implemented numeric nutrient criteria. Other states, like Iowa and Kansas, have narrative nutrient criteria. Both forms of criteria create challenges and opportunities when writing permits for nutrients. State representatives have discussed these challenges in each workshop, working toward solutions to challenges and sharing expertise.

Lastly, the issue of small systems management has been discussed in each workshop. Representatives from EPA Region 7, Kansas, and Indiana have presented together in each workshop on the challenges faced by small systems in communities smaller than 3,000 residents. Challenges include dwindling resources and populations, lack of operator expertise, need for system upgrades, and potential tightening of permit limits. Potential solutions included long-term nutrient reduction plans, regionalization, general permitting, variances, and more.

These four themes are just a few examples of the themes covered in the workshop series.

Future Meetings

ACWA and WEF plan to continue offering interesting and important topics and discussions at the next three nutrients permitting workshops. These workshops provide states and EPA, as co-regulators, the opportunity to identify and seek solutions for the diverse challenges associated with nutrient pollution.

In 2020, there will be two workshops, in summer and autumn, with the final workshop of the cooperative agreement to be held in 2021. ACWA and WEF hope to continue to work toward solutions to one of the nation's greatest environmental challenges.


Both authors are from the Association of Clean Water Administrators (Washington, DC), the independent, nonpartisan, national organization of state, interstate, and territorial water program managers, who on a daily basis implement the water quality programs of the Clean Water Act. ***Mark Patrick McGuire*** *is an Environmental Program Manager and* ***Katie Foreman*** *is an Environmental Program Associate at ACWA.*

Seven Entries Earn Awards in the 2019 Operator Ingenuity Contest

Every year at WEFTEC, the Operator Ingenuity Contest awards operators who find simple, applicable solutions to everyday problems. WEFTEC® 2019 hosted the eighth annual Operator Ingenuity Contest awards ceremony on September 25. In 2019, seven new winners joined the ranks of the nearly 50 other fixes that made people's jobs easier and safer.

The Muckraker Award

This award went to Mike Wenner of the City of Napoleon (Ohio) for creating a tool to help solids dry more quickly. Wenner fabricated a large rake from a piece of steel angle and welded to it several portions of cut pipe. The rake gets attached to a front-end loader. The loader can now be used to rake the solids in the drying bed, increasing its surface area and drying it much faster than was previously possible.

The Goody Bag Award

William Paddock of the South Orange County Wastewater Authority (Dana Point, Calif.) received this award for his invention of a fisheye filtration system. After discovering fisheyes (globules of polymer) were blocking his facility's polymer flow switch and ball checks and triggering multiple 'low polymer flow' alarms daily, Paddock knew something had to be done. Paddock and his staff decided to create a filter using an old chemical tote. They cut a hole in the tote and fashioned a filter from screen door material. It worked, but the process was labor intensive because they had to frequently clean the filter to maintain flow. After a few iterations, they landed on using a replaceable 600-micron bag filter that it could be replaced easily when full. They also installed a removable filtration platform that could be placed on top of any tote, and a pneumatic double diaphragm pump, which enables them to place the filtration system above the tank. Paddock credits his success to communication with staff: "I went to every single operator and asked 'what would make this better?' We got some really good ideas."

The Tight Squeegee Award

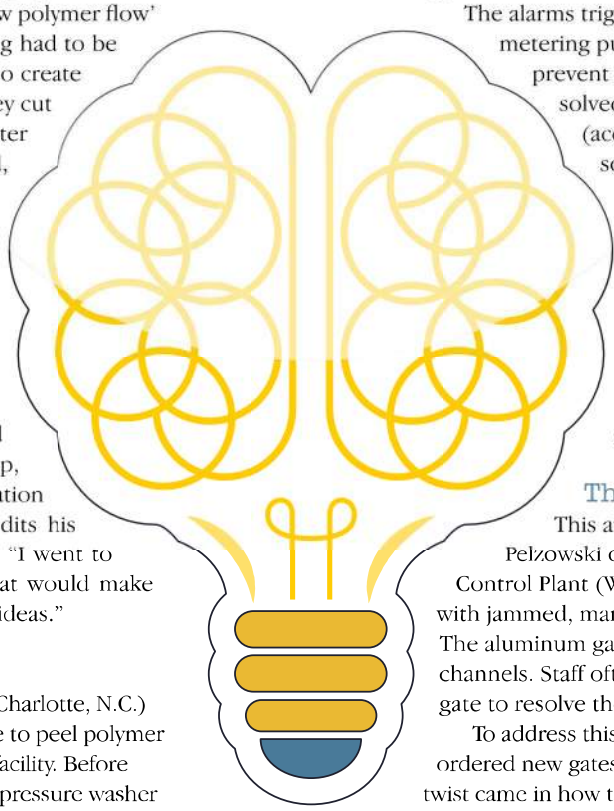
This award went to Charlotte Water's (Charlotte, N.C.) Johanna McHone for inventing a device to peel polymer slime off the polymer age tanks at her facility. Before her invention, she had to use a heated pressure washer to clean the tank sides. This had the risk of splashing scalding hot water or chemicals on the operator. It also consumed a lot of diesel, electricity, and water. Her fix was incredibly simple: She fixed a squeegee to a flexible broom handle. The tool just peels the slime off the tank wall.

The Sewer Sailor Award

This award went to James E. Segrest Jr. from the City of Auburn Water Resource Management Sewer Department (Auburn, Ala.). Segrest had a wide diameter sewer main that had to be inspected. The flow in the main was too great for the facility's crawler camera to be feasible. So, instead of sending a human in, Segrest attached a GoPro camera and flashlights to a cooler lid and floated it through the main. He attached the float to a reel of kite string to control its progress. The facility has used the sewer sailor several times.

The Bottle Bump Award

Perhaps the simplest and cleverest of all, this award went to James Petalio of the Rodeo Sanitary District (Rodeo, Calif.) who was dealing with constant chlorine dosing alarms after hours. The alarms triggered the facility's sodium bisulfite metering pump to run at 100% automatically to prevent a chlorine violation. The problem was solved by simply raising reagent bottles (acetate and potassium iodide buffer solution) from below the analyzer unit to above it. Removing the need for the reagent dosing pump to overcome the head of lifting it up to the analyzer stabilized the process and eliminated the alarms. This straightforward fix saved the district $1,200 in overtime costs and more than $12,800 per year in sodium bisulfite costs.



The Smooth Move Award

This award went to John Presta and George Pelzowski of the Corbett Creek Water Pollution Control Plant (Whitby, Ontario) who were dealing with jammed, manual, aluminum, channel sluice gates. The aluminum gates had fused to the aluminum channels. Staff often were resorting to cutting out the gate to resolve the problem.

To address this issue, the Corbett Creek team ordered new gates from various suppliers. Their clever twist came in how to install them: They welded side slide

"If you have a simple fix that has made your job safer, easier, or more efficient, submit it for the 2020 contest."

tabs to the new gates that let them fit in the original channels perfectly. They also added a rubber stop at the bottom of the gate to help the seal.

The Rag Spear Award

Matt Haggler from the City of Meridian (Idaho) received this award for skewering an irritating problem. The city's 3-million-L (800,000-gal) anaerobic digesters hadn't been cleaned in several years and the influent screens weren't working well. This meant wipes, rags, and hair had built up in the tank. The bound up material had created massive rag flotillas, which soon began to affect digester performance.

Haggler's solution was a 7.6-m-long (25-ft-long) long, 50-mm-thick (2-in.-think) solid steel spear head with collapsible tines. The spear can be attached to a crane and forced into the rag balls. Once stabbed in, the crane pulls the spear back out and the tines unfold. The tines hook into the rag ball like barbs, and the mass of material can be pulled out. The spear has removed rag balls weighing nearly 450 kg (1000 lb). The spear cost less than a few hundred dollars and has saved the city significant money in down time, and enabled the digesters to work properly.

Apply now for Operator Ingenuity 2020

Next year's contestants will certainly have big shoes to fill, but if past years are any indication, the idea will only get more creative and ingenious. If you have a simple fix that has made your job safer, easier, or more efficient, submit it for the 2020 contest.

The application period is open now and closes June 5. The contest is open to all. (The entry form includes a field for WEF Member ID number; this field is optional.) Find full submission details online at *www.weftec.org/ingenuity.*

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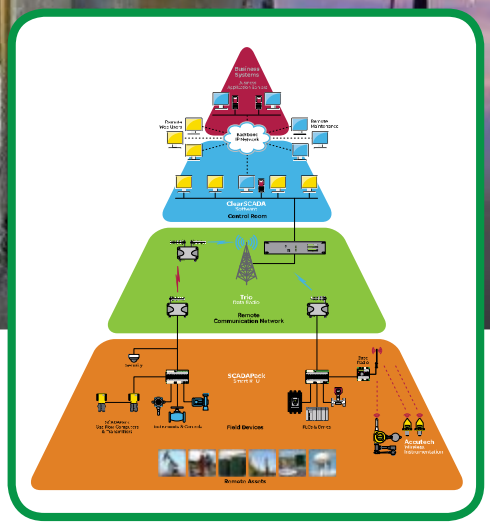

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CHANGE@WORK:

Making the People Side of Change Better

By Wendy Rabel, Stantec Consulting Services, Inc.

Change is everywhere and happens to all of us, and the amount of change we are experiencing in the workplace is accelerating. Workplace change can look like a business process or software change, a reorganization or resignation, or it can be related to the physical space you work in, from full office moves to furniture changes. Change can be stressful as you attempt to adapt and remain productive. For people leaders, the impacts of a poorly-managed change can feel more like a crisis.

Whether at work or in our personal sphere, change impacts most human beings in a similar way, but we all experience this process individually. The severity of the impact we feel is subjective and depends on how big or complex the change is, the loss we associate with it, and how many changes we are asked to navigate at once.

If change is coming at us all the time, how can we manage it better while remaining productive and meeting expectations?

Get (and Give) The Facts

When change is happening in the workplace, the information is also changing. The most important step you can take is to ensure you have the facts. Do not make decisions based on circulating rumors and do not spread false information.

For leaders, planning communications and other activities ahead of the first announcement is key to providing the right support at the right time, which will allow a return to full productivity as soon as possible. Whether it is the introduction of a new treatment process, a new regulation to be followed, or a facility moving locations, sharing information ahead of time gives others a chance to process the change and the opportunity to ask questions and get clarification.

> “Take stock of what you control and what you influence. Much of our time and energy is often spent on things that are beyond our control or influence, which equates to time wasted and energy spent towards little impact.

Get (Pro)Active

It has been said that 80% of success is just showing up. The importance of being present cannot be underestimated in the context of navigating change in the workplace. This means showing up for your colleagues and your leaders by doing what is asked of you and leading by example. This includes being open to training in new skills, preparing for meetings, and paying attention to current information and updates related to the change. In leadership roles, your presence is key to successful transitions because it gives your team a chance to ask questions and allows for those concerns and opinions to be heard and addressed. This also gives team members someone to look to for support.

Taking initiative through non-required efforts can also help. Keeping up to date with industry news on your own, such as drought contingency plan changes connected to the Colorado River System, can be a way for you to be proactive in learning about policy that could directly affect you both professionally and personally.

Get Out of Your Own Way

Take stock of what you control and what you influence. Much of our time and energy is often spent on things that are beyond our control or influence, which equates to time wasted and energy spent towards little impact.

Regardless of your position or role, focusing your efforts where you have control and/or influence will help you be more effective and feel more productive. For example, you might have recommendations or suggestions on an upcoming operations and maintenance changes to the facility you work at. You can also look into what you can control, such as bringing that conversation to the table at an industry organization like AZ Water where there may be technical experts who can provide different perspectives.

Taking small steps in a more proactive, positive way can make a huge difference. Change will happen, and you have much more control over the outcome than you may realize. By focusing on your own reactions and being intentional about how you respond, you can make even the most difficult changes easier – for you and for your team. DN

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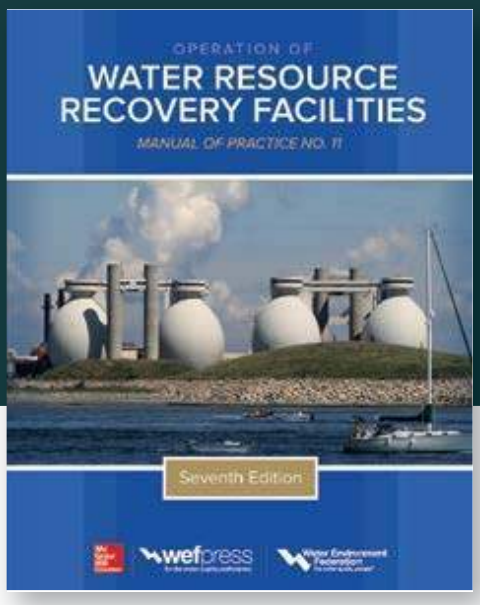

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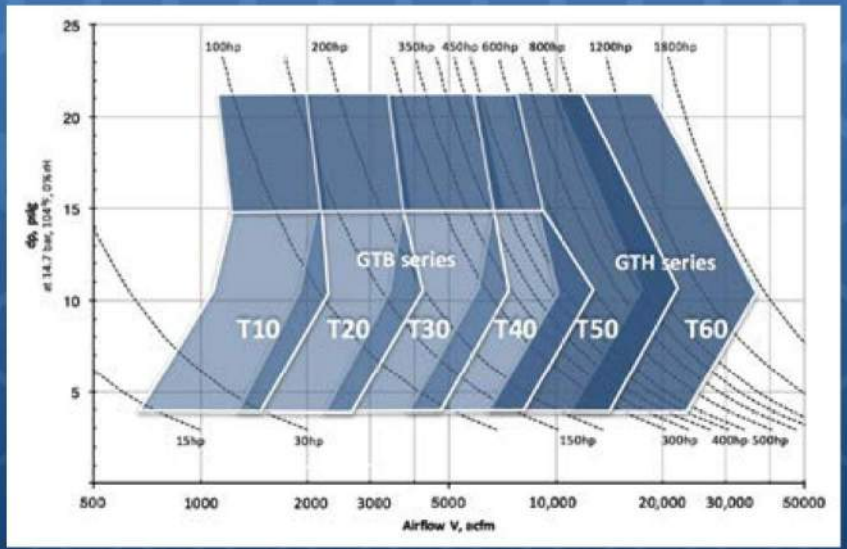

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