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#### INSIDE:

- Update from the YP Committee
- CWWA National Conference Going Virtual



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ATLANTIC CANADA WATER & WASTEWATER ASSOCIATION

American Water Works Association Atlantic Canada Section Water Environment Federation<sup>\*</sup>

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On the cover: Frozen lake on the Nova Scotia south shore in winter. | dreamstime.com

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#### What can you see beyond the horizon?

elcome to our final issue of Go With the Flow for 2021. December provides a time for reflection

**V** on lessons learned (+/-), accomplishments to be celebrated, newly established protocols and delivery methods in our many businesses/utilities.

2021 brought with it the continued challenges from COVID-19, and the ways in which we delivered our goods and services.

What will 2022 bring? As we close out one year, we begin our to-do lists for the coming year.

#### "Change lives on the Horizon!" –TF Hodge

We recently concluded our second virtual ACWWA Annual Conference. Our strong Technical Papers program, which included our Young Professionals program and vendors Tradeshow, provided some new perspectives that hopefully gave food for thought or solved some problems for our attendees and their colleagues. We would like to thank our various delegates, presenters, vendors, and sponsors without whom the conference would not be possible. Their continued support is to be applauded. Trihedral, once again, provided an exceptional experience for our attendees, and we would like to thank their production team for their efforts and guidance.

Our audience was treated to magician Steve Spade, sponsored by the ABEA. And the Membership Committee provided a social experience with GatherTown – a meet and greet like no other!

The continued dedication of our conference committees is second to none, and being virtual provides no less challenges – so we raise a glass to you – cheers!

#### "We have our fingers crossed that 2022 will be an in-person event to be held in Saint John, NB."

We have our fingers crossed that 2022 will be an in-person event to be held in Saint John, NB.

Education has been pervasive in our lives in a big way over the last 20 months. It can be said that:

#### "Continuous learning is the minimum requirement for success in any field." –Brian Tracy

Our Education Committee continues to present a strong selection of online courses, and are attempting to re-introduce in-person selections, following provincial health guidelines and judging the appetite based on registration numbers. COVID-19 may have created opportunities for alternative delivery methods but in no way has affected the quality of our product. See our many offerings on the website at www.acwwa.ca/education/acwwa-courses.

We also strive to support the learners of tomorrow through our scholarship offerings – it is never too early to begin planning for future needs. Visit www.acwwa.ca/committees/scholarship.html.

In closing out my 2021 address I would like to thank my fellow board and committee members for their support and the continued opportunity to serve. I wish everyone a safe and healthy holiday season, and all the best for a prosperous new year.



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#### WEFDelegate'sReport



#### Reflections

s this year draws to a close, we can reflect on the challenges we have experienced over the past many months with travel restrictions, vaccines and the like that have been on everyone's minds. The ACWWA "virtual" AGM and Conference is taking place December 7 to 9, 2021. Depending on when you read this article that I am writing in November... I would like to predict that we had a great conference, and we all learned a great deal from our guest speakers, technical sessions, and we all enjoyed the virtual Trade Show portion of the conference.

A lot of work goes on behind the scenes to prepare for this conference, and I want to commend everyone for their role that made this a success. I cannot lie and say that I am really looking forward to the next ACWWA AGM and Conference being an in-person event. I do look forward to being able to talk with people face to face and not monitor to monitor. Fingers crossed for 2022.

Well as far as WEF is concerned – WEFTEC did take place in Chicago in October. There were smaller attendance numbers as can be expected, but those who were able to attend in person really enjoyed their experience. I was not able to attend this year for obvious reasons.

WEF has some exciting projects they have been working on such as the DE&I (Diversity, Equity & Inclusion) Tool Kit. This is now available to every Member Association to use to help encourage more DE&I. Once we have the opportunity here in Atlantic Canada, we will be able to



First row (L to R): Janet Hurley Cann, Ifetayo Venner, Jamie Eichenberger, Aimee Killeen; Second row (L to R): Gustavo R. Gallo-Chacon, Shellie Chard, Howard Carter, Lynn Broaddus; Third row (L to R): Diego Rosso, Walt Marlowe, John Trofatter, Keith Hobson.

share what we have learned from the Tool Kit.

With this being a very brief update, I am pleased to introduce you to the 2021–22 WEF Board of Directors below. Please reach out if you have any questions about WEF or any of their programs.

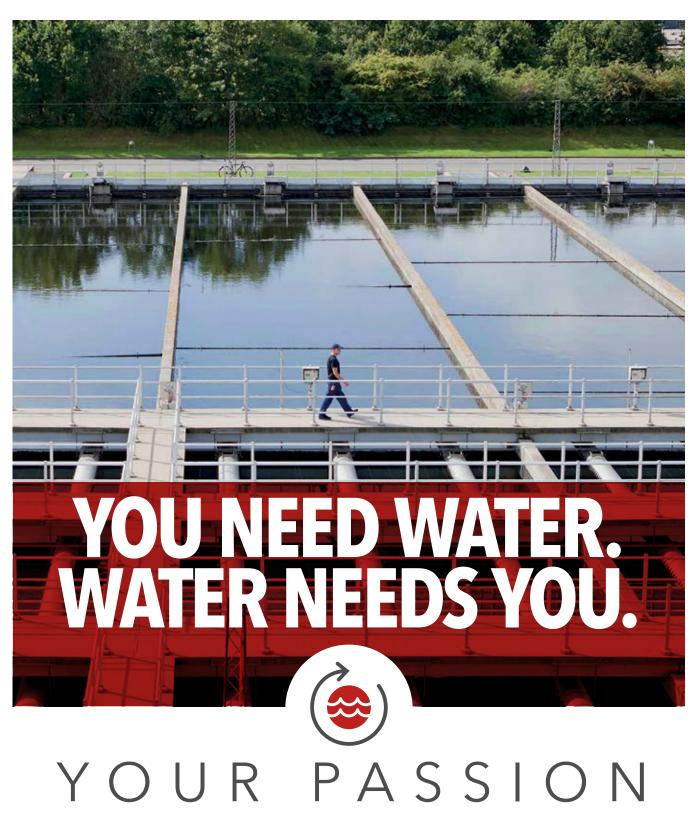
#### WEF 2021–22 Board of Trustees Source: WEF.org

The Board of Trustees serves as the governing body of WEF and holds legal authority and fiduciary responsibilities on behalf of the federation and its membership. The Board of Trustees also provide guidance and direction to implement the WEF Strategic Plan.

The Board consists of the President, President-elect, Vice President, latest living Past President, Treasurer, and six WEF members recommended by the WEF Nominating Committee and confirmed by the House of Delegates – the member advisory body of the Board. The WEF Executive Director serves as Secretary of the Board.

Since 1928, the Water Environment Federation and its members have protected public health and the environment. As a global water-sector leader, our mission is to:

- Connect water professionals;
- Enrich the expertise of water professionals;
- Increase the awareness of the impact and value of water; and
- Provide a platform for water-sector innovation.
  If you wish to contact a Board Member or request copies of WEF Board Meeting Minutes, please send your request to Sandi Grooms at sgrooms@wef.org.



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WATER IS OUR PASSION. WE'D LIKE IT TO BE YOURS, TOO.





#### **AWWADirector's**Report



## AWWA envoi an online resource for standards

elcome to the Winter 2021/22 issue of ACWWA's Go With the Flow magazine. As we move into the winter months, I hope everyone working within our industry has had a successful fall.

Many in the utility world have been busy ensuring their water, wastewater, and stormwater construction projects are wrapping up properly prior to the onset of winter. The pandemic has created many challenges for us all in all aspects of our lives, including for those who work to supply parts and appurtenances to our industry. Supply chain issues and logistical challenges are impacting all of us, and it will no doubt carry forward into the 2022 construction season. Let's continue to hope that the overall picture improves.

The winter months can be challenging operationally for utilities, but many in the industry also use this time to review and revise their municipal specifications and focus on planning for next year's work. Many rely on AWWA standards when considering new parts and appurtenances to be allowed in their specifications, along with updating installation methods to reflect current best practices. To that end. I wanted to highlight AWWA's 'envoi' product. Envoi is an online library accessible within the AWWA website that houses all of the more than 180 AWWA standards. This is a member benefit at no extra cost. Manuals of practice are also available, but may require a further subscription, depending on your membership type. I have browsed through the envoi site, and thought it was a practical way to access AWWA standards. I invite you to look through the envoi site yourself in the event you are searching for the most current information relative to AWWA standards. The envoi site can be found at www.awwa.org/ Publications/envoi

In other AWWA news, there was a Council Summit held in late October in Denver. It marked the first inperson Directors' meeting since the onset of the pandemic. Many directors still attended virtually, although it was an encouraging sign to have any kind of in-person meeting. In January, there will be a winter Board of Directors meeting, scheduled to be held in Santa Fe, New Mexico. This will also be an in-person meeting, with some elements offered virtually for those unable to attend. The key action to be taken at this meeting will be the election of the new AWWA President-Elect. Candidates are currently undergoing the vetting process, with the vote to be held in Santa Fe. The Association has resumed some in-person training and conferences, and it is their intent to host ACE 2022 next June in San Antonio, Texas, as an in-person event, although AWWA remains flexible in the event virtual programming becomes required.

Lastly, a friendly reminder for members to check both the AWWA and ACWWA websites for the latest in education and training opportunities. Remember, despite our new normal, it is critical that operators within our industry have access to the training required to maintain relevant certifications.

I wish you the best over the winter months and hope we will be able to gather together in person at some point in 2022.

Thank you for the opportunity to serve our Section. Please feel free to contact me with any AWWA-related questions or concerns at scott.grasman@fredericton.ca.

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#### **MEMBERSHIP**Corner

Julie Stokes (ACWWA Membership Director)



#### Kudos to our members

hese past few months have been exciting for our members as we move to more in-person courses again. We were able to provide you with a virtual meet and greet at our conference for those who miss the in-person networking. Let's hope that next year we will be able to meet in person and network again with our industry peers.

Once again, we had a very successful photo contest which saw the production of yet another wonderful calendar. We hope that you keep enjoying this membership appreciation gift for being an ACWWA (AWWA & WEF) member. It never seems to amaze us to see the talent we have amongst members in our Association. It is also nice to see what our beautiful provinces have to offer as most pictures were taken locally due to COVID travel restrictions.

Congratulations to our 2021 ACWWA photo contest winners: Nadine Keller-Wadden, Cape Breton Regional Municipality (top prize), Wendy Krkosek, Halifax Water (first runner-up), and Deborah Smith, City of St. John's (second runner-up). Thank you to all our members who took time to submit photos for the contest.

#### Did you know?

- In appreciation for all you do, AWWA members can now use a promo code "THANKYOU" to receive 20% OFF your next AWWA store purchase\*, now through December 31, 2021.
- If you know someone who may be interested in becoming an AWWA member but is not sure, they can try a free 90-day trial. If you know of someone interested, please have them contact me at *julie.stokes@moncton.ca* or (506) 877-7702.
- With your WEF membership, you receive complimentary webcasts, member discounts to conferences and events, as well as up to 20% off knowledge center products.

"Once again, we had a very successful photo contest which saw the production of yet another wonderful calendar." Welcome to the following new members:

Name	Organization	Membership	
Joydip Dev	Halifax Harbour Bridges	WEF	
Peter Takacs	Flowstar Industrial ULC	WEF	
Andrew Burgess	Flowstar Industrial ULC	WEF	
Dylan Takacs	Flowstar Industrial ULC	WEF	
Jake Larsen	UPEI	AWWA	
Mike Trainor	Charlottetown Water & Sewer Utility	AWWA	
Donald Jarvis	Veolia Water Canada	AWWA	
Dave Marriott	Town of Sussex	AWWA	
Darrell Bent	Town of Middleton	AWWA	
Shaun Thompson	Town of Middleton	AWWA	
Jeff Manderville	City of Miramichi	AWWA	
Adrien Robichard	City of Miramichi	AWWA	

#### As of October 31, 2021

Total AWWA active members: Total AWWA late members: Total active WEF members: Total WEF late members:

Don't forget the "refer a member" contest for a chance to win a \$50 gift card of your choice.

Congratulations to Darren Row who was our last refer a member contest winner!  ${\ensuremath{\ensuremath{\,\cong}}}$ 





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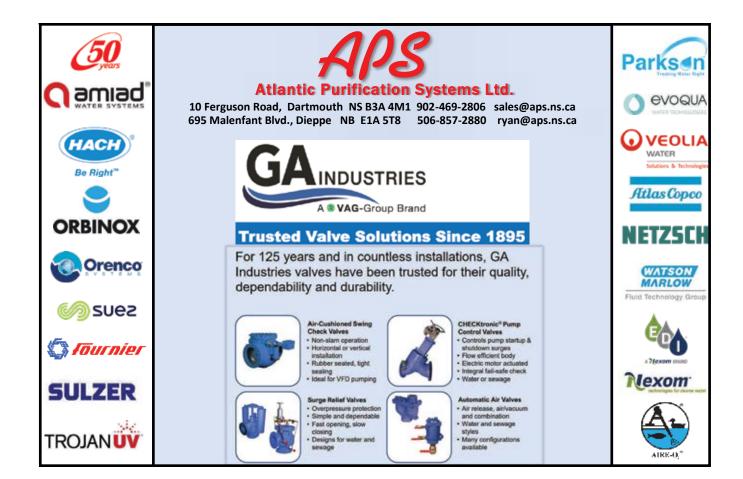


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## GO with FLOW

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#### **ABEA**News



#### Here to assist

new year is around the corner and the 2022 planning process is well underway. The ABEA continues to support the ACWWA and its members. Let us find a way to make your process more seamless.

We continue to listen to the needs of our customers and assist in problem solving. COVID-19 is now a part of our daily lives so our members strive to develop communication strategies to adhere to Public Health guidelines, and respect individual protocols. We are a caring team made up of 56+ unique members and are here to assist in any way possible.

The ABEA offers four x **\$1,000 academic scholarships** annually to deserving individuals who meet the application criteria (visit *www.ABEA.biz*). Graduation is around the corner, so start planning today!

We hope all Annual Conference attendees enjoyed the well-developed program, as well as the entertainment provided by Steve Spade, and sponsored by the ABEA. We are looking forward to the next Annual Conference slated for Saint John, NB and hope we can return to an in-person model – stay tuned!

Education is a hot topic this year, and our membership continues to find ways to assist their customers with creative delivery methods to keep them informed of changes in the industry. If you have a need please feel free to reach out. We are certain that we have something to meet your needs on an individual basis, or we can create a program in conjunction with the ACWWA Education Team.

#### Joyeuses Fêtes et Bonne Année Happy Holidays and Happy New Year 🍛

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Contact information for our members, and applications for our Scholarship and Grant Program, can be found at www.ABEA.biz.

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#### Current ABEA Board:

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Your ABEA members are still available and there to assist with all of your needs – let's stay connected in 2022.

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#### **UPCOMING ACWWA COURSES**

The following is a list of the upcoming ACWWA courses. All registrations and payments can be completed online at acwwa.ca. Please check the website for new course listings and the most up-to-date information.

February 7–10, 2022

February 14–17, 2022

March 28–31, 2022

April 25–28, 2022

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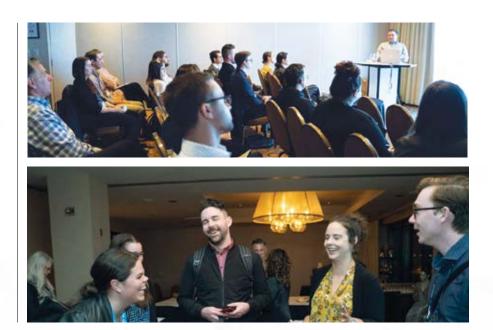


## update from the **Young Professionals Committee**

BY ISOBEL DEMONT

he ACWWA Young Professionals Committee is a group of engaged engineers, researchers, technical salespeople, and managers emerging in their careers in water and wastewater. The committee aims to help form networks that will help our members push the boundaries of our field and shape the future of the Atlantic Canada water/wastewater industry. We host professional development seminars, social events, and volunteer opportunities for our members to enhance their budding careers.

One of our annual events was the YP session at the ACWWA Annual Conference. This year, we





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had remarkable presentations from five different YPs. Topics covered a wide range of fields in the water industry and included: monitoring of SARS-CoV-2 in wastewater and municipal solids, monitoring of lead and copper in schools, and prediction models of geosmin in surface waters. Every year the session highlights the amazing work being done by our YPs, and this year was no different. Congrats to all!

Although the YP session was virtual, we're extremely excited to get back to in-person events as restrictions become more flexible. We're currently planning for some social events in the winter of 2022, so stay tuned for more information! We're also always looking for new ideas – especially activities that can connect our YPs from all across the Atlantic provinces, as our network is heavily Halifax-based. If you're interested in volunteering with the committee, or have some suggestions for future programming, please reach out to me at isobel@dal.ca! 🕰

FROM American Water Works Association

#### WHAT YOU NEED TO KNOW ABOUT THE UPDATED WATER CONSERVATION & EFFICIENCY PROGRAM OPERATION & MANAGEMENT STANDARD (AWWA G480-20)

By Jennifer Shimmin (Vice-chair, AWWA Standards Committee on Water Conservation Practices)

hroughout North America, water conservation and efficiency programs play an increasingly prominent role for water providers as climate change, rising costs, and environmental and legislative constraints put pressure on water supplies. To contend with these challenges, water providers need assurance that their conservation efforts are meaningful and effective. Some may need guidance on the core components that comprise successful and effective conservation and efficiency programs, and others may need a way to evaluate how their water conservation and efficiency program measures up.

For the past eight years, the ANSI/AWWA G480 Utility Management Standard on Water Conservation and Efficiency Program Operation and Management has offered an industry-standard metric for evaluating programs of all sizes and budgets. The first edition of the standard was issued in 2013, and a revised version of the standard is now available, offering utilities a fresh opportunity to assess their programs. The new edition, AWWA G480-20, which was released Feb. 1, 2021, and is available from the AWWA Store, updates and expands on the 2013 edition, including important new provisions relating to metering, water loss control, outdoor water planning and management, and many other areas.

#### **UPDATES TO THE STANDARD**

The AWWA G480-20 standard is entirely voluntary and offers a comprehensive set of program measures that utilities can choose to adopt and use to evaluate their own offerings. Utilities may formally adopt AWWA utility management standards and seek to conform to each specific requirement or simply use the standards as guidance. AWWA G480-20 includes the following sections:

- Regulatory requirements
- Top-level organizational functions, such as staffing and planning
- Internal utility actions and requirements, such as metering, billing practices, and nonpromotional rates
- Program components, such as landscape efficiency

and transformation, landscape water budgets, and water loss control programs

• External policy requirements, such as water efficiency in building codes and standards

• Specific requirements for wholesale water agencies In building on the 2013 first edition, AWWA G480-20 includes significant updates and refinements. These include a new section on the integration of water efficiency and land use planning, along with detailed recommendations related to water shortage and drought planning, metering practices, water loss auditing, and audit validation.

#### **VERIFICATION OF COMPLIANCE**

The new standard includes a section focused on documentation and verification of conservation and efficiency program compliance. Compliance requires a verification update every five years, which should be made available to the public. It includes transparency and full accountability, which are core components of all AWWA utility management standards.

Utilities may seek an independent review to determine how they measure up to the standard. One way to do this is by working with the Alliance for Water Efficiency (AWE), which offers an independent compliance verification service for its member agencies. AWE uses a compliance checklist, the components of which include utility conservation planning documents, water resources plans, water shortage plans, and more. The AWE G480 Leaderboard recognizes exemplary water utilities that have adopted and complied with the voluntary AWWA G480 Standard and establishes compliance at Bronze, Silver, Gold, and Platinum levels. AWE staff look forward to submissions for review and to get agencies listed on the new leaderboard. Utilities are encouraged to reach out to AWE for the checklist in order to begin the process.

Given the heightened interest in conservation, the AWWA G480-20 standard will prove helpful for any water provider interested in increasing the level of water conservation and efficiency among its customer base.

#### **News**&Notes



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#### CWWA NATIONAL WATER AND WASTEWATER CONFERENCE

Going Virtual January 11 – February 3, 2022

The 2022 event will be hosted virtually. We're still working with our technical committees to figure out exactly how that will look, but we guarantee it will be the excellent technical content you're used to seeing from CWWA.

We are planning on hosting webinars every Tuesday and Thursday from January 11 – February 3, 2022. Topics will be varied, allowing delegates to tune in to just the events they are interested in. Registration and sponsorship are coming soon.

We've finalized the webinar schedule, and will be updating the page as we finalize speaker outreach.

- Opening Plenary January 11 (morning)
- Drinking Water Pandemic impacts on water quality – January 11 (afternoon)
- Water Efficiency January 13 (morning)
- Energy Efficiency January 13 (afternoon)
- Water Security Cyber security threats and executive issues – January 18 (morning)
- Biosolids across Canada January 18 (afternoon)

- New and Ongoing Challenges in Drinking Water Quality – January 20 (morning)
- Climate Change: Risk and Resilience Session – National Adaptation and Mitigation Case Studies – January 25 (morning)
- Wastewater and stormwater: Microplastics and fibres – January 25 (afternoon)
- New and Ongoing Challenges in Drinking Water Quality – January 27 (morning)
- Workforce Development February 3 (morning and afternoon)

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The support of our sponsors is vital to allowing us to offer the great programming and hospitality events you've come to expect at CWWA events. We look forward to launching our sponsorship opportunities soon. For updates and more information, visit https://cwwa.ca/national-waterand-wastewater-conference/.

## Rising threat of cyber-attacks requires collaborative approach to resilience

Source: AWWA.org



Responding to recent highprofile cyberattacks on U.S. water and wastewater systems and other critical infrastructure,

the American Water Works Association (AWWA) commissioned a report that examines approaches for increased cybersecurity oversight and accountability.

Earlier this year, after a water utility in Oldsmar, FL, was hacked and the Colonial Pipeline was hit with a ransomware attack, the Biden Administration issued an executive order calling for private-public collaboration to improve water sector cybersecurity by increasing supply chain security, improving federal cybersecurity standards, and establishing a cyber safety review board.

To inform a water-sector led approach, AWWA commissioned a report from Dr. Paul Stockton, a prominent cybersecurity expert who previously served as Assistant Secretary of Defense for Homeland Defense and Americas' Security Affairs. Stockton's report explores industry-led regulatory options to support water sector cyber



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resilience, including the option of creating industry-wide cyber standards with oversight from a federal body, similar to what exists within the energy sector.

"AWWA recognizes that actions necessary to mitigate cyber risks to drinking water and wastewater systems require a collaborative partnership between owner/ operators and federal, state and local partners," said Pat Kerr, chair of AWWA's Water Utility Council.

"Because the sector collectively deals with a complex set of information systems and hardware that operates aroundthe-clock to ensure public health and safety, there is an opportunity and need to improve cybersecurity across the sector," Kerr added. "Taking no action is not acceptable."

Stockton's report analyzes how the water sector might create a sector-led process to develop mandatory, enforceable standards. This would be achieved through collaboration with the U.S. Environmental Protection Agency.



In the coming months, AWWA plans to lead discussions among leadership and volunteers to strengthen the water sector's cybersecurity resilience.

"The cybersecurity needs within the water sector are up and down the spectrum of complexity; utility size is not a proxy for maturity or capability, nevertheless it is clear that together we must advance a sector-wide approach for resilience to cyber threats," said Kevin Morley, AWWA's federal relations manager. "The cyber threat landscape is dynamic, and we need to establish a consistent foundation for managing the risk to water sector assets."



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#### Water utilities, partners unite for Source Water Protection Week

Source: AWWA.org

Water utilities, environmental advocates, elected leaders, and others throughout North America and beyond highlighted the importance of protecting drinking water sources during the first-ever Source Water Protection Week, Sept. 26 to Oct. 2, 2021.

The American Water Works Association (AWWA) declared Source Water Protection Week to emphasize that the most efficient way to assure safe and sustainable water supplies is to protect watersheds, reservoirs, rivers, and groundwater from pollution.

Throughout the week, utilities of all sizes and geographies – from Eugene, Oregon, to San Jose, California, to Cleveland, Ohio, to Kansas City, Missouri, to Asheville, N.C., to Ontario, Canada – posted photos of beautiful source waters using the hashtags #ShowYourSource, #SourceWaterProtectionWeek, and #ProtectTheSource to increase understanding about the relationship between the water we experience and the water we drink. Federal agencies like the U.S. Environmental Protection Agency participated, as did environmental and health advocates like Clean Water Action and the Source Water Collaborative.

The New York City Department of Environmental Protection celebrated with a tour of a stream management project at Red Falls in the Catskill Mountains, while Halifax, Nova Scotia Mayor Mike Savage taped a video proclamation formally marking the week, and West Virginia issued a statewide proclamation. Water sector organizations such as the National Association of Clean Water Agencies and the Association of State Drinking Water Administrators posted social media messages, and American Water, the largest publicly traded U.S. water and wastewater company, issued a press release with source water protection tips.

"I'm very excited to see the participation in the first-ever Source Water Protection Week," said AWWA President Chi Ho Sham. "We need to protect our source water all the time. We also need to take some time to celebrate what water professionals and their partners have been doing and will be doing to continue and enhance their efforts to continue to protect our drinking water from source to tap."

More information about source water protection is available on AWWA's resource page at www. awwa.org/Resources-Tools/Resource-Topics/Source-Water-Protection.

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The Water Leadership Institute Class of 2021 includes 54 water professionals representing 29 states, Canada, and New Zealand. These graduates are the tenth class of the institute and join 343 alumni of the program.

The Water Leadership Institute (WLI) program is aimed at educating and training emerging leaders and providing them with opportunities to build strong, lasting relationships within the water sector. The intensive program enables participants to engage in management training and leadership development through a blended learning approach that includes examining complex challenges facing the water and wastewater industries and networking with public and private sector practitioners.



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#### The Class of 2021 was recognized at a ceremony on October 17 during WEFTEC 2021:

- Adam Eaton, City of Houston
- Adam Feffer, San Jose Water
- Aimee Bajoie, Texas Meter Device
- Andre David Grace, Beca Limited
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- Andrew Simkins Hollis, Slater Infrastructure Group
- Anjali Gupta, DC Water
- Ar'Manni Pretlow
- Brian Persing, WSSC Water Brittany Park, Leeway Engineering Solutions LLC
- Bryan Coday, Carollo Engineers
- Casey Mentzer, Truckee Meadows Water Reclamation Facility
- Charles Wright, Jr., Hampton Roads Sanitation District
- Emily L. Cole-Prescott, City of Saco, Maine Water Resource Recovery Department
- Faith Oviawe, Alexandria Renew Enterprises
- Frank Dubasik, GHD
- Hannah E. Frels, Plummer Associates, Inc.
- Heather Tugaoen, Stantec Consulting Services, Inc.
- Irene Teshamulwa Okioga, Charlotte Water
- Jamie Kreller, Town of Suffield WPCA
- Jana Stewart, City of Greensboro
- Jane Schipma, Metropolitan Water Reclamation District of Greater Chicago
- Jazmin Goines, Water Environment Federation
- Jeremy Carnahan, Pierce County Planning and Public Works
- Jeremy Stachowski, City of Redmond
- Joanne So Young Dill, Metropolitan Water Reclamation District of Greater Chicago

- Joe Dvorak, City of Portland Bureau of Environmental Services
- Jonathan Sandhu, Gulf Coast Authority
- Joseph Carter, Lyon County Utilities
- Kathleen Peach, SUEZ Water Technologies and Solutions
- Kayson Smith-Bejgrowicz, Carollo Engineers
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- Kristin O'Neill, Stantec Consulting Services, Inc.
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- Laurie Perkins, Wright Pierce
- Laurin C Benson, SUEZ WTS
- Leah Hall, City of Rapid City Water Reclamation Division
- Lisa Melton, City of Goodyear
- Lori Jordan, Water Environment Federation
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#### Source water quality and organic matter

By Kyle MacIntyre, P.Eng., Dillon Consulting

he safety and security of our drinking water systems is critical to public health, and has been brought to the spotlight with the recent issues in Iqaluit, one of Canada's most northern cities. Closer to home, utility operators regularly face similar challenges, such as the issues many in our association saw with blue-green algae this past summer.

The use of emergency response and contingency planning is practiced in many communities, and should consider how changes in the raw water supplying a treatment plant would impact downstream consumers. These changes, coupled with more stringent regulatory requirements and climate change, place a considerable amount of stress on a treatment facility, especially those that may be already at capacity or utilizes an older treatment technology designed for the needs of the past.



One of these parameters that has caused its fair share of concerns across Canada has been natural organic matter (NOM). The Guidelines for Canadian Drinking Water Quality (GCDWQ) describe NOM as: "Natural organic matter is an extremely complex mixture of organic compounds and is found in all groundwater and surface waters. Although NOM has no direct impact on health, it affects the efficacy of drinking water treatment processes and consequently the safety of drinking water. NOM may also



affect consumer satisfaction because it can contribute to undesirable colour, tastes, and odours in drinking water."

The term NOM encompasses a wide array of compounds, making it difficult or costly to accurately characterize. To address this issue and allow our industry to effectively reduce levels in treated water, several indicator parameters are recommended as part of a routine monitoring program. These parameters are more economic and practical to analyze: total organic carbon (TOC), dissolved organic carbon (DOC), total colour, UV absorbance, and chemical oxygen demand (COD). Generally, DOC/ TOC are recognized as surrogates for NOM.

Every system is different, but some common indicators that your facility may be experiencing increased NOM include increased chemical consumption, shorter times between filter backwashes, poor clarifier performance, and biofilm growth. Monitoring disinfection byproducts throughout the system is also very important, as these have maximum acceptable concentrations based on public health requirements.

There are several industryaccepted technologies to removing NOMs from source waters, depending on the specific makeup of the organics and the overall goal or regulatory requirement trying to be achieved. These include enhanced coagulation and filtration, membrane filtration (typically UF with coagulation or NF), activated carbon and ion exchange. Impacts to backwash and sludge generation as a result of NOM spikes can be accounted for in a utility's sludge management program.

Do you have a topic for a future Back to Fundamentals article? Email it to kmacintyre@dillon.ca or contact@acwwa.ca and we will do our best to cover it! Established in 1955, CBCL provides multidiscipline engineering, geotechnical and environmental services.

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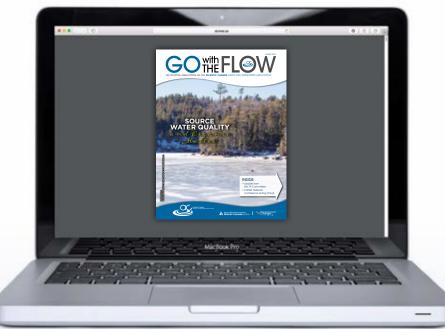
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