



A Newsletter for Water and Wastewater Treatment Plant Operators!

# THE WATERDRUM

October 2023

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## Operators visit Walkerton



From left to right: Greg Edwards, Connor McCauley, Robert Dawson, Phil Tangie, Allan Gibbons, Edward Black, Terrence Bird, Troy White and Amanda Kelly.



Operators from First Nation communities visited Walkerton in August and toured some of the sites associated with the Walkerton water tragedy that occurred in May of 2000.

(see story page 12)



Sponsored by: Indigenous Services Canada and First Nations Inuit Health Branch



*The meaning of the AWWAO logo as described by the artist:*

- Tree—represents Mother Earth*
- Sun—brings Life to our Environment*
- Eagle—watches over the Environment*
- Sky—ensures the Cycle of Water*

## ABOUT US

The Aboriginal Water & Wastewater Association of Ontario is an information source for water environment and Operator training and certification issues and technology. AWWAO's members include professionals from Ontario First Nations, Environmental Health Officers, Tribal Councils, Municipal Suppliers and some Government Agencies.

AWWAO is dedicated to the transfer of information and concepts regarding all areas of the water environment. As members of the American Water Works Association (AWWA), the Ontario Water Works Association (OWWA), the Water Environment Federation (WEF) and the Water Environment Association of Ontario (WEAO), we provide an invaluable network for those involved in water and wastewater industry. AWWAO maintains a partnership with First Nation Inuit Health Branch (FNIHB) and Indigenous Services Canada (ISC) and continues to liaise with provincial and federal government agencies. AWWAO has a volunteer seat on many of the various association's committees.

AWWAO offers its members the opportunity to:

- ◆ Be updated and informed about issues that affect the water environment.
- ◆ Interact with persons in various fields of water expertise.
- ◆ Promote concerns of the membership through a collective voice.
- ◆ Exchange information and ideas to other members, the public and Chiefs and Council.

To date, the AWWAO consistently ranks the training and certification of Plant Operators as its top priority. The attainment of Certification is widely recognized as essential to performing a good job, at a high level, in the water and wastewater treatment plant operations, and an indicator of a responsible and contributing community member.

## MEMBERSHIP

\$200.00 Membership Fee for First Nations Water and Wastewater Treatment Plant Operators per operator. This Membership entitles the Operator(s) to the AWWAO Newsletter, monthly bulletin, Annual Report and the Annual General Assembly and Training Conference cost reimbursement, if applicable.

\$400.00 Membership Fee for Non-Operator, Public Works Management, Administration and Management of a First Nation or Non-First Nation. This Membership entitles the Member to the AWWAO Newsletter, monthly bulletins, Annual Report and invitation to the Annual General Assembly and Training Conference.

Please Print

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First Nation/Business: \_\_\_\_\_

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## VISION

Our Vision is to be the Association that best understands and satisfies the training, education, certification and licensing needs of Operators of Ontario First Nations. Our dedication to supporting Operators touches not only health, but safety, spirit and empowerment ... most of all knowledge.

## OBJECTIVES

- ◆ To act as a voice and forum for First Nation Plant Operators in Ontario, publish a newsletter, promote communications and networking among Plant Operators and other persons interested in AWWAO's objectives;
- ◆ Promote the importance of a safe and potable water supply and the highest standard of wastewater operations;
- ◆ Promote the development and delivery of continuing education and training programs for Plant Operators and others involved in water and wastewater treatment;
- ◆ Promote the importance of technical training in maintaining and upgrading the Operator's knowledge of proper water and wastewater operation and maintenance requirements;
- ◆ Promote the importance of involving qualified Operator's in the design, construction or upgrading of water and wastewater treatment plants;
- ◆ Promote the importance of proper training, certification and licensing of Operators;
- ◆ Promote the importance of enhanced lab testing of potable water and monitoring of wastewater effluents; and
- ◆ Promote the importance of establishing an effective Operations & Maintenance Management Plan to ensure proper care is performed for the assets.

## MISSION STATEMENT

We are a member oriented, non-profit Association, providing province-wide and year-round high-quality services and an annual forum for the First Nations Water and Wastewater Treatment Plant Operators, allowing for networking opportunities at the same time. We are committed to providing high quality information on the water and wastewater industry through the quarterly newsletter. We are dedicated to promoting, preserving and protecting the water, natural resources and environment through the education, training and networking of the Ontario First Nations Water and Wastewater Treatment Plant Operators.

Aboriginal Water and Wastewater Association of Ontario's newsletter is published quarterly by AWWAO at Box 20001, RPO, Dryden, ON P8N 0A1  
Tel: (807) 216-8085  
E-mail: info@awwao.org

Advertising opportunities and/or submission or request of information, please contact the Association Coordinator.

## Karolyne Newby

Aaniin,

My name is Karolyne Newby, and I would like to share with you the incredible journey I have had in the field of water operations. Originally from Nogojiwanong (Peterborough), I have had the privilege of serving as a water operator for Mississaugas of Scugog Island First Nation (MSIFN) for nearly five years, with a total of seven years of industry experience. This year, I was both incredibly validated and humbled by our victory in the Water Cup Challenge.

I am proud to hold Class 3 water treatment certificates and Class 2 distribution licences, and I have recently been appointed as the Overall Responsible Operator (ORO) for MSIFN's water facilities. Collaborating with my dedicated team of operators—Jonathan LaRocca, Scott Wylie, and Matt Nielsen—I extend my gratitude and share this victory, as it is through their efforts that our community's water remains safe, clean, and now, even award-winning.

Reflecting on my journey at MSIFN, I am astounded by the significant changes we have undergone. From three humble pump houses and boil water advisories, we have emerged with a brand new Class 3 water treatment plant, a reservoir tower capable of holding over a million litres, and a Class 2 distribution system. We consider ourselves fortunate, as our groundwater is naturally clean with minimal turbidity. Furthermore, I am delighted to share that the majority of our on-reserve members are now connected to the system, underscoring our commitment to ensuring clean water access for everyone.

Upon winning the Water Cup Challenge, my thoughts gravitate towards the countless individuals who played pivotal roles in the construction of our treatment plant and the ultimate lifting of the long-term boil water advisory. Without the unwavering support of our Chief and Council—past and present—alongside engineers, designers, former and current staff, construction crews, and countless advocates for safe drinking water in First Nations communities, this award would not have been possible. To each and every one of them, I express my heartfelt niishin and Chi Miigwetch, with Chief Kelly LaRocca adding "Council echos the pride and sense of accomplishment that accompanies our clean, award-winning drinking water for MSIFN. We are incredibly proud of our community for investing in our health and economic future."

I would also like to extend my gratitude to all the dedicated operators who tirelessly work to ensure the safety of their communities and the protection of our precious Nibii (water). Lastly, I must express my utmost appreciation to AWWAO. Your invaluable support throughout my career, helping me attain certificates and licences and access training, has been truly transformative. The work you do in assisting us to become licenced operators is immeasurable.

On a final note, it feels amazing to be able to say that we at MSIFN have Award Winning Water! Chi Miigwetch to all who have contributed to this remarkable achievement.



Karolyne Newby

*Northwest Angle No. 33 First Nation completes a new water treatment plant and lifts three long-term drinking water advisories*

From: [Indigenous Services Canada](#)  
News release



**July 4, 2023 — Northwest Angle No. 33, Ontario — Indigenous Services Canada**

Today, Northwest Angle No. 33's Angle Inlet community site held celebrations following the completion of a new water treatment plant for Angle Inlet. Chief Darlene Comegan and the Honourable Patty Hajdu, Minister of Indigenous Services, announced today that with the water treatment plant complete, the community lifted three long-term drinking water advisories.

The new centralized water treatment plant will provide reliable access to safe and clean drinking water for 100 residents. The water treatment plant meets the community's current needs and has the capacity to support future population growth over the next 20 years.

This community-led project includes the construction of a water treatment plant, raw water intake and distribution system upgrades. Indigenous Services Canada (ISC) provided approximately \$19 million for the project to ensure clean drinking water for community residents.



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The community has hired training operators that will maintain and operate the new water treatment plant. The ISC-funded Centralized Water and Wastewater Hub, delivered by Anishinaabeg of Kabapikotawangag Resource Council, is training and mentoring other community members. Currently, there is one certified operator.

Access to clean drinking water is an inherent right for everyone. Since 2015, First Nations, with support from the federal government, have now lifted 142 long-term drinking water advisories on public systems on reserves, including three lifted at Northwest Angle No. 33 First Nation. Work is underway in partnership with First Nations to address the remaining 28 advisories across Canada.

The Government of Canada is committed to working with First Nations partners to ensure the funding and resources are available to install and maintain water treatment systems in all First Nations communities.

### Quotes

“Today, I am very proud to announce the lifting of long-term drinking water advisories in the community of North West Angle No. 33. Access to clean water is essential for all. While we had to overcome a number of challenges to complete this new water treatment plant, this project secures clean and reliable drinking water for our Angle Inlet community now and for years to come. I would like to acknowledge and thank our dedicated community members, the project team, and all others involved in advancing this project, for their hard work and support in completing this major accomplishment.”

Chief Darlene Comegan  
Northwest Angle No. 33 First Nation

“Everyone in Canada should have access to clean drinking water. For too long, successive governments have ignored this and underinvested in First Nations communities. In partnership with communities and their leadership, we are doing what’s needed to fix this and provide access to clean drinking water to everyone. With this new water plant and other upgrades, three advisories can be lifted and the community will have access to clean drinking water for years to come. I sincerely thank Chief Darlene Comegan and the project team for their leadership and hard work to make today possible. Together, we will lift all long-term drinking water advisories.”

The Honourable Patty Hajdu  
Minister of Indigenous Services

### Quick facts

- Northwest Angle No. 33 is geographically separated into two communities, located at opposite ends of the Lake of the Woods. Angle Inlet, the location of the new centralized water treatment plant, is accessible only by water, air or winter ice road. It is located southeast of Kenora, Ontario, on the west side of Lake of the Woods. Dog Paw is located on the east side of Lake of the Woods and is served by an existing water treatment plant.
- Drinking water advisories were set on the Elsie Blackhawk Pumphouse and the East Pumphouse in April 2011 and on the West Pumphouse in February 2016. All three advisories were lifted by the community’s Chief and Council as of June 14, 2023.
- The new centralized water treatment plant was built at Angle Inlet and replaces all three pumphouses to better serve the community and more efficiently provide clean water.

## *What is the Operations Challenge*

The **Operations Challenge** is a series of wastewater events that are hosted annually at the **Water Environment Association of Ontario (WEAO)** conference. The conference is known to be the largest gathering of wastewater professionals in the industry and is hosted every year in a different city in Ontario.

The first Operations Challenge was held in the *City of Niagara Falls* back in 1991. Since then, the competition has grown consistently developing provincial champions who go on to challenge the best at the annual North American Operations Challenge.

For the uninitiated, the Operations Challenge is a series of hands-on competitions consisting of five events. Each of these events is designed to test the diverse skills required for the operation and maintenance of wastewater treatment facilities, their collection systems, and their laboratory testing. Events are judged and scored separately based on the time required to complete each event, with adjustment for penalties for items not performed or performed improperly. The scores of all events are finally added up and the overall winning team is selected. The two top teams from Ontario eventually go on to compete in the US at the Water Environment Federation Technical Conference (**WEFTEC**) held in the autumn of each year.

The Operations Challenge provides a forum in which wastewater operators can showcase their talents and demonstrate the high level of technical expertise and knowledge they bring to the workplace. Operations Challenge also provides an opportunity for operators from across the province to get together, have a lot of laughs, and exchange a few stories and experiences. As a water/wastewater professional and a member of the Operations Challenge committee who provides training for operator certification, I have seen these competitions grow and encourage many individuals to go further in their career and reap the benefits of that extra effort in promotions and pay increases.

Without question, the Operations Challenge is the most exciting event of the WEAO conference. It adds vitality to the conference and renders the equipment exhibition booths around the competition area become the hottest real estate space of the conference floor. But most importantly, the events provide a forum to acknowledge and showcase the professionalism and skills of our wastewater operators to everyone. These are the people who make the hundreds of wastewater treatment plants in Ontario perform reliably and efficiently day after day, and enables Ontario to enjoy a clean water environment and sustainable development at the same time.

Remember that behind every successful Operations Challenge is a group of not only our capable operators, but also a dedicated organization. In the process of planning every task down to the last detail, you as an organization are standing behind your operators, motivating them to train, participate, and become better operators. You are also promoting these events to managers and councils for support as well as soliciting funding and donations to send your best teams to compete provincially and nationally.

In short, below is a list of benefits to both operators and the organizations behind them:

- Continuous education through practice and competition
- exposure to latest innovations and technologies
- expand and share operational knowledge and experience in different areas
- develop skills and professional careers
- help grow in job responsibilities
- employment advancement with opportunities to move into management positions
- cultivate teamwork
- build camaraderie and leadership

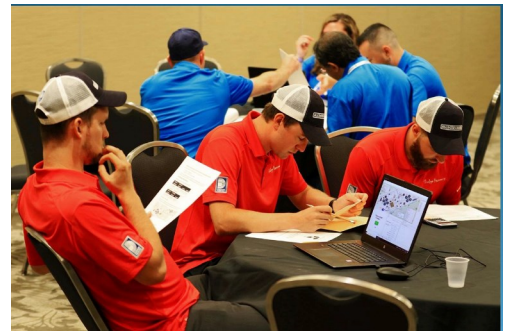


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- combine sports team mentality with competitive nature and lots of fun
- generate appeal to newcomers to our business (helps industry)
- great networking with other industry professionals
- receive 40 hours of training and 4.0 CEUs towards wastewater licence upgrades
- winning teams get to showcase their skills on a national level
- show that employers are willing to invest in their operators and grow their careers
- educate public about what wastewater operators do
- great exposure for operator and employers alike

If you are interested in getting involved in the Operations Challenge, there are many activities that you can get involved with, from participating in the events as a competitor, to judging, setting up and tearing down, keeping score, and simply supporting the teams. Below is a brief description of the challenge events.

**Process Control Event** – Is designed to showcase process control skills of competing teams. It comprises two components – a “written exam” challenge that is timed at 20 minutes, and a “process simulation” challenge that is timed at 15 minutes. The challenge is designed to be long enough so that teams do not run out of questions to answer or tasks to achieve. It is not expected that teams will complete the entire challenge (answer all questions or tackle every simulation problem). The goal is, however, to see who can answer most questions with the fewest mistakes. The types of questions and difficulty level are matched to points awarded for getting correct answers. The written portion of the challenge includes multiple choice questions, word matching, math calculations, and advanced scenario questions. Solving the more complex questions (process math and scenario problems) is worth more than the simpler questions (multiple choice and word matching). Therefore, it is up to team members to develop a strategy regarding which questions to answer in the allotted time, with the goal being to achieve the highest final score. For more info visit [https://www.youtube.com/watch?v=QjWniPWmOsA&ab\\_channel=WaterEnvironmentFederation](https://www.youtube.com/watch?v=QjWniPWmOsA&ab_channel=WaterEnvironmentFederation)



**Laboratory Event** – Team members are required to complete various analytical tasks pertaining to day-to-day treatment and plant operations. Tasks include calibration of YSI Xylem MultiLab Meter (based on conductivity), analysis of TSS (gravimetric method) and TDS, and performing various process calculations (loadings, mass balance, sludge age/SRT/MCRT, wasting rate, SVI, removal and capture efficiency of solids handling process, and overall treatment efficiency. Other components of the event include observing all safety and good housekeeping practices. For more info visit [https://www.youtube.com/watch?v=OIZMI8Yd8-c&ab\\_channel=WaterEnvironmentFederation](https://www.youtube.com/watch?v=OIZMI8Yd8-c&ab_channel=WaterEnvironmentFederation)



**Pump Maintenance Event** – It simulates a response to an issue at a pumping station scenario. The pump station team receives a high-level alarm via telemetry. The high-level alarms are cleared and acknowledged several times. The SCADA trends show that the pump is cycling as programmed but continues to hit high-level set-point. Also, it is confirmed that station has yet to receive high-high-level back-up float so visual and audible alarms were not activated. The plan is to mitigate the alarms, perform full service of the station, assemble the gantry, remove the pump,

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check and service various pump components, (impeller, corroded hardware, pump nozzle, etc.), check and service the motor, check and service the control panel, remove the pump from the service table and lower it back in the station, disassemble the gantry, restore power to the control panel, and document all service results in the CMMS. For more info visit [https://www.youtube.com/watch?v=lpF4E4Epl3c&ab\\_channel=WaterEnvironmentFederation](https://www.youtube.com/watch?v=lpF4E4Epl3c&ab_channel=WaterEnvironmentFederation)

**Collection Systems Event** – It simulates connecting a 4-inch PVC lateral sewer to an existing 8-inch PVC sewer pipe while in service, in addition to programming an automatic sampler. The event starts with a small leak in a PVC pipe that represents an in-service pipe (wet pipe). Another section of dry pipe must be used to make repairs on the leaking wet pipe. Competing teams have to cut and remove a measured length of pipe from both the wet and the dry PVC pipes, cut a section from the dry pipe, and include an Inserta Tee™ that will be used to replace the cut piece from the wet pipe. Team members have to secure the connection with flexible repair couplings and hose clamps. All of this must be completed while water is running in the pipe. Once completed, judges will perform a pressure test to determine if connections made are watertight. Competitors must also program the automatic wastewater sampler and ensure it is working properly. For more info visit [https://www.youtube.com/watch?v=vTk21PGj6Xk&ab\\_channel=WaterEnvironmentFederation](https://www.youtube.com/watch?v=vTk21PGj6Xk&ab_channel=WaterEnvironmentFederation)



**Safety Event** – A co-worker collapses inside a manhole and is found at the bottom of a lift station (confined space) unconscious. It is suspected that he/she was overcome with unknown gas or lack of oxygen due to a worn 4-inch check valve gasket in station. In response to the call, team members must enter the confined space, test the atmosphere, perform a full rescue operation, close two gate valves, lock-out and tag-out, repair a check valve, replace the flapper and gasket, and then put the line back into service. For more info visit [https://www.youtube.com/watch?v=cQ\\_iFfJabg&ab\\_channel=WaterEnvironmentFederation](https://www.youtube.com/watch?v=cQ_iFfJabg&ab_channel=WaterEnvironmentFederation)



It's a chance to have lots of fun, meet a lot of like-minded individuals, receive free training (travel, meals and accommodations not included) and bring home a trophy to your community to highlight the development of your skills in various categories.

To learn more please feel free to contact *Krista Thomas* – Operations Challenge Committee Chair and Laboratory Event Coordinator at [KThomas@peterborough.ca](mailto:KThomas@peterborough.ca); *Hany Jadaa* – Past Chair and Process Event Coordinator at [lexicon@ca.inter.net](mailto:lexicon@ca.inter.net), or visit our website – [weao.org/committees/operations-challenge/](http://weao.org/committees/operations-challenge/)

The 2024 Operations Challenge will take place in the City of Niagara Falls at the Niagara Falls Convention Centre.



The event will be held during the OWWA/WEAO Joint Conference from May 5-7. [Water Environment Association of Ontario | Operations Challenge – May 5-7th \(weao.org\)](http://www.weao.org)





## *James Haskell- Instructor of the Year*

When I started in water treatment in 2005 for the Red Rock First Nation near Nipigon, ON, I didn't think I would be training other people to become operators and hopefully trainers themselves.

In school, I wasn't the one answering questions (too shy I guess). I asked a friend of mine how he could stand up in front of his class?! "I couldn't do it" I said... Well, that has changed. Once I started building confidence in my job and was mentored by very good trainers, I believed I could do this type of work as well as operating my plant.

So, I started with the Ontario First Nations Technical Services Corporation (OFNTSC) being a circuit rider trainer. I figured that helping other operators at their plants and in their communities would be great work. I was right; it was very rewarding. Then I had the opportunity to train for the Keewaytinook Centre of Excellence (KCE) in Dryden. I started out giving CEU courses, then exam prep courses and then working with the Aboriginal Water Wastewater Association of Ontario (AWWAO) and giving the Entry-Level Course for the Walkerton Clean Water Centre (WCWC).

From my start in water treatment in 2005 to the present, I have become something that I didn't think I could be or really could do... Be a trainer. And through this journey of becoming an operator first, then a trainer, I have been to some amazing places, met amazing people and grown as an individual. It is a constant learning curve but it is so rewarding and actually fun.

I was asked to write up a little something for being voted Trainer of the Year. Truth be told, it is kind of uncomfortable talking about myself this way. Lol. But there it is. A short journey from an operator to a trainer. It is incredible what one can accomplish if given the opportunity to learn, experience and grow.

I thank you for the votes. I am grateful for the opportunity to help new operators and communities and hope to help new operators in the future in such a great line of work.

Thanks, James Haskell



Long-term drinking water advisories on public systems on reserves

Updated August 21, 2023



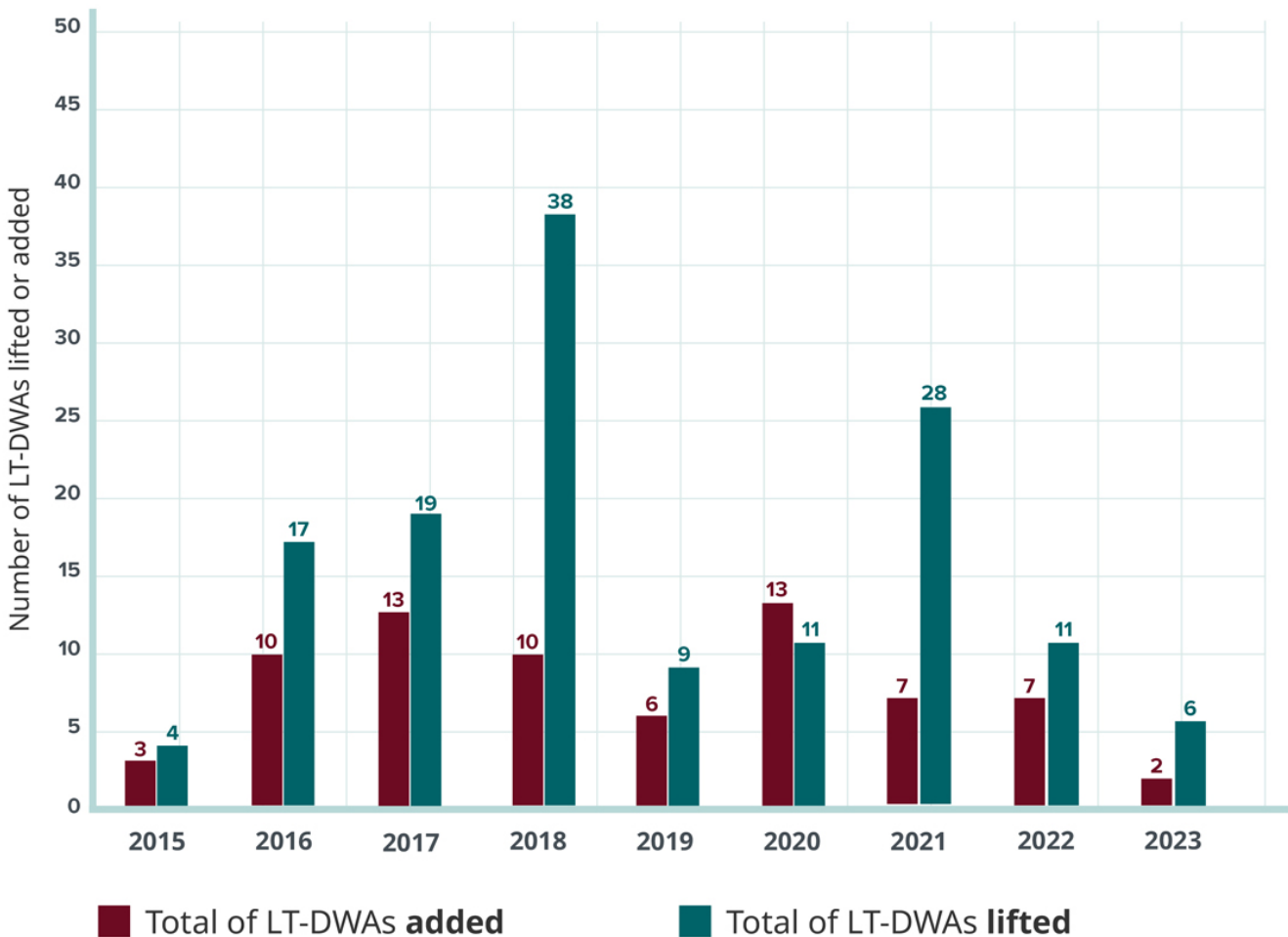
143

long-term drinking water advisories lifted since November 2015

28 long-term drinking water advisories

in effect in

26 communities



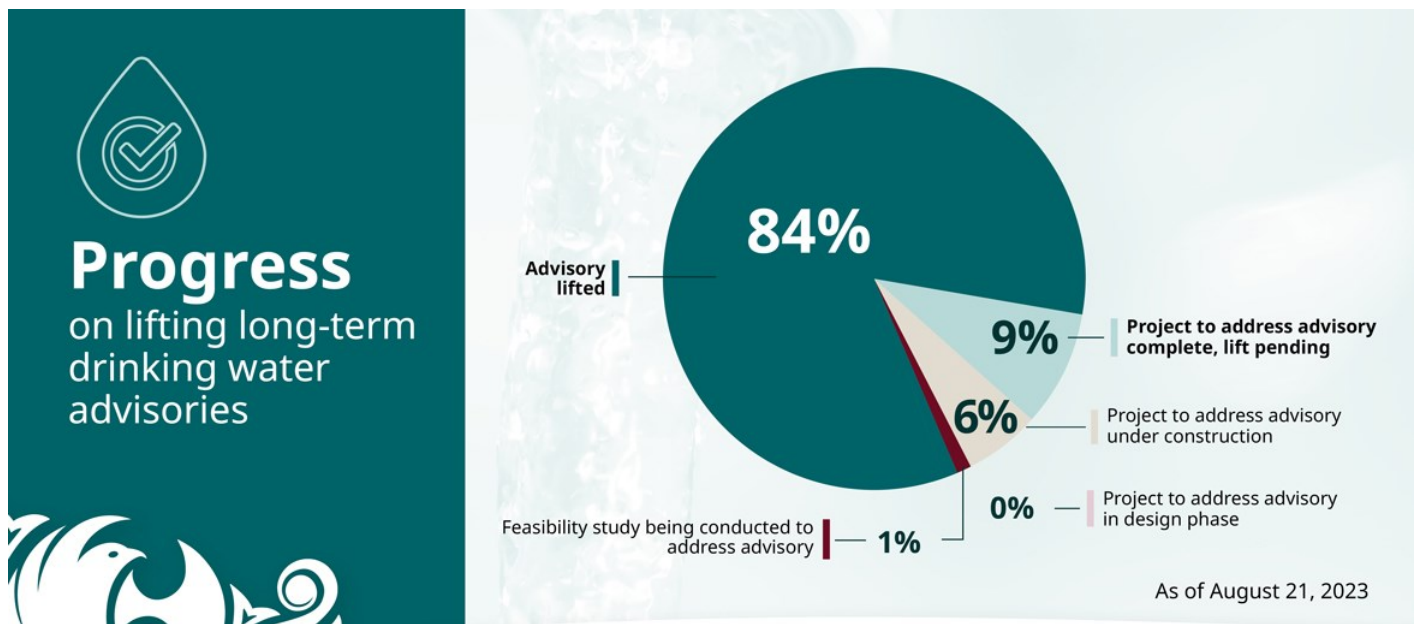
## Recently lifted long-term drinking water advisories

Wabaseemoong Independent Nations as of August 21, 2023

The long-term drinking water advisory affecting Wabaseemoong Independent Nations' Whitedog Public Water System, in Ontario, was lifted effective August 11, 2023. The system is producing and distributing potable water meeting drinking water guidelines and standards. The Centralized Water and Wastewater Hub, delivered by Bimose Tribal Council and funded by ISC, continues to provide support to the local water operator.



## Progress on lifting long-term drinking water advisories on public systems on reserves



## *Maintenancefest at the Walkerton Clean Water Centre*

Phil Tangie, AWWAO Board Chair and Hub Manager of Anishinaabeg of Kabapikotawangag Resource Council (AKRC) along with eight operators from AKRC travelled to Walkerton in August to attend Maintenancefest at the Walkerton Clean Water Centre. Maintenancefest is a two-day event and participants attend six two-hour hands-on training modules for a total of 1.2 CEUs.

Those attending say they enjoyed Maintenancefest, especially being able to do hands-on training which many people find to be an effective way to learn. As well, they appreciated being able to take the training in person, also a preference for many operators.

“I enjoyed my time spent at Maintenancefest learning about various elements of being a water operator and also meeting new people who enjoy the work we do.” Robert Dawson

While in Walkerton, in the evening, the group toured some sites in Walkerton related to the Walkerton water tragedy which occurred in May of 2000. After a drive to see the site of the wells in use now, they went to the site of Well 5 which was decommissioned back in 2000 after it was determined as the source of the contaminated water that entered Walkerton’s distribution system and caused about half the town to become sick. Tragically, seven people died from drinking the contaminated water.



Corinne Luther, AWWAO Assistant Coordinator, who lives in Walkerton, accompanied the group on the tour and shared memories of what it was like in May 2000 at the time of the tragedy. She described that time as “surreal” with helicopters coming and going from the hospital steadily as it took sick residents to larger centres for care. The town was flooded with media and even going to the post office to pick up mail meant working your way past reporters who were eager to get statements from local residents. Schools were closed and families adapted to using bottled water about for six months. She noted that other communities’ businesses, organizations and water services were quick to come to the aid of Walkerton in many ways, which will always be remembered with thanks by the residents of Walkerton.

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As a result of the inquiry held after the tragedy, based on recommendations made, the Safe Drinking Water Act was created. This act was put in place in 2002 to safeguard drinking water in all of Ontario and regulations were implemented to ensure that no other community would experience what happened in Walkerton in May of 2000.

The group also visited Walkerton's Heritage Water Garden featuring Walkerton's proud history told in a series of plaques. The memorial fountain commemorates those who suffered because of the May 2000 tainted water tragedy and represents water as a positive healing symbol.



*Manitoba Government commits additional \$1.5M for safe drinking water in Northern Affairs communities*

By Water Canada-July 28, 2023

The Manitoba government continues to take concrete action to improve the safety of drinking water in Northern Affairs communities, Indigenous Reconciliation and Northern Relations Minister Eileen Clarke announced today.

“Access to safe drinking water is a fundamental human right and a prerequisite for good personal and public health,” said Clarke. “Remote northern communities face many challenges in operating and maintaining complex drinking water infrastructure, and we remain committed to working collaboratively with communities to implement innovative solutions that will address these challenges.”

As part of Budget 2023’s priority focus to create stronger communities, the Manitoba government is committing an additional \$1.5 million in annual funding to support water system operations in Northern Affairs communities.

The increased funding will allow operators to spend more time in community water and wastewater treatment facilities to monitor water quality and complete required maintenance and repairs, noted the minister. The investment will also build capacity through new operator-in-charge and operator-in-training positions, as well as training programs for existing and prospective operators, added Clarke.

“I am pleased to say the significant increase in funds by the Manitoba government for water treatment plant (WTP) operator salaries and their mandatory ongoing training courses, is a much-welcomed resource to ensure our community is always supplied with clean drinking water,” said Kyle Lafreniere, community administrative officer, Northern Affairs Community of Camperville. “Highly trained WTP operators can now make a great living in our IRNR communities, adding to the rural economy and quality of life for their families. The community also benefits as the clean drinking water supply is secure now and into the future.”

The minister noted this investment builds on substantial work done in recent years to improve the health and safety of drinking water in Northern Affairs communities including work to:

- ◆ address long-term boil water advisories;
- ◆ upgrade community water treatment plants;
- ◆ improve compliance with provincial operator certification requirements; and
- ◆ implement new training programs.

The minister added that ensuring all Manitoba residents have access to fresh, clean drinking water is a top priority for the Manitoba government.

## Sault Ste Marie Exam Prep Recap

In our continued quest to improve First Nations operators' levels of certification, AWWAO hosted a Northern exam preparation week in Sault Ste. Marie from September 18 to 22, 2023. The week contained four days of classroom exam preparation courses: OIT, WTI and WTII followed by a fifth day for the Provincial Certification Exam. A total of 38 operators attended the prep week. The World Water Operator Training Company Inc. (WWOTC), Ontario First Nations Technical Services (OFNTSC) and Keewaytinook Centre of Excellence (KCE) provided the training for these courses.



AWWAO would like to thank WWOTC instructor Dave Russell, OFNTSC instructor Shayne Dale and KCE instructor Charles Friday for providing an excellent and informative exam prep course.



## Operator Math Corner

### Article #6 - We Won't Get Fooled Again

#### Operators Math Corner

By Hany G. Jadaa; C.Chem., M.Sc. Eng.

LEXICON Environmental Consulting Services Inc.

#### Article #6 – We Won't Get Fooled Again

Hello everyone, and thank you for joining me again in another exciting article about math for operators. Truth be said, these articles are not strictly meant for operators, but for all of us who dabble in the business of water and wastewater processes, from design, construction and management to operations and maintenance. So I hope everyone is enjoying reading these articles as much as I enjoy writing them.

If you recall my last article, I outlined a few important pointers relevant to converting between different kinds of units, including simple singular ones (like *liters* and *kilograms*) and compounded ones (like *mg/L* and *m<sup>3</sup>/sec*). In summary, I talked about short cuts (when to take them and when not to); about multiple conversions and the order of performing them; about when to multiply and when to divide; and about knowing (in a very visual way and before using your calculator) whether you are on the right track or not. I also left you with a thought especially directed to those of you who write qualification exams with multiple choice answers. I did say that those answers, in most cases, are not randomly generated values, but are typically chosen based on common mistakes that people do. The question was:

Your chemical consumption at the plant is measured at the beginning of the shift everyday at 7:00 am, and the last reading indicated you have used 75 m<sup>3</sup> of chemical. Now you have to report this on your data log sheet in the unit of mL/sec. What would be the answer?

- a) 52,083 mL/sec
- b) 868 mL/sec
- c) 52 mL/sec
- d) 0.868 mL/sec

If you circled 868 mL/sec, then you chose the right answer. How did I arrive at that? Very simple. I set up the *Hany* boxes as I have shown you before. My starting unit (a compounded one) is m<sup>3</sup>/day, and my desired target unit (which is a compounded one as well) is mL/sec. Let's set this up.

<del>75 m<sup>3</sup></del>	<del>1,000 liters</del>	1,000 <span style="border: 1px solid blue; border-radius: 50%; padding: 2px;">milliliters</span>	<del>1 hour</del>	<del>1 min</del>	= 868 mL/sec
<del>24 hrs</del>	<del>1 m<sup>3</sup></del>	<del>1 liter</del>	<del>60 min</del>	60 <span style="border: 1px solid blue; border-radius: 50%; padding: 2px;">sec</span>	

As you can see, the unit m<sup>3</sup> from Box #1 is cancelled with m<sup>3</sup> in Box #2 when it got converted to *liters*; and the unit *liters* from Box #2 is cancelled with *liters* in Box #3 when it got converted to *milliliters* (which is one of our target units). Notice that the unit *milliliters* also appears on top in the *Hany* box, as it should be. Similarly, the unit of *hours* from Box #1 is cancelled with *hours* in Box #4 when it got converted to *minutes*, and the unit of *minutes* in Box #4 is finally is cancelled with *minutes* when it got converted to *seconds* in Box #5. Also notice that the unit *seconds* appears on the bottom of the *Hany* box as it should be. Ultimately, we arrived at our compounded unit of *milliliters/second*, which is our final target in this question.



## Cont'd

Now let's look at the pitfalls and where most people commonly make mistakes. I am especially talking about those of us who traditionally like to break one of the most important rules that I stressed in my first article. Yes I'm referring to those who say "*this is simple – why do I need to write everything down – I can do this in my head*". Well let's see. Many of you have done the following:

$$75 * 1,000 * 1,000 \div 24 \div 60$$

When you do that, your answer will be equal to 52,083, and you would think that answer a) is the correct answer. Let's examine what you have done closely. You multiplied by 1,000 to convert the  $m^3$  to *liters*; you then multiplied by 1,000 again to convert the *liters* to *milliliters*; you then divided by 24 to convert the *day* to *hours*; then you divided by 60 to convert the *hours* to *minutes*. All good so far. However, in your haste, you had forgotten to divide by 60 again (something you should have done in order to convert the *minutes* into *seconds*). Trust me, this is one of the most common mistakes that I see all the time. And when I show people what they've done wrong, they say "*ooh – I screwed up!*"! An honest mistake? Maybe, but by then it is too late.

Others will do something a little bit more dramatic like the following:

$$75 * 1,000 \div 24 \div 60$$

The only difference between this mistake and the above is that you have forgotten to multiply by 1,000 twice – once to convert the  $m^3$  to *liters*, then again to convert the *liters* into *milliliters*. And yes, you also forgot to divide by 60 again to convert those *minutes* into *seconds*. And in this case, your answer would be answer c), which is 52. Another honest mistake? I don't know about that.

And then I have others that make the ultimate mistake:

$$75 \div 24 \div 60 \div 60$$

And when they look at the answer on their calculators, they see that it reads something like 0.000868 (or  $8.6 * 10^{-4}$  if you used a scientific calculator). So they automatically think "*this is a very small number, and it is not on my list of choices; it must be wrong, and I should multiply by 1,000*". Then they get answer d), which is 0.868, believing it is the right answer. What is the mistake here? Oops – you forgot to convert your  $m^3$  to *liters* and your *liters* to *milliliters*.

Here's a thought for you. Multiplying by 1,000 (or any other number for that matter) just for the sake of making a number look good does not cut it. Similarly, dividing by 1,000 (or any other number) just to have your answer match one of the choices is not the proper way of doing math, and certainly will not lead to *the* correct answer all the time. You have to work with the units, not with the numbers alone, and definitely you would have to know when to multiply and when to divide. How would you know all of this? By setting up the boxes properly and following with your units. No ifs or buts.

Let me add one more thing. The choices of wrong answers are many. I could have easily created 3 or 4 more wrong answers by making silly mistakes like the ones I've already shown you. But when it comes to math problem, there is always one right answer, and one right answer only, no debating this fact. So don't get fooled again by any of these mistakes.

## Cont'd

So, in closing this issue, I would like to stress one more time the golden rule “*never do math in your head, no matter how simple it may look*”. Those of us who have written numerous exams in our lives know how stressful they can be. Why add more stress to your precious exam time by doing it in your head? Just take the time to write it all out the first time, as I have shown you so far, and I will guarantee you that your answer will always be the right one, the first time.

See you around in the next issue. Until then, if you have any comments or questions please do not hesitate to contact me at [lexicon@ca.inter.net](mailto:lexicon@ca.inter.net).

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## New Program Forms (OWWCO)

### News

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#### New Program Forms!



Updated operator certification program forms are available. The new forms are completed entirely electronically, and also allow for secure online payment with your credit or debit card, making it easier for you to access services.

First up, the [Change of Address form](#) and [WWOCS User Access Request form](#) – neither require payment, but you can now complete and submit these forms entirely from your desktop, laptop, tablet, or even your phone. No faxing, no mailing.

Announcements will be made as more forms are updated and form resources, including instructions, tips and FAQs, become available. Check OWWCO’s website for updates! [owwco.ca](http://owwco.ca)

## Where do we go from here?

### **Repeal of the Safe Drinking Water for First Nations Act**

BY JULIE ABOUCHAR

The gap between drinking water quality on First Nations reserves and the rest of Canada has long been a source of frustration for First Nations and a shame to many Canadians. The gap arises from the size and location of reserves and the complex legal, operating, and governance context of First Nations drinking water systems. First Nations do not have the same legally enforceable safe drinking water protections as the provinces and territories.

In 2006, the Expert Panel on Safe Drinking Water for First Nations identified solutions to close this gap. The report found that adequate financing of the installation and maintenance of water infrastructure was more critical than regulation alone. Subsequently, the federal government passed the *Safe Drinking Water for First Nations Act* in 2013. This Act was intended to support the development of federal regulations to secure First Nations' access to clean, reliable drinking water as well as the effective treatment of wastewater.

However, since 2018, many First Nations have voiced strong concerns about the legislation, saying it was ineffective. The main concerns expressed by First Nations were that the Act lacked:

- ◆ adequate, predictable, and sustainable funding
- ◆ recognition and protection of Aboriginal and treaty rights
- ◆ source water protection, and
- ◆ that there was insufficient engagement on issues that directly affected First Nations.

In addition to these concerns, on December 22, 2023, the Federal Court and the Court of Queen's Bench of Manitoba issued a joint decision approving an agreement to settle a class-action litigation related to safe drinking water in First Nations communities. This settlement agreement provided, in part, \$1.5 billion in compensation for individuals deprived of clean drinking water, the creation of a \$400 million First Nation Economic and Cultural Restoration Fund, a commitment of at least \$6 billion to support reliable access to safe drinking water on reserves, a renewed commitment to lifting all of the long-term drinking water advisories on reserves, and a commitment to modernize Canada's First Nations drinking water legislation.



Key to the Act is that the effective management and monitoring of water services that includes a multi-barrier approach and a comprehensive asset management plan.

***As a result of the concerns of First Nations communities and the settlement agreement, the federal government repealed the Safe Drinking Water for First Nations Act on June 23, 2022.***

### **Proposed new legislation**

The Government of Canada is now in the process of developing new legislation for First Nations drinking water and wastewater management. To facilitate this, Canada is consulting with the Assembly of First Nations, First Nations' rights holders, and Modern Treaty and Self-Governing Nations to understand what is required in the new legislation for it to be effective and responsive to First Nations' needs. Canada is also engaging with provinces and territories on source water protection to inform the development of the new legislation.

Cont'd

The federal government released a Consultation Draft entitled “Proposal for An Act respecting drinking water, wastewater and related infrastructure on First Nation lands.” Engagement with First Nations on this draft began in 2022 and ended on April 23, 2023.

The proposed First Nations Drinking Water and Wastewater Act asserts the inherent self-governance rights of First Nations, including jurisdiction over drinking water, wastewater, and related infrastructure on their lands. It also mandates that laws and implementation policies regarding water services on First Nation lands align with the United Nations Declaration on the Rights of Indigenous Peoples.

The proposed First Nations Drinking Water and Wastewater Act asserts the inherent self-governance rights of First Nations, including jurisdiction over drinking water, wastewater, and related infrastructure on their lands. It also mandates that laws and implementation policies regarding water services on First Nation lands align with the United Nations Declaration on the Rights of Indigenous Peoples.

The proposed Act states that First Nations are to have control over their water services, including design, construction, operation, maintenance, and management, and acknowledges First Nations laws, which, in case of a conflict, would supersede federal laws, except for certain specified sections, including the 'Principles' section.

A key principle of the proposed Act is that the effective management and monitoring of water services includes a multi-barrier approach, a comprehensive asset management plan with risk assessment and management applied throughout all stages of water services delivery, the training and certification of water services operators, and the provision of sustainable water services. These reflect the principles of safe drinking water systems as recommended by the O'Connor Report into the Walkerton tragedy in 2002, which have become a blueprint for safe establishment, operation, and maintenance of drinking water systems across Canada.

The proposed Act also provides for the establishment of a First Nations Water Commission, a corporation under the *Canada Not-for-profit Corporations Act* that is led by First Nations.

In addition, the proposed Act contains consultation requirements when the designated Minister makes decisions or exercises various functions under the Act.

**Looking ahead**

While Indigenous Services Canada reports that 81 per cent of drinking water advisories in First Nations communities have been lifted, 32 long-term drinking water advisories are still in effect in 28 communities. This work must continue as regulation alone will not be sufficient to ensure safe drinking water is achieved. The principles of the proposed Act, including a multi-barrier approach, a comprehensive asset management plan, risk assessment and risk management approach, the training and certification of water services operators, and sustainable water services, can only be achieved with adequate investment in human resources and physical assets.

**FN in action**

Everyone deserves clean water. Through ongoing consultation and other efforts, Indigenous communities are raising awareness of the issues and solutions surrounding access to clean drinking water. One example is the Indigenous-owned, FN Clean Water, which not only sells sparkling and still water but also educates consumers about First Nations' drinking water conditions. FN Clean Water contributes a portion of its earnings to Water First, a Canadian charity committed to collaborating with Indigenous communities on local water challenges. To date, Water First has worked with over 55 Indigenous communities across Ontario, Manitoba, Quebec, and Labrador.



Learn more: <https://fncleanwater.ca>,  
<https://waterfirst.ngo>

*Cont'd*



This article was originally published in the September/October issue of Water Canada magazine.

For further reading visit [watercanada.net/so23resources/](http://watercanada.net/so23resources/)

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*With the assistance of Sydney Smith, articling student.*

