



A Newsletter for Water and Wastewater Treatment Plant Operators!

# THE WATERDRUM

October 2022

## Inside this issue:

|   |       |
|---|-------|
| Next generation of Water Operators                          | 1     |
| About Us  | 2     |
| Event Recap   | 3     |
| AWWAO Membership  | 4     |
| 27th Annual Conference Registration                         |       |
| Water Ceremony  | 5     |
| The Gary Oja Award, Instructor of the Year                  | 6     |
| Operator of the Year Award/Water Cup Challenge Winners      | 7     |
| 2022 Operator of the Year Announcement                      | 8-9   |
| Southern Operator of the Year-Brittany Lariviere            | 10    |
| 2021-2022 Derrick Kamanga Water Taste Challenge Cup Winners | 11-12 |
| Operator Math Corner, Article #3-In search of the way       | 13-17 |
| Sudbury Exam Prep Recap                                     | 18    |
| iPad Winner-Terrence Fortin                                 | 19    |
| Classes   | 20-21 |
| Guest Speakers  | 22    |
| Centre Line Band  | 23    |
| 6th Annual Tradeshow  | 24-25 |

## Next generation of Water Operators



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, through a partnering agreement with Keewaytinook Okimakanak and Health Canada co-operates and liaises with the above noted associations, and all 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 rank 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

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Name: \_\_\_\_\_

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

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

## 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.

## Event Recap

After months of planning and preparation Aboriginal Water and Wastewater Association of Ontario was very pleased to have hosted the 27th Annual Training Conference and Tradeshow the week of June 6, 2022.

“As it was the first on site conference for many participants after more than 2 years, we wanted everything to run smoothly,” And it did! The atmosphere was great and everyone was in high spirits.

The conference captured a three day program of training courses, tradeshow vendors, presentations and interactive dialogue between the attendees.

The conference welcomed water and wastewater professionals from across Ontario. The purpose of the conference was to promote the development and delivery of certified training programs for members and others involved in the water and wastewater industry.

Over 90 people and 25 exhibiting companies made their way to Sault Ste Marie to attend the event.

Highlights of the event included: the banquet dinner, guest speakers, water ceremonies and the Centre Line Band.

A big thank you to Indigenous Services Canada and First Nations Inuit Health Branch for funding this event and their continued support.

We would also like to thank Walkerton Clean Water Centre, Keewaytinook Centre of Excellence and World Water Training Company for providing us with the courses.

It is fair to conclude that everybody was happy to be finally back to in-person meetings. The overall feedback from participants and speaker's was extremely positive as well. There was plenty of interaction and space for interesting and inspiring discussions.



## AWWAO Membership

First and foremost, we want to thank you for your continued membership with AWWAO. We value all contributions to AWWAO and memberships make up the lifeblood of our organization.

In 2022 AWWAO has seen new faces and welcomed new members, both Regular and Associate Memberships to the Association. To date we currently have:

Total Regular Membership-186  
Total Association Membership-14

## 27th Annual Conference Registration

| Conference Attendance |         |         |         |         |         |         |         |         |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Year                  | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2021/22 |
| # Of operators        | 87      | 69      | 96      | 99      | 100     | 90      | 107     | 99      |



## Water Ceremony

The Traditional Drum singing group, from the Healing Lodge Singers, honored the AWWAO conference with a Water Ceremony, Feast Song and a Travel Song. Thank you to Christine Kay, Theresa Binda and Adrienne Beaupre. Beautifully done ladies. Miigwetch



From left to right: Christine Kay, Theresa Binda and Adrienne Beaupre



*The Gary Oja Award, Instructor of the Year*

AWWAO would like to congratulate James Haskell on receiving the Gary Oja, Instructor of the Year Award. This award is to an individual for a sustained contribution to the learning of our operators and demonstrates teaching expertise within our programs.



## Operator of the Year Award/Water Cup Challenge Winners

Each year, AWWAO recognizes First Nation Operators in Ontario who go above and beyond doing a good job. The Operator of the Year award is given to one operator from the North and one from the South who:

- Provides an example to others of the many facets of being an operator, particularly in supporting the other activities of other operators
- Make the extra effort to support and educate their fellow operators
- Encourage others to become more involved
- Go out of their way to help everyone in the water and wastewater field
- Volunteer to help others and serve on committees
- And all while doing the things that are necessary to be good at their job

The winners of the 2022 AWWAO Operator of the Year awards were: (South) Brittany Lariviere from Nipissing First Nation and (North) Brian Indian from Onigaming First Nation.

The conference also featured the Water Cup Challenge which involved a panel of judges weighing the taste and appearance of tap water produced by reserve water systems. The 2022 Water Cup Challenge winners were: (South) Stacey Kicknosway, Elijah Contreras and Colin Peters from Walpole Island First Nation, and (North) Greg Edwards and Edward Black from Wahgoshig First Nation.



From left to right: Greg Edwards, Edward Black, Elijah Contreras, Colin Peters and Stacey Kicknosway

## 2022 Operator of the Year Announcement



Every year the Aboriginal Water and Wastewater Association of Ontario invites “Operator of the Year” nominations from the membership and affiliates from across the province. Several nominations were received this year however there can be only one winner for the coveted award that comes with a plaque and a monetary prize, not to mention “bragging rights” and hopefully a pay raise for a job well done.

What does it take to win the “Operator of the Year” award you ask? Well, it takes an extra ordinary individual who display a vast array of character traits such as commitment, dedication, motivation, enthusiasm, positive mental attitude, leadership in addition to the scholastic achievements which includes, at a minimum, a grade 12 or a “good enough diploma”. Not to mention an aptitude for science and technology, biology and math as well as communications and technical report writing skills.

All of these qualities (and more) embody what an Operator can and should be to meet the “day to day” challenges of providing safe potable water to their friends, family and fellow community members.

The AWWAO graciously thanks all the front-line Water and Wastewater Operators for their roles in keeping their water safe. As Operators ourselves, we understand and appreciate the efforts required to perform the necessary tasks.

Brian was chosen Operator of the Year because he is a certified Class 3 Water Treatment Operator who continually delivers above and beyond the call of duty. Brian, for the past 17 years has donated time and energy to his community to ensure the safe delivery of potable water.

Brian has not taken a vacation for the past 10 years and has donated his accrued vacation time back to his community. He faithfully works weekends and is a model Operator who without delay maintains his WT3 certification. He has never allowed his certification to expire.

He performs his daily Operational duties and sends his water quality results to his ORO 7 days a week. He and his team faithfully complete the WTP weekly bacteriological analysis and sends their results to the EHO as required. Brian has created and maintains good relations with his team, the Environmental Health Officer, his Chief & Council, local vendors, Indigenous Services Canada and most importantly, his community members.

Brian also created and is fostering a succession plan for his retirement. He found funding to hire a full time and a part time OIT so that he’ll have an experienced certified Operator to replace him when he retires in the near future.

And if that isn’t justification for winning the award, upon being presented his plaque and \$500 worth of credit cards, Brian immediately volunteered to share a portion of his winnings with Amanda, his fellow WT1 Operator.

Congratulation Brian for winning the award and Chi-miigwetch for your exemplary water treatment Operator service!

Well done Brian!!



## 2022 Operator of the Year Announcement

Congratulations to the 2022 "Operator of the Year" Brian Indian from the Ojibways of Onigaming.



Authored by: Phil Tangie

## Southern Operator of the Year - Brittany Larivière

Hello,

My name is Brittany Larivière, I reside in my home community of Nipissing first Nation with my daughter. I've been working as a water operator in my community for about the last 4 years. I have a diploma in environmental technology, and I am currently working on a degree in environmental biology. When I started my educational journey into science, I spoke with a program coordinator at my local community college and decided to pursue a career in water treatment opposed to healthcare. I decided I would like to work and contribute my education back to my community that is what lead me to my current role. I find it rewarding to provide safe potable water to our community. I enjoy learning new ways to improve standards for sustainability for our future generations.

I, along with my colleagues maintain water quality standards through our treatment process at our level 2, green sand filter plant. We service 75 homes on our main system and maintain our 10 smaller water treatment systems that are throughout our reserve. We preform preventive maintenance on our treatment and distribution systems. I have been very fortunate to work alongside my colleagues, who have taken the time to teach, mentor, and answer the millions of questions I have asked throughout my journey.

Thank you, Mark, Aaron, and Dan.

I am very humbled to have been nominated for this award.

Chi Miigwech

**Brittany Larivière**  
Water Operator- WT2, WQA  
Nipissing First Nation, Public Works



## 2021-2022 Derrick Kamanga Water Taste Challenge Cup Winner

AWWAO BOD's and AWWAO members would like to congratulate this year's winners of the, 2021-22 Derrick Kamanga Water Taste Challenge Cup

Southern Cup Champions are Walpole Island First Nation (Bkejwanong Territory) ...

Walpole Island First Nation, that area is known in the Anishinaabe language as Bkejwanong (where the water divide) Territory. Has a population estimated around 4600 and has a land /water area of about 85 square km's and is located at the mouth of Lake St. Clair where the St. Clair River flows into the lake, approximately 50 km northeast of Detroit, Michigan and Windsor, Ontario. The people of Walpole Island First Nation are Anishinaabe, which is made up of Ojibwa (or Chippewa), Odawa (or Ottawa) and Potawatomi that have always lived in this territory. In which why Walpole Island First Nation is Unceded Territory for we have always lived here and were never placed here.

Walpole Island First Nation Waterworks certified staff is made up of Stacey Kicknosway ORO, Ian Coppo OIC, Colin Peters Operator, Joshua Schram Operator, Elijah Contreras Operator which work together to provide a safe and potable drinking water supply to the community.

Their Water Treatment Plant Facility went online in 2007, consists of a PALL Corp. microfiltration -membrane system, GAC, UV treatment and Sodium Hypochlorite injection. The WTP can produce 40 L/s and they have a water reservoir that holds 800m3 and a water tower that also holds 1600 m3 which provides the First Nation Community with about 3 days of storage. Their Water Distribution System which parts of it dates back to 1979 when the original plant was built has about 50 km's of water main and about 210 fire hydrants that they maintain. They also have an estimated 900 service hook-ups, residential, business and band buildings.

The Waterworks crew had the opportunity of riding in our 2022 National Indigenous Day Parade to share the trophy with our community.

Congratulations to the hard-working team at Bkejwanong keep that safe potable good tasting water flowing...

The waterworks crew and community of Bkejwanong would like to say a special Miigwech/Thank you to AWWAO for allow us to share the cup with our community.



Cont'd



## Operator Math Corner Article #3 - In search of the way

Operators Math Corner

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

LEXICON Environmental Consulting Services Inc.

### Article #3 – In search Of The Way

Hello friends and colleagues. It's me again with another article about math and how it applies to our business. This article is not about Zen Buddhism as the title may imply; it is about the most challenging (and perhaps one of the most interesting) issues that faces all of us in our day-to-day work. It is with no doubt the challenge of converting from one unit of measure to another.

Let me start off with this tidbit of information. If you do a global search of the early definition of mathematics, you would find it defined as the study of relationships between quantities, magnitudes and properties, as well as the logical operations by which unknown quantities, magnitudes, and properties may be deduced (*Microsoft Encarta Encyclopedia*). It may also be defined as the study of quantity, structure, space and change (*Wikipedia*). Other definitions tell us that mathematics is the science of quantity, whether of magnitudes (as in geometry), or of numbers (as in arithmetic), or of the generalization of these two fields (as in algebra), and it is seen in terms of simple search for patterns. During the 19th Century, mathematics broadened these applications to encompass mathematical or symbolic logic, and mathematics became regarded increasingly as the science of logical relations or of drawing necessary conclusions.

When I read this, the words "logical operations", "logical relations" and "symbolic logic" strike me with great interest. Why is that? Let me tell you a little story.

Throughout my career, starting with being a young engineer working as an operator and a chemist at a fairly large water treatment plant, moving on to the world of consultancy, operations and management, and having worked in three continents serving all kinds of clients, it amazes me to this day how different people convert units of measure. Some do it in various methodical ways using pen and paper; others do it in their heads as they take random and obscure short cuts; while others draw triangles and squares and circles (and some other odd and fascinating shapes) that get dissected in many intriguing ways, then filling-in the resulting mini-shapes with few interesting units of measure that would allow the conversion process to proceed to the required units of measure. Some rely on available conversion sheets from different sources. And an increasing number of people nowadays rely solely on conversion-type calculators and cell phone apps to perform the required conversions for them. As you can see, different people, different ways of thinking, utilizing different logical operations, and applying different techniques and tools (and even logic) to convert between units.

But here's the problem. Some people tell me that their *logical* method of conversion only works if the original units are given to them in this and that. Others tell me that the shape-based method (triangles, squares, circles, etc.) will not work if one of the given units does not match this and that, therefore they would have to perform a pre-conversion from something to something else before they can apply this technique. And if they cannot convert this unit to that unit prior to applying their brilliantly crafted shape-based method, then things fall apart. People who rely on conversion sheets often tell me that in many cases these sheets lack a particular direct conversion they're seeking, or in other cases it just takes too long to search for a specific unit of measure. Operators who rely on their dollar-store conversion-based calculators and expensive cell phone apps often tell me that their wonderful gadgets sometimes lack a direct conversion button between certain units, and they would have to apply some intermediate conversion to arrive at the desired units and ultimately solve a question. And if they don't know how to do these intermediate conversions, then I'm told that their calculators are now useless, and "it's time to throw

Cont'd

*this one in the garbage and buy another*". One person even told me that updating his cell phone in order to accommodate a more sophisticated conversions app is now a must.

So the million dollar question becomes, what is the best way to convert between units? My answer to you is very simple. The best way is *"your"* way, as long as *your* way yields the correct answer – all the time, not some of the time. And, one more thing. If you are planning on writing exams of any type, I would like to add – the best way to convert is by utilizing a technique that will yield the correct answer, all the time, and in the shortest time possible – the luxury of time is just not there.

When I train operators on how to solve math problems, this is my message. I really have no preference as to how you do your conversions, as long as you come up with the right answer. If your method works for you (i.e., yields the right answer), and works for you all the time, then your logic is well justified and it is a good method. Stick with it and keep using it. There is no such thing as a good way or a bad way to convert. A good way is when you come up with the right answer all the time. A bad way is when you keep coming up with the wrong answer (or occasionally the right answer). And if you keep coming up with the wrong answer (or the occasional right answer), don't you think it is time to adopt a different logic and learn a new technique?

We all have different ways of thinking, and we all apply different logic in our approach to conducting our business and solving problems of all kinds. As you know, adopting a very methodical approach to solving problems of any kind is fundamental and crucial. Reading further, I will show you *"my"* method of converting units; a method that has worked for me over the years; a method that has not failed me yet in my over 30 years of practice in the world of water/wastewater engineering and operations. Three things of importance I want to note here. First, I am not trying to convert you (pardon the pun) into using my method of madness, I am merely showing you how I convert units with a technique that yields the right answer, all the time, no exceptions, and, I might add, in a very few seconds (not minutes). Second, I am not saying that my method is perfect; I am saying that my method is perfect for *me*; it conforms to my logic and my logical way of thinking (but may not conform to yours). Third, if you keep experiencing continuous trouble with performing conversions using your way, maybe you should give my technique a try and see if it works for you (you might even like it after a while). All I'm going to say is that my method works, and it works all the time, and it works fast.

Before I show you my method, here are a few conversion factors that are a **must** for every operator in our business to know (not necessarily in any order of importance):

- 1 m = 100 cm = 1,000 millimeters (units of distance) – used for calculating surface areas and volumes of tanks and pipes; etc.
- 1 m<sup>3</sup> = 1,000 Liters (units of volume) – used for calculating flows, retention times, weir overflow rates, etc.
- 1 Kg = 1,000,000 milligrams (units of weight) – used for calculating dosages, concentrations, chemical consumption, etc.

Other units that are, in my opinion, very useful to know, include:

- 1 m = 3.28 ft (units of distance)
- 1 ft = 12 inches (units of distance)
- 1 Kg = 2.2 lbs. (units of weight)
- 1 Liter = 1,000 milliliters (units of volume)

## Cont'd

- 1 U.S. gallon = 3.785 liters (units of volume)
- 1 Imperial gallon = 4.546 liters (units of volume)
- 1 M<sup>3</sup> = 35.3 ft<sup>3</sup> (units of volume)
- 1 ft<sup>3</sup> = 7.48 US gallons (units of volume)
- 1 ft<sup>3</sup> = 6.23 Imperial gallons (units of volume)

And don't worry if I have missed some of your personal favorites. I might include other conversion values as they become relevant to a specific discussion. But on top of my head, and having worked in Canada, the US, the Middle East, Latin America, and in China, these are the only conversion factors that I know! And I mean these are all I need to know to be in this business.

Okay – enough stories and opinions and on to converting. So, say you get asked to convert 28,750 m<sup>3</sup> to liters. Some of you will say “oh that's easy; just multiply by a 1,000”. Others may say “no, divide by a 1,000”. Yet others will say “a m<sup>3</sup> is larger than a liter therefore you have to multiply by a 1,000”. Others may disagree and say “because a m<sup>3</sup> is larger than a liter, then you have to divide by a 1,000 to make it smaller”. Yet someone will say “well let me look it up in this conversion sheet that I have... oh... it's not there”! And the debate continues... and here we are wasting time discussing what to do and how to do it, especially when time is precious and there are only a few minutes left to finish this painfully long certification exam.

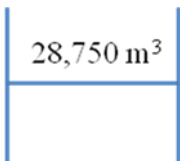
Here is my technique. I will describe to you both verbally and visually. I'm going to call it the “Hany” method (and no, I did not invent it nor I am collecting royalties for it). Why the “Hany” method? Because it starts with writing the first letter of my name – an H. If you examine the letter H, it resembles a little storage container with two spaces (or boxes) – one on top, and one on the bottom. Bare with me while I show you my method of madness in steps.

**Step 1** – Draw an H (and it doesn't have to be pretty; trust me – I won't get offended).



**Step 2** – Identify your “given” unit and your “target” unit. Remember, you are trying to convert 28,750 m<sup>3</sup> to liters. In this case, your given unit is “m<sup>3</sup>” and your target unit is “liters”. What you need to do is get rid of the unit m<sup>3</sup> and replace it with the unit liters (i.e., m<sup>3</sup> → liters). Note that both of these are units of volume and could be converted from one to the other.

**Step 3** – Take the given numerical value and its attached unit (28,750 m<sup>3</sup>), and write it in the box on the top.



**Step 4** – In basic math, there is a rule that says “if you divide a numerical value by itself, it resolves to a value of 1”. In other words, 5 divided by 5 equals 1. 20,000 divided by 20,000 equals 1. Well the same thing sort of thing applies to units as well. Dividing a unit of measure by itself resolves it to 1 (i.e., it gets cancelled). In that sense, the

Cont'd

expression  $m^3$  divided by itself ( $m^3$ ) makes the unit disappear. In order to divide the unit  $m^3$  by itself and make it disappear, write it in a separate storage container (another H), this time on the bottom.

|              |       |
|--------------|-------|
| 28,750 $m^3$ |       |
|              | $m^3$ |

**Step 5** – Remember your target unit? That target unit “liters” now needs to go in the opposite box (the empty box on the top of the second H).

|              |        |
|--------------|--------|
| 28,750 $m^3$ | liters |
|              | $m^3$  |

**Step 6** – Now, insert the proper conversion factors (the numerical values) for these units. Recall that 1  $m^3$  is equal to 1,000 liters. Therefore, the number 1 goes in the box on the bottom before the unit  $m^3$ , and the number 1,000 goes in the box on the top before the word liters.

|              |              |
|--------------|--------------|
| 28,750 $m^3$ | 1,000 liters |
|              | 1 $m^3$      |

**Step 7** – Since the unit  $m^3$  appears in two opposite locations (the top of one box and the bottom of another), they can now be cancelled. And the only unit that is left over is your target unit, in this case “liters”.

|                                    |                               |
|------------------------------------|-------------------------------|
| 28,750 <del><math>m^3</math></del> | 1,000 liters                  |
|                                    | 1 <del><math>m^3</math></del> |

**Step 8** – See that red line in the middle of the H’s? That is what I call my “divide” line. Which means, any numbers that appear above that line get multiplied, and any numbers that appear below that line get divided. And the only unit that should remain is your target unit (in this case it is “liters”).

|                                    |                               |
|------------------------------------|-------------------------------|
| 28,750 <del><math>m^3</math></del> | 1,000 (liters)                |
|                                    | 1 <del><math>m^3</math></del> |

**Step 9** – On your calculator, multiply 28,750 by 1,000 and divide by 1. And voila – your answer is 28,750,000 liters.

Someone might say “well I knew that; this is easy, and I don’t have to do 9 steps to give you the right answer”. To them I say “good for you, if it works all the time”. I know this is easy, but math problems are not always that easy as most of you know. Some problems are a bit more complex and involve multiple steps and more complex units. All



*Cont'd*

I'm showing you right now is the baby steps to take and the foundation to solving the most complicated math problems in our business. This step-by-step approach, in my opinion, is very methodical, and it is all about working with units (and not numbers); it's all about matching similar units for cancellation purposes. It takes away the guess work out of solving math problems (should I multiply by a 1,000 or should I divide by a 1,000). It is also very visual as you can see (matching units – tops with bottoms). And because it is both methodical and visual, it is foolproof and makes it very easy to identify mistakes when you make them. No guessing, no wasting time. If you are able to cancel units, then you are on the right track. If you cannot, then you are on the wrong track.

And one more thing. When applying this technique, your calculator becomes the last tool you would want to use, not the first tool. There is no point in punching numbers on your calculator if you do not know whether to multiply or to divide. I tell people – let the units guide you. If the numbers fall above the H, you multiply them. If the numbers fall below the H, then you divide them. Simple.

Let's review and summarize very quickly. Identify your given and your target units from the question. Start off by writing your given unit and its numerical value in the top portion of the first H box (box #1). Cancel your given unit by placing it in the bottom portion of the next H box (box #2). Place your target unit in the opposite location of box #2. Now add the corresponding numerical values to your units in box #2. Cross-out (cancel) similar units. Finally multiply or divide the numbers according to their location in the various boxes – top numbers get multiplied; bottom numbers get divided. Done.

See if you can repeat these steps and get the right answers for the conversion problems, I gave you a couple articles ago.

**Problem 1** – Convert 375 liters/sec to  $m^3/day$ .

- a) 4.3  $m^3/day$
- b) 540  $m^3/day$
- c) 1,350  $m^3/day$
- d) 32,400  $m^3/day$**

**Problem 2** – Convert 460 imperial gal/min to  $m^3/day$

- a) 3,011  $m^3/day$**
- b) 145.7  $m^3/day$
- c) 125.5  $m^3/day$
- d) 70.3  $m^3/day$

Good luck, and we will continue this discussion in the next issue. Until then, if you have any questions, suggestions or comments please feel free to send them my way via email at [lexicon@ca.inter.net](mailto:lexicon@ca.inter.net).

Copyright © 2015 LEXICON Environmental Consulting Services Inc.

All Rights Reserved

**No part of this material may be reproduced or photocopied, in any form or by any means, without permission. Permission to photocopy any part or section of this material must be obtained in writing from LEXICON Environmental Consulting Services Inc. or by contacting us at [lexicon@ca.inter.net](mailto:lexicon@ca.inter.net)**

## Sudbury Exam Prep Recap

In our continued quest to improve the First Nations Operator's level of certification, AWWAO hosted a Southern exam preparation course in Sudbury. The course contained a four-day classroom prep, followed by a fifth day Provincial Certification Exam. There was a total of 38 operators in attendance. World Water Operator Training Company Inc. (WWOTC) provided the training for these courses.

AWWAO would like to thank WWOTC's instructors, Dave Russell, Ken Blewett, Matt Lukich and Matt Prentice for their providing an excellent and informative exam prep course.



## *iPad Winner-Terrence Fortin*

Hello my name is Terence Fortin I'm currently part of water first internship and graduating in September as an intern I have achieved my OIT certification and plan to achieve my Class 1 water treatment and my Wastewater OIT.

Every drink of water I take now is totally different I'm constantly thinking of the residual and the process it takes to get clean drink water and how important safe drinking water really is for myself and the community!

As a new operator I see the challenges I have to overcome to become a Class I operator. My plant is currently 21 years old so I know the importance of the system to maintain and preventive maintenance for successful clean drinking water.



Classes

AWWAO would like to thank all of the instructors for providing excellent instructions in the courses!!

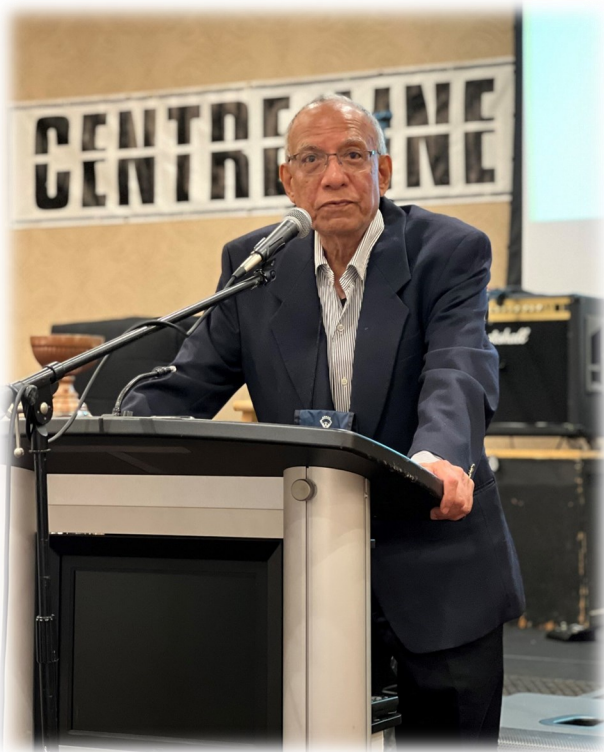


Cont'd



*Guest Speakers*

AWWAO would like to thank our honored guest speakers, Chief Dean Sayers, Mohammed Karim and John Millar for sharing their very interesting and exclusive presentations providing the conference attendees with new information for thinking and further development.



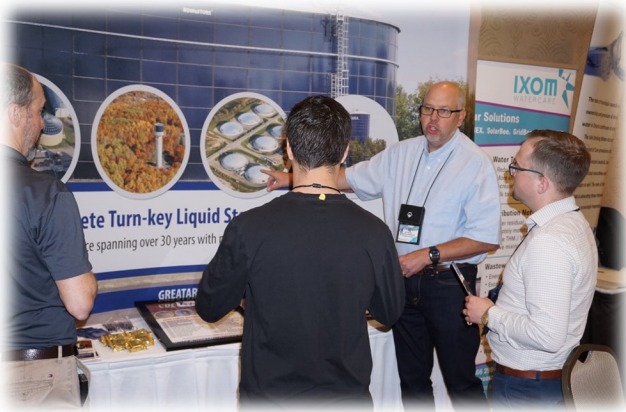
## Centre-Line Band

Thank you to Centre-Line Band for providing AWWAO with an entertaining evening



## 6th Annual Tradeshow

AWWAO would like to express our thanks to the 25 exhibitors for sharing their knowledge and expertise at the 6th Annual Tradeshow!!





Cont'd



6th Annual  
Tradeshaw

