

OPERATOR DIGEST

SUMMER 2025 | NUMBER 165



Quarterly Magazine of the
Environmental Operators
Certification Program – BC/Yukon

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OPERATOR DIGEST

The Operator Digest is the official magazine of the Environmental Operators Certification Program.

Submissions for publication in the Digest are welcome. Please email them to the EOCP office at eocp@eocp.ca

Changes of address, annual dues, Continuing Education requirements, exam applications, as well as general enquiries about the program should be addressed to:

Environmental Operators Certification Program

201 – 3833 Henning Drive,
Burnaby, BC V5C 6N5

PHONE: 604 874 4784

FAX: 604 874 4794

TOLL FREE: 1 866 552 3627

EMAIL: eocp@eocp.ca

WEB: www.eocp.ca

LINKEDIN: EOCPBCY

INSTAGRAM: EOCPBCY

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The Environmental Operators Certification Program is a charter member of Water Professionals International and is a registered society with more than 4,500 active members.

Staff

Katja Roberts, CEO, kroberts@eocp.ca

Kim Eames, Director of Operations, keames@eocp.ca

Stephanie Hall, Exam Specialist, shall@eocp.ca

Heather Reynolds, Administrative Specialist, hreynolds@eocp.ca

Jenni Green, Technical Specialist, jgreen@eocp.ca

Gulmira Turginbayeva, Administrative Assistant, gturginbayeva@eocp.ca

Board of Directors

Natasha Cvenkel – Chair

Tara Macrae – Chair-Elect

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Rob Fleming – Director

Chris Ford – Director

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OPERATOR PROFILE

Kyle Arsenault, CWP, CWWP



How did you become an Operator?

I was interested in the Water Quality Technology course offered at OUC in Kelowna and saw large opportunities within the field.

How long have you been an Operator?

I have been an Operator since 2005, starting my work experience as a co-op student in Vancouver.

What are your core functions?

I am the Chief Water Operator of Rose Valley Water Treatment Plant. I assign daily duties and oversee the operation of the treatment plant ensuring the highest quality of drinking water we can deliver to our community.

What is your typical day like?

My day starts by reviewing SCADA to see how the plant performed overnight and to check if anything requires immediate attention. I then assign the daily tasks and lead a tailgate meeting to review them with staff. There are many tasks required throughout the day, including maintaining instrumentation, flushing,

and calibrations. Lab testing is also performed daily, weekly, and monthly, with chemical adjustments made based on the results. I also order the chemicals needed for plant operations. I am a mentor for my staff through all these tasks. A lot of planning goes into ensuring successful operations each day.

What do you most enjoy about the work?

The variety of it. I like being able to operate at two facilities including both watersheds. It provides lots of challenges that make things exciting and keeps us very busy.

What are some challenges you face?

Seasonal Manganese has been a recent challenge, and we are currently commissioning a permanganate system to help oxidize dissolved Mn. Other challenges include meeting increased demand during the summer months due to agricultural use. Day-to-day operations also present their own set of challenges, which foremen must navigate and address as they arise. Staying on top of everything is essential.

What advice do you have on how to have a successful career as an Operator?

Learn as much as you can—and keep learning. Take good notes and keep organized records. Don't be afraid to make mistakes—just make sure you learn from them. Chat with senior operators and learn from their past experiences.

What do you do when you aren't working?

I love the outdoors, and camp, hunt, fish, and golf. I enjoy coaching my kids' softball team.

What else can you tell us about working as an Environmental Operator?

It's an amazing opportunity to enjoy what you do while continuing to learn as the seasons and plants change. Each plant is unique, and I've enjoyed learning about each one I've had the chance to work at. It's not just about plant work either. This field opens the door to many other jobs related to environmental operations.

Whom would you recognize as a mentor?

All the senior staff that I have had an opportunity to learn from throughout the years.



Continuing Education Just Got Easier.

The EOCP is excited to launch a new initiative to help Operators stay ahead and meet their continuing education requirements.

We are curating a list of **Free, No Membership Required CEU opportunities**, available online and accessible from anywhere. We want to share the event information and connect you with the Training Provider, so you can get the CEUs you need. Whether you're looking to sharpen your skills, explore new topics, or earn Continuing Education Units (CEUs), these events should be a perfect fit.

What to Expect:

- No membership or subscription required
- CEU-approved content from trusted sources
- Regularly updated listings

Check out the Calendar on our website at <https://eoecp.ca/events-calendar/> for the events. We'll be sharing upcoming opportunities via email too — so you never miss a chance to learn and grow. Event Registration is through the Training Provider, available through the Calendar Items.

 **Know a great free CEU event?** Let us know and we'll help spread the word!

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MESSAGE FROM TEAM EOCP



Summer is upon us, and we hope you're finding time to relax, recharge, and enjoy the season with friends and family.

We are pleased to announce that on July 15, 2025, Katja Roberts joined the EOCP Team as our new Chief Executive Officer. Working closely with our Board of Directors, Katja will help strengthen our operations, and build on our existing successes. We are confident that together their leadership will bring fresh perspective and momentum to the work ahead. See page 5 for a message from Katja.

Voting is now open for the 2025 EOCP Board Election! Voting began on July 11th, and ballots are already coming in. This year, we're excited to share that a record nine certified Operators are running for two Board Director positions. You can learn more about the candidates at: <https://eocp.ca/2025-eocp-board-elections/> and on page 12 of the digest.

As of July 1st, Operators have begun writing the latest version of the standardized WPI Level I-IV exams. For more information about the updated Need-to-Know Criteria and what's covered at each level, see page 14 of the EOCP Digest.

The countdown to EOCP2025 is on! Join us at our new venue in Richmond for our Tradeshow and a full lineup of Education sessions. We're pleased to welcome Tanya Steele as our keynote speaker and look forward to bringing you a range of informative and engaging presentations led by industry experts. We extend our sincere thanks to our event sponsors. Your generous support is instrumental in the success of this event. There is still time to register, and we look forward to seeing you there.

<https://events.myconferencesuite.com/EOCP2025/reg/landing>

The EOCP Annual General Meeting will be held on September 22, 2025, in Richmond at the Sheraton Vancouver Airport hotel at 1pm, and those of you not able to attend in-person can join us online.

The current CEU reporting period ends on December 31, 2025. It is a great time to check in to make sure you are on track with your requirements.

As we look ahead to the Fall, we're excited about what's to come and look forward to continuing our work together. In the meantime, we wish you a safe, restful, and enjoyable summer.



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MEET KATJA ROBERTS

EOCP'S NEW CEO



Dear Members and Stakeholders,

I am honoured to step into the role of Chief Executive Officer at the Environmental Operators Certification Program (EOCP). As we enter a new chapter of growth and sustainability, I am excited to lead this important organization and work alongside our dedicated team, committed operators, and valued partners.

My professional background spans senior leadership roles with a strong foundation in finance and operational strategy. I hold a Bachelor of Science in Natural Resource Management from the University of Northern British Columbia, and over the course of my career, I have developed a financial and strategic lens that supports long-term organizational success. My approach has always been rooted in collaboration, integrity, and a commitment to excellence.

For over two decades, I have called the mountain resort community of Sun Peaks home. It is situated on the territory of the Simpcw, Adams Lake, Neskonlith and Tk'emlups te Secwepemc peoples and it is also where I enjoy everything the outdoors has to offer—hiking, skiing, biking, pickleball, and the occasional quiet moment with a book by the lake.

As I take the helm at EOCP, my focus will be on expanding the reach and impact of our certification programs, enhancing operator support across British Columbia and Yukon, and ensuring we remain a trusted leader in environmental certification. I am deeply committed to EOCP's mission and to strengthening our core values of integrity, excellence, and continuous improvement.

In the coming months, I look forward to connecting with many of you - hearing your insights, understanding your challenges, and learning about the successes that shape our sector. Together, we will continue to support operators in delivering safe, effective, and sustainable services to the communities we all serve.

With gratitude,



Katja Roberts

Chief Executive
Officer

Environmental
Operators
Certification
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BRIDGING CONTINENTS THROUGH CLEAN WATER: MIKE FIRLOTTE AND PAUL BISHOP LEAD OPERATOR TRAINING

By Abby Bishop

In a defining moment for international water and wastewater operator training, 2025 EOCP Board Director and Water Professionals International (WPI) Board Chair Mike Firlotte, PO, and WPI President & CEO Paul Bishop, CAE, joined forces with Game Changers Inc., to launch Kenya's first Professional Operator (PO) certification cohort. Together, they demonstrated that global standards can be successfully localized—and that the passion for clean water transcends borders.

As a Director for both EOCP and WPI, and an accomplished instructor, Mike saw the opportunity as far more than just a professional assignment—it was a personal challenge. “Whenever I instruct any group, I’m imparting knowledge,” he shared. “I take pride in teaching diverse and often unorthodox customer bases. For me, it was a challenge: can I do this? Can I truly impart my knowledge?”

He did far more than that. In a country where many participants had never experienced standardized testing, Mike adapted his teaching style to meet a wide range of learning needs. “I can teach a class fifty different ways,” he explained. “I connect with everyone in that room in some way, shape, or form... half of what we did was to make sure everyone felt seen. Everyone had a story.”

The training culminated in an emotional pinning ceremony—an important milestone for both instructors and students. “The pinning made me super proud,” Mike recalled. “I pushed myself in how I presented to the class. I saw how hard so many people worked—and how many succeeded.”

Paul Bishop witnessed the transformation firsthand. “Mike’s program shows that people from diverse backgrounds can complete this program successfully,” Paul said. “It highlights the need for education and allows for mobility for operators around the world.”

The results speak for themselves: of 40 participants, 29 earned their certification—a 71% success rate

comparable to established programs in North America. Yet, as Mike and Paul emphasized, the real impact goes beyond the numbers. It lies in empowering operators with the skills, confidence, and global recognition they need to create lasting change in their communities.

Mike described his approach as that of a “translator,” noting, “We take complex topics and make them understandable and relatable. Even those who didn’t pass the exam still left with valuable knowledge.”

Looking to the future, Kenyan organizations are already building on this momentum. Plans are underway to establish a dedicated training center, ensuring local ownership of professional development and reducing reliance on external support. “There was a real need and an appetite for what we do,”

Looking ahead, Mike and Paul are committed to expanding access even

further. A key priority is increasing opportunities for women in the water sector. Paul commented that “Looking forward, we want to ensure more education for women, so they can return to their communities and teach others.”

At the heart of their mission is a clear, shared vision: to build not only a stronger water workforce but also a global network of servant leaders committed to protecting clean water.

Mike and Paul are not just building operator capacity—they are building hope, resilience, and opportunity. “Nothing can happen if we don’t have clean water,” Paul reminded, “it’s all interconnected.”

Mike agrees, underscoring the need to invest in global water communities: “The way to strengthen the chain is to make sure we are all trained and have the same understanding. We are only as strong as the person beside us.”



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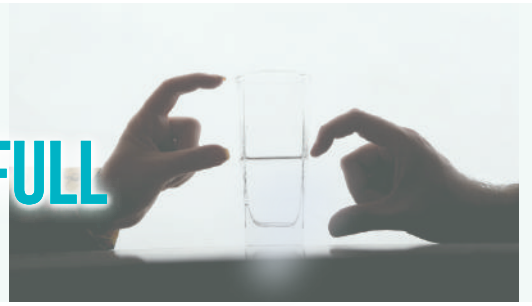
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MATH FOR OPERATORS: THE OPTIMIST SEES A GLASS HALF FULL

By Graeme Faris



Calculating cross-sectional area in pipes that are partially full

The optimist sees a glass half full; the pessimist sees a glass half empty and the value engineering consultant sees a glass that is twice as big as it needs to be.

Every operator should be familiar with the formula for calculating flow. In its basic form, flow is equal to area times velocity or $Q=AV$.

When a pipe is flowing full, its cross-sectional area (A) is equal to the constant pi (π) times the radius squared ($A=\pi r^2$); when flowing half full, the full pipe area would be divided by 2 but what formula do we use when the pipe is flowing less than or more than one half full?

In this article we will look at the formulae that are used to calculate those in-between areas. The math will require the use of a scientific calculator. The solutions presented here were obtained using a scientific calculator purchased at a Dollarama for \$4.35.

Condition 1 - Flow in a partially full pipe (less than ½ full)

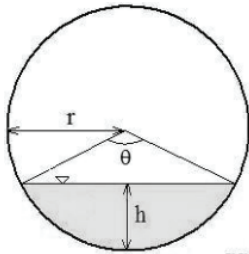
When calculating the cross-sectional area of flow in a partially full pipe (less than 1/2 full) the following formulae are used.

radius (r) = ½ diameter (D) or $D/2$

h = depth of liquid

$$\theta = 2 \arccos\left(\frac{r-h}{r}\right)$$

$$\text{Area, (A)} = \frac{r^2(\theta - \sin\theta)}{2}$$



In the metric system, angles are measured in radians.

1 radian is approximately equal to 57.3 degrees.

The Greek letter theta (θ) is used to represent an unknown angle in radians.

Calculate the cross-sectional area of flow in a 300 mm diameter pipe when the water is flowing at a depth (h) of 75 mm.

Known: $r = D/2 = 300/2 = 150 \text{ mm} = 0.15\text{m}$ $h = 75\text{mm} = 0.075\text{m}$

Step 1 : Calculate θ

$$\theta = 2 \arccos\left(\frac{r-h}{r}\right) = 2 \arccos\left(\frac{.15\text{m} - .075\text{m}}{.15\text{m}}\right) = 2 \arccos(0.5) = 2.094 \text{ radians}$$

Keystroke sequence to calculate arccos value: Use **DRG** key to select **RAD** as the unit of angular measurement. Enter value, press 2nd function key, press **COS** key, then multiply by 2

Step 2: Calculate cross sectional area (A)

$$\text{Area, (A)} = \frac{r^2(\theta - \sin\theta)}{2} = \frac{(0.15\text{m})^2(2.094 \text{ rad} - 0.733 \text{ rad})}{2} = 0.0153\text{m}^2$$

Keystroke sequence to calculate $\sin\theta$: Use **DRG** key to select **RAD** as the unit of angular measurement. Enter value for θ , press **SIN** key, then perform remaining operations

Condition 2 - Flow in a partially full pipe (more than ½ full)

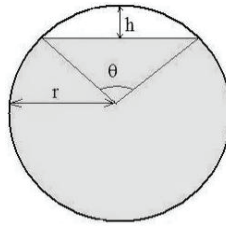
When calculating area (A), in a partially full pipe (more than 1/2 full) the following formulae are used.

radius (r) = ½ diameter (D) or D/2

h = height of void space

$$\theta = 2 \arccos\left(\frac{r-h}{r}\right)$$

$$\text{Area, (A)} = \pi r^2 - \frac{r^2(\theta - \sin\theta)}{2}$$



Calculate the cross-sectional area of flow in a 300 mm diameter pipe when the water is flowing at a depth of 200 mm.

Known: $r = D/2 = 300/2 = 150 \text{ mm} = 0.15 \text{ m}$ $h = 300\text{mm} - 200\text{mm} = 100\text{mm} = 0.1 \text{ m}$

Step 1 : Calculate θ

$$\theta = 2 \arccos\left(\frac{r-h}{r}\right) = 2 \arccos\left(\frac{.15\text{m} - .1\text{m}}{.15\text{m}}\right) = 2 \arccos(0.33) = 2.462 \text{ radians}$$

Keystroke sequence to calculate arccos value: Use **DRG** key to select **RAD** as the unit of angular measurement. Enter value, press 2nd function key, press **COS** key, then multiply by 2

Step 2: Calculate cross sectional area (A)

$$\text{Area, (A)} = \pi r^2 - \frac{r^2(\theta - \sin\theta)}{2} = 0.0707\text{m}^2 - \frac{(0.15\text{m})^2(2.462 \text{ rad} - 0.628 \text{ rad})}{2}$$

$$\text{Area} = 0.0707\text{m}^2 - \frac{0.0225\text{m}^2 \times 1.834 \text{ rad}}{2} = 0.0707\text{m}^2 - 0.0206\text{m}^2 = 0.0497\text{m}^2$$

Keystroke sequence to calculate $\sin\theta$: Use **DRG** key to select **RAD** as the unit of angular measurement. Enter value for θ , press **SIN** key, then perform remaining operations

Remember our value engineering consultant? She would tell you that, under gravity flow conditions, the maximum flow and velocity will be obtained when the pipe is precisely 81.28 % full. Why? To answer that we will have to explore Manning's equation and the effect of hydraulic radius on friction head loss and that is a task for another day!



Potting Around

Randy Colombo, CWP, CWWP, found these quirky planters on Isla de la Roqueta in Mexico—talk about recycling with style!

THE DISTRICT OF PORT HARDY'S WATER TREATMENT PLANT

By Joe Jewell, CWP, CWWP

Nestled at the northern tip of Vancouver Island, the District of Port Hardy, British Columbia, is a community defined by its pristine natural beauty, rugged coastline, and close connection to the land and sea.

Serving a population of approximately 5,000, the District of Port Hardy's water treatment plant is essential not just for the town itself, but also for the neighbouring Kwakiutl and the Gwa'Sala-Nakwaxda'xw First Nations.

But the reach of the Port Hardy Water Treatment Plant extends well beyond serving homes and businesses. The plant also supplies essential water to the ferries that connect Port Hardy to the wider province, to bustling fish processing plants—each critical to the local economy. In a place where “the highway ends, and the adventure begins,” the water plant supports both community well-being and the spirit of exploration that defines this northern gateway.

This facility, often unseen by residents and visitors alike, plays a crucial role in ensuring that the district's most fundamental resource—clean, safe drinking water flows reliably.

By the late 1990s, it became clear that the aging water infrastructure required a comprehensive upgrade. The existing level of treatment was becoming inadequate for the community's needs and for compliance with evolving health regulations. After careful planning and design, the District of Port Hardy commissioned the water treatment plant in May 2000. The plant was designed by BCA (now AWC), and the District entered a public-private partnership with EPCOR Water Services. With a maximum flow capacity of 10 ML/day but typically operating at around 4.4 ML/day, the plant delivers safe, high-quality, water to every home and business in the District of Port Hardy.



River and Reservoir Water Samples



Raw Water Forcemain

How the Plant Works: From Source to Tap

Water is supplied by the Tsulquate River, which is fed by Kains Lake. The lake and river are distinctly tea-coloured; a hallmark of many west coast communities which presents many unique considerations for treatment.

One of the most striking characteristics of Port Hardy's raw water is its deep, amber hue. The annual average colour measures around 70 TCU (True Colour Units), but at times it can surge to highs of 200 TCU or drop to the low 30s, reflecting the river's response to seasonal changes and weather events. Such pronounced colour not only signals a rich presence of natural organics but also poses unique challenges for treatment and distribution.

The treatment process begins with the addition of ISOPAC 6, as a coagulant, and soda ash for alkalinity and pH adjustment to the raw water.

Once coagulation is complete, the water flows into the Dissolved Air Flotation (DAF) system. Here, microbubbles adhere to the flocs, lifting them to the surface where they can be efficiently skimmed away. This has shown to be particularly effective for the removal of the river's characteristic organic colour and turbidity.



Lime Silo

The clarified water then passes through dual media filters, composed of silica sand and anthracite coal.

Post filtration, alkalinity is increased using lime. To fine-tune the final pH, carbon dioxide is introduced, lowering the pH to its ideal level for both safety and palatability.

Water is disinfected using a sodium hypochlorite generator. This process replaced the use of chlorine gas cylinders in the early 2010s.

Daily operations, including laboratory testing, system oversight, and maintenance, are carried out by a single skilled operator. The plant is classified as a Level III with the EOCP.

Commitment to Environmental Sustainability

Port Hardy's water treatment plant is designed with sustainability in mind. DAF treatment operates efficiently, minimizing energy and chemical use while maximizing water recovery. Unlike conventional flocculation methods that rely on forming large, settleable flocs, the DAF process produces a much smaller "pin floc," ideal for flotation.

Backwash wastewater and residuals are pumped to the Tsulquate Wastewater Treatment Plant for treatment, safeguarding local waterways and ecosystems.

Water restrictions are a key component to effective water conservation. Implementing water restrictions not only supports the ongoing efforts of the Utilities Department to maintain a reliable water supply but also fosters a culture of stewardship across the community.

Emergency Preparedness and Resilience


No water system is immune to emergencies. The Port Hardy Water Treatment Plant is equipped with a 600 kW diesel generator capable of powering the entire site, ensuring continuous operation even during power outages.


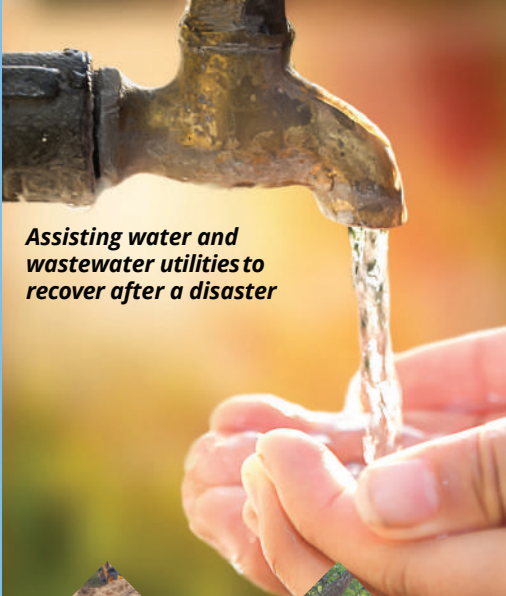
Plant operators utilize a full SCADA system, providing comprehensive, real-time monitoring and remote accessibility. Water quality parameters—including turbidity, pH, chlorine residual, and high reservoir discharge flow rates are continuously monitored and trended.

In recent years, the District has made substantial investments in water storage infrastructure to enhance both emergency preparedness and fire flow capacity. In 2018, the addition of the Fort Rupert Reservoir brought an extra 2 million litres (ML) of reserve, while Reservoir #1 underwent a significant upgrade, increasing its storage from 2 ML to 2.7 ML. In 2025, Reservoir #2 upgraded to match the 2.7 ML capacity of Reservoir #1. Bear Cove Reservoir adds a further 1 ML to the network. These improvements bolster the district's ability to respond to fire and the community's demands.




Investments are currently being made to track water patterns and demands. Water meters have been installed in 3 of 4 water reservoirs and soon all of the District's 7 PRV stations will have water meters installed with remote monitoring and alarms for high flow.

Clean water is one of the most critical components of daily life, yet it is so easily taken for granted. In Port Hardy, the constant vigilance of the District's Utilities Department behind the scenes maintains the safe, reliable flow of water for those who call this corner of Vancouver Island home.


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Assisting water and wastewater utilities to recover after a disaster

2025 EOCP BOARD ELECTION: MEET THE CANDIDATES

Two Certified Operator Positions



Chris Ford, Incumbent



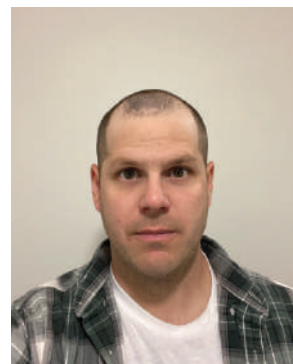
Darryl Bjorgaard



David Best



Jeffrey Parker



Jeffrey Singbiel

One Consultant Position



Nicolas Duran



Randall Colombo



Ryan Federau



Tina Henderson



John Bergese

Voting opened on July 11th in the 2025 EOCP Board Election. This year, there are a record nine certified Operators running for two Board Director positions.

To cast your vote, click the link that was emailed to you on July 11th. It will take you directly to the Customer Relationship Manager (CRM) system. Alternatively, eligible Operators can log into their CRM profile at <https://crm.eocp.ca/> and follow the voting prompt that appears.

Learn more about the candidates by viewing their bios here: <https://eocp.ca/2025-eocp-board-elections/>
Voting closes on August 22nd. Make your voice count and help us reach a record-high voter turnout this year!

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WHO'S ON THE MOVE

Darcy Dion, CWP, CWWP



Darcy Dion fixing a fire hydrant

ask them! Also, don't be afraid to fess up if you do – taking responsibility is a great way to build trust within your team. Those around you have made the same or similar mistakes.

Take opportunities to learn and grow – education and training is critical to supplement hands-on work experience to become an efficient and skilled operator.

What are some of your goals in your new position?

Connect and meet with as many operators as possible to learn about their systems! I appreciate wholeheartedly the work operators do, whether large scale municipalities, small utilities, or First Nation communities. I would also like to make sure I am offering exceptional customer service and supporting operations teams, distributors, and contractors to ensure Clow Canada's products are meeting and exceeding expectations.

What do you do in your spare time?

When my husband and I are not chasing after our little ones around the yard or lakeside somewhere I am actively involved in the water and wastewater sector. Contributing to both EOCP and BCWWA Boards has been incredibly rewarding. I appreciate the opportunity to ensure operators are recognized and celebrated throughout the industry. Currently, I am working on the next Operator Challenge for BCWWA!

What was your first job?

I worked in the hospitality industry while still in high school, both in the kitchen and serving. The work was hard but rewarding as I loved the fast pace and being around people all the time. When I was 20 years old an opportunity came up to work in a camp kitchen in northern Alberta – the high pay and promise of an entire week off every month sent me on a plane and on my way.

What was your path to becoming an Operator?

While working in a camp approximately 35 minutes north of Fort McMurray, the 21/7 schedule was becoming taxing. I missed my friends and family, but I still enjoyed being there – the work itself and the pay made it worthwhile. I shared this with one of the maintenance plumbers and he said I should go work in the wastewater treatment plant, because they worked a 2 week on / 2 week off schedule. I was intrigued so the next day I talked with the manager, Michael Murphy. He told me this was a great industry to work in with lots of promise, but to start taking some courses as he couldn't hire me for an entry level role because they required Certified Operators. At the time they had a very tight schedule with 1-2 operators per shift that cross shifted each other on the 14/14-day schedule.

After 4 years of taking every Sacramento Course I could, taking short school training on my 7 days off whenever possible, I landed an entry level position that required me to drive to various camps and check the chlorine residuals and take weekly water quality samples. This took me about 2-3 hours to complete each day, so the remainder of my time was spent training in operating the water and wastewater treatment plants that were beside each other at the camp I stayed at. After a few years I was able to write my first water and wastewater treatment certification exams.

How did you pivot from your last position to your current one?

After camp, I had the opportunity to work in various water and wastewater systems, and today I hold certifications in all 4 operator designations. Working in various sectors, I realized how operators were treated was extremely diverse, and not always in the best way. After getting positions on both the EOCP and BCWWA Boards, I realized how passionate I was about operator advocacy and organizations that supported operators.

In my experience, Clow had always been there when I needed technical support. Also, after many years of hydrant maintenance on almost any hydrant you could name, I found I would get excited about the next Clow hydrant on the line because of how easy they are to take apart and maintain.

It just made sense I got to talk about waterworks products I believe in so strongly, while at the same time getting the opportunity to connect with and support EOCP Operators across BC.

What advice would you give to someone who is currently an Operator or considering becoming one?


Don't be afraid to make mistakes! I made many – my past supervisors have some great stories, if you ever get the chance to

THE OPERATOR'S SECRET WEAPON TO ACE THAT EXAM!

What Every Operator Needs to Know Before Test Day

As of July 1st, the updated Level I-IV standardized exams are officially in use, along with refreshed Need-to-Know (NTK) criteria to help Operators prepare for their exam with confidence.


The NTK outlines the key job tasks for each discipline and level, grouped into content areas that show how many questions you can expect in each section. It's your new go-to guide for studying smart!



16 Recall
19 Application
6 Calculation Items

Water Distribution Operator Class I Examination Outline


Distribution System Components



14 Recall
16 Application
3 Calculation Items

Water Distribution Operator Class I Examination Outline

Equipment Installation, Operation, Maintenance, and Repair



8 Recall
7 Application
0 Calculation Items

Water Distribution Operator Class I Examination Outline


Water Quality Monitoring, Evaluation, Adjustment, and Laboratory Analysis/Interpretation



7 Recall
13 Application
0 Calculation Items

Water Distribution Operator Class I Examination Outline

Security, Safety, Administrative Procedures, and Public Interactions



16 Recall
19 Application
6 Calculation Items

Water Distribution Operator Class I Examination Outline

Distribution System Components

Aid in the design of water distribution projects

Assess water production (e.g., water restrictions and demand)

Adjust the water production to meet the demand (e.g., start pumps, adjust flow valves, etc.)

Understand backflow prevention and control devices

Understand SCADA systems components

Monitor water distribution system parameters (e.g., pressure, flow, water quality, water age, velocity, storage levels, etc.)

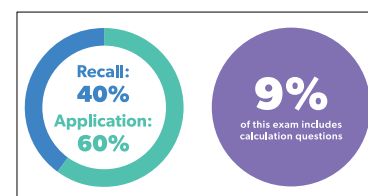
- Mains and related equipment (e.g., hydrants and valves, pressure regulating valves, air relief valves, etc.)
- Metering and related equipment (e.g., remote readers, meter replacements, etc.)
- Finished water storage and related equipment (e.g., tanks, overflow pipe, vents, access hatches, etc.)

Understand schematic diagrams


Understand wells and related equipment (e.g., measure static water levels and pumping water levels, etc.)

Perform operational analysis (e.g., analyze operational data, meet performance objectives, document operating conditions, etc.)

Exam content includes how many recall and application questions are in each section. The number of calculation questions are listed separately.



The NTK breaks down each content area in more detail, outlining what you can expect in each section.



Need-to-Know Criteria

Water Distribution
Operator Class I

A Need-to-Know Guide when preparing for the:
Water Distribution Operator Class I Certification Exam

| NUMBER OF QUESTIONS | CONTENT AREA | PRIMARY REFERENCE | SECONDARY REFERENCE |
|---------------------|--|--|--|
| 35 | Distribution System Components | AWWA WSO Water Distribution Grade 1-2 | CSUS Water Distribution System Operation & Maintenance 7th Edition |
| 30 | Equipment Installation, Operation, Maintenance, and Repair | AWWA WSO Water Distribution Grade 1-2 | AWWA Water Distribution Operator Training Handbook 4th Edition |
| 15 | Water Quality Monitoring, Evaluation, Adjustment, and Laboratory Analysis/Interpretation | CSUS Water Distribution System Operation & Maintenance 7th Edition | AWWA WSO Water Distribution Grade 1-2 |
| 20 | Security, Safety, Administrative Procedures, and Public Interactions | CSUS Water Distribution System Operation & Maintenance 7th Edition | AWWA Water Distribution Operator Training Handbook 4th Edition |

Each NTK criterion includes the primary and secondary reference materials for every exam content area.

A complete list of references used to develop the exam is available on WPI's website at:

<https://www.gowpi.org/services/abc-testing/>

Check out the entire updated [Need-to-Know](#) Criteria and get set to ace your exam!

ARE YOUR CEUS UP TO DATE?

There are five months left in the 2024–2025 reporting period—plenty of time to meet your Continuing Education Unit (CEU) requirements and maintain your certification.



Keep in mind the requirements for the different EOCP Certifications:

- Level I–IV: 2.4 CEUs, with 0.6 CEUs per utility if certified in multiple areas
- SWS/SWWS/BWD/BWS: 1.2 CEUs, with 0.3 CEUs per utility if holding multiple certifications

Also remember the Key Rules for CEUs:

- Core CEUs = job-specific; Related CEUs = industry-wide
- No repeat courses in the same two-year period
- CEUs can't be divided across periods or earned via exams/self-study
- Extra CEUs don't carry over
- Missed CEUs or unpaid dues = "not certified" status with EOCP

Need help understanding your specific requirement? Contact our office—we're happy to assist!


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Exciting Progress in Water Innovation

We have been granted permission to share an article from Carollo Engineers about the **El Paso Pure Water Center**, a groundbreaking Direct-to-Distribution Water Reuse Facility that was officially accepted by the City of El Paso, TX in late 2024. Construction began in 2025, and the facility is expected to be completed by 2028.

This project marks a significant advancement in water purification technology and stands out as a forward-thinking solution to drought resilience and long-term water security. We're following its progress with great interest and wanted to share the information as a potential model for addressing critical water challenges in similar regions.

PLANT PROFILE



Pure Water Center will produce 10 million gallons of water per day

EL PASO WATER BREAKS GROUND ON NATION'S FIRST DIRECT-TO-DISTRIBUTION WATER REUSE FACILITY

Release Date: February 27, 2025

Article courtesy of El Paso Water

Reprinted by EOCP with permission

Original article found at:
<https://carollo.com/press-releases/pure-water-center-el-paso/>

EL PASO, TX – [El Paso Water](#) (EPWater), joined by local, state and federal leaders, broke ground today on the [Pure Water Center](#), formerly known as the Advanced Water Purification Facility. During the ceremony, the new name was unveiled, reflecting the mission to produce sustainable, high-quality [drinking water](#) for the El Paso community.

EPWater has worked collaboratively with the [Texas Commission on Environmental Quality](#) (TCEQ) for more than a decade to ensure that the water produced at this facility will meet all state and federal requirements for safe drinking water. In late 2024, TCEQ granted final design approval, allowing [construction](#) to move forward.

"After years of planning, design and thousands of water-quality tests, we are excited to begin construction on the Pure Water Center," said President and CEO John Balliew. "This is the next step in El Paso's long history of water reuse, and we hope it will serve as a model for other communities facing water related challenges."

Cutting-Edge Water Purification Process

The Pure Water Center will receive treated water from the Roberto Bustamante Wastewater Treatment Plant, which is currently used for irrigation and discharge to the Rio Grande. This water will undergo a multi-step purification process to go beyond drinking water quality standards before distribution to customers.

The advanced purification process includes membrane filtration, reverse osmosis, ultraviolet light with advanced oxidation, granular activated carbon filtration and chlorine disinfection.

Designed by [Carollo Engineers](#) and soon to be constructed by the PCL/Sundt Construction Joint Venture, the Pure Water Center will provide an additional 10 million gallons of drinking water per day directly to El Paso residents.

"The groundbreaking of EPWater's Pure Water Center represents a historic milestone for [water reuse](#) innovation," said Sanaan Villalobos, Vice President and Project Manager at Carollo. "As the nation's first direct-to-distribution potable reuse facility, this pioneering project showcases EPWater's visionary leadership and unwavering commitment to [water sustainability](#)."

"We are honored EPWater has entrusted the PCL/Sundt team with this transformative project," said Ankur Talwar, District Manager

for PCL's Civil Infrastructure Division. "Our hope is that the Pure Water Center will set a new standard for water resiliency across the country."

"At Sundt, we take pride in our long-standing expertise in building critical [water infrastructure](#) that strengthens communities," said Sam Reidy, President of Sundt's Water and Wastewater Group. "Through our partnership with EPWater and PCL Construction, we are ensuring a resilient water future for the region."

Investing in Community Engagement and Education Through Water Reuse

EPWater is committed to keeping customers informed about El Paso's water resources and systems. The Pure Water Center will feature a state-of-the-art visitor center, offering educational opportunities to learn about water sources, water supplies, environmental stewardship, and advanced water treatment processes.

Pure Water Center Funding and Project Timeline

The U.S. Bureau of Reclamation awarded \$3.5 million in 2019 for the facility's design and committed an additional \$20 million in 2022 to support construction. The total project cost is currently estimated at \$295 million, and EPWater continues to pursue additional state and federal funding. Construction is expected to be completed in 2028.



RESILIENCE AND REFORM:

REMEMBERING THE WALKERTON WATER CRISIS 25 YEARS LATER

The crisis led to the creation of the Walkerton Clean Water Centre, which has helped to train thousands of water professionals.

By David Nesselth

This article has been republished with permission from Environmental Science & Engineering Magazine.

Ed Houghton's nine days on the ground in Walkerton are now something of a blur. But the emotion remains vivid as he recalls becoming the de facto spokesperson for a tragedy that would grip the nation — informing the public and media, one death at a time, of the devastating toll of E. coli-contaminated drinking water.

Now Executive Director of the [Ontario Municipal Water Association](#) (OMWA), Houghton was called over the Victoria Day long weekend in 2000 by the Walkerton utility's general manager, who knew of Houghton's experience dealing with a cryptosporidium outbreak four years earlier in Collingwood, Ontario. The general manager — who would later be imprisoned for risking public safety — told Houghton a boil water advisory had been issued and that he needed help.

Arriving in Walkerton before sunrise the next day with Collingwood's water superintendent, Terry "Hock" Hockley, Houghton quickly grasped the seriousness of the situation. Local hospitals were admitting residents with bloody diarrhea, and the town's chlorinator wasn't functioning. Before initiating system flushing, Houghton requested the past 60

days of water sampling and lab reports, as well as distribution system drawings.

"It didn't take me very long after I started reviewing the reports that I saw a trend, and I saw issues," Houghton said, during a webinar recognizing the 25th anniversary of the crisis, which was hosted by the Walkerton Clean Water Centre (WCWC) on May 21. "The lab results showed many many signals that should raise significant red flags, but obviously hadn't."

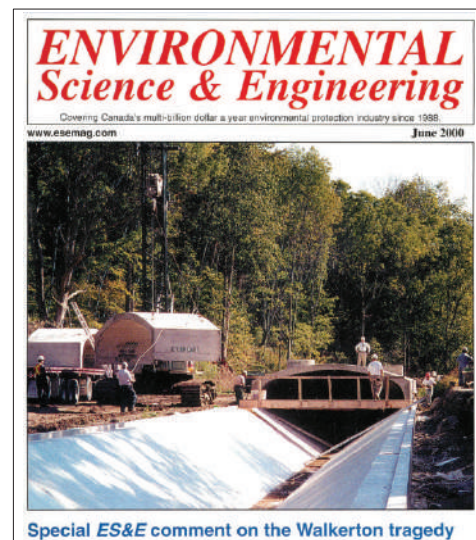
As Houghton discussed flushing plans with Hockley that day, he watched Walkerton Utility Manager Stan Koebel — his eyes red, voice shaking — walk out of the office. It would be the last time Houghton would see him until months later at the Walkerton Inquiry.

"I went from trying to restore the health of the water system with Terry Hockley to becoming the spokesperson for the utility," Houghton recalls. "I attended all the media events. I was informing everyone what we were doing, and informing the media and the public that we now have the first death, the second death, and so on."

While Houghton says it's clear that Koebel and his younger brother Frank — the utility's foreman — were "certainly neglectful," the systemic problems went far beyond Walkerton.

"Was Walkerton an anomaly, or were they the norm?" Houghton asked during his webinar presentation. Given the state of technology, funding, and training in 2000, he believes it was, "unfortunately," closer to the norm for many small municipalities.

As information emerged — from unusually heavy rains to a freshly fertilized cattle farm



The June 2000 issue of Environmental Science & Engineering Magazine included a comment on the Walkerton Water Crisis from Founding Editor Tom Davey.
https://issuu.com/esemag/docs/2000_06-jun_-_environmental_magazine/6

and the shallow, poorly protected Well 5 — the tragedy became a national wake-up call. The Walkerton Inquiry, led by Ontario Associate Chief Justice Dennis O'Connor, would become a pivotal moment in Canadian environmental and public health policy. Twenty-five years later, the former judge says he still feels the resilience of the Walkerton community, which lost seven people and saw more than 2,300 sickened by drinking manure-tainted water.

"It's one of my strongest lasting memories," O'Connor tells the WCWC webinar, recalling how eager the community was to find out exactly what had happened. "It was simply the resilience in the community spirit of the people who went through this devastation."

Central to what went wrong was Well 5, a GUDI well (groundwater under direct influence of surface water) that, O'Connor noted, should never have been approved by the province in 1978.

"Nobody ever revisited it, but it was a dangerous well and an accident waiting to happen — and eventually did," he says.

Walkerton operators routinely entered identical data into their records, and no one noticed. They skipped required residual checks and based chlorination decisions on public complaints. While O'Connor said the Koebel brothers weren't bad people and truly "loved their community," the system had failed them — and everyone else.

"People weren't trained properly," O'Connor says. "Everybody tends to focus on the two water operators in Walkerton, but the failures are much wider than that. The failures were throughout the system at every step of the way."

O'Connor's [121 recommendations](#) reshaped water protection policy in Ontario. He was satisfied by the academic expertise that formed the recommendations and state-of-the-art best practices, but notes that real safety remains an evolving process.

"Human experience tells us in whatever field we look at that as time goes on circumstances change, and in the case of drinking water, new threats emerge," O'Connor says.

O'Connor notes that he's pleased Ontarians can have greater confidence in government based on how they responded to the Walkerton water crisis with the creation of Ontario's Safe Drinking Water Act (2002) and the Clean Water Act (2006). It was a period in time when guidelines began to shift into legislative requirements, with a sharper focus on system operations. Multi-stakeholder source protection committees were formed and gradually O'Connor's recommendations began to form Ontario's drinking water protection framework.

"I take my hat off to the drinking water community for actually developing really sound policy that got implemented because it made sense," says O'Connor.

His recommendations also led to the creation of the WCWC, which has helped to train thousands of water professionals, and hosted the 25th anniversary discussion for the current crop of water professionals, most of whom would not have been working in the sector at the time.

Brian Bates, the Walkerton Clean Water Centre's CEO, called the event a "solemn but essential anniversary" as the sector moves from a "reactive" position to a "preventative" one.





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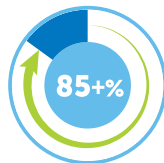
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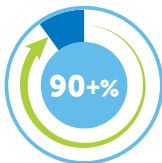
FOG Reduction



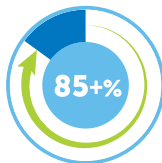
BOD Reduction



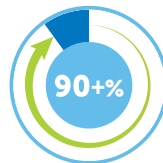
Phosphorus
Reduction



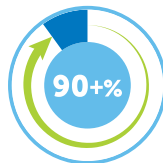
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STATISTICS

April 1st - June 30th, 2025



EOCP

Environmental Operators
Certification Program

EXAM STATISTICS



484 exams
taken

135 exam
sessions

FACILITIES



150 facilities
added or
upgraded

CONTINUING EDUCATION UNITS (CEUs)

1,155 Operators
submitted CEUs

1,779 CEUs earned

DEFINITIONS

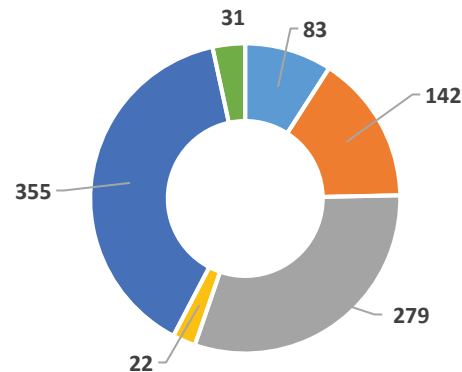
| | |
|-------------|------------------------------|
| WT | Water Treatment |
| WD | Water Distribution |
| WWC | Wastewater Collection |
| WWT | Wastewater Treatment |
| OIT | Operator In Training |
| BWD | Bulk Water Delivery |
| BWS | Building Water System |
| SWS | Small Water System |
| SWWS | Small Wastewater System |
| SCS | Stormwater Collection System |
| MU | Multi Utility |

OPERATOR CERTIFICATIONS

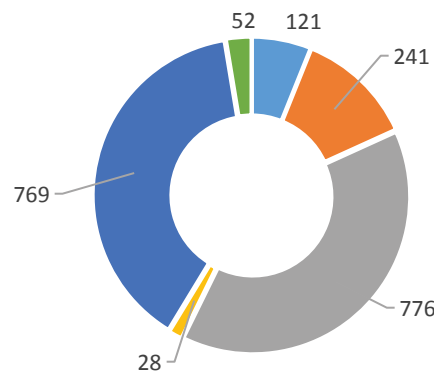
- MU II
- MU I
- IV
- III
- II
- I

OPERATOR CERTIFICATIONS

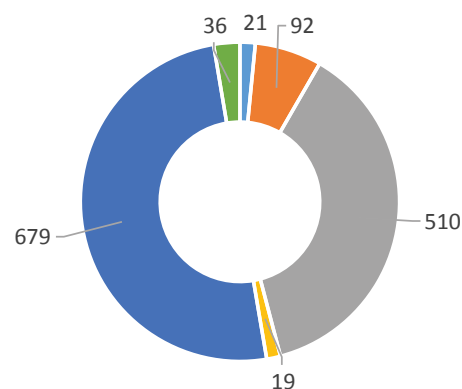
WT OPERATOR CERTIFICATIONS



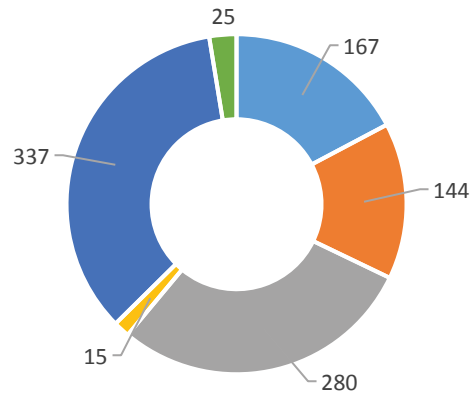
WD OPERATOR CERTIFICATIONS



WWC OPERATOR CERTIFICATIONS



WWT OPERATOR CERTIFICATIONS



MU II

MU I

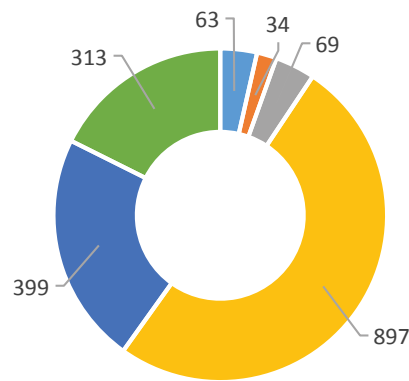
IV

III

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OTHER OPERATOR CERTIFICATIONS



BWD

BWS

SCS

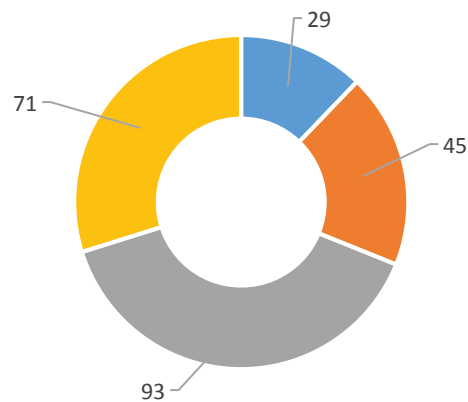
SWS

SWWS

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FACILITY CLASSIFICATION

WT FACILITY CLASSIFICATIONS



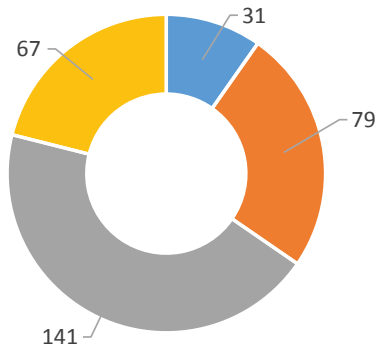
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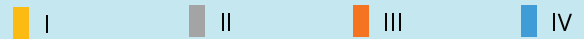
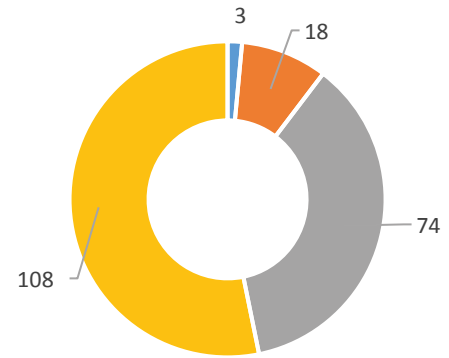
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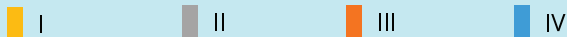
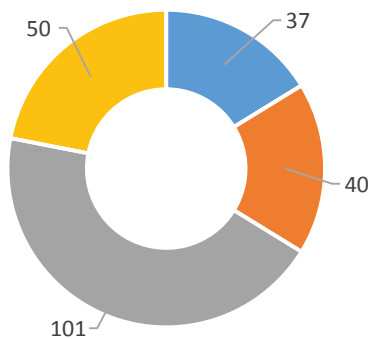
WD FACILITY CLASSIFICATIONS



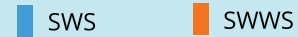
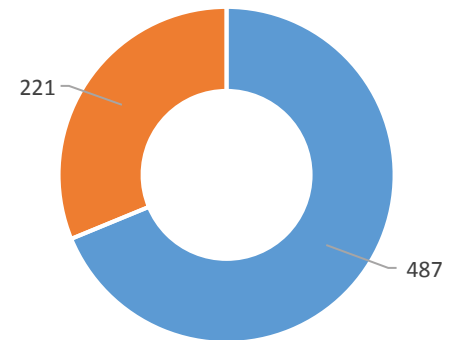
WWC FACILITY CLASSIFICATIONS



WWT FACILITY CLASSIFICATIONS



SMALL SYSTEMS CLASSIFICATIONS



Check your Operator status by logging into your profile at <https://crm.eocp.ca>

Choose **ACCOUNT** to see if your 2025 dues have been paid and **LEARNING STATUS / CEU** to see if your CEUs are up to date.

If your profile shows as **Not Certified** this means you haven't paid your 2025 dues and/or submitted CEUs.

CEUs can be added to your profile by choosing **Action > Add Course Taken** under the learning column. Alternatively, you can forward your course completion certificates to eocp@eocp.ca

If your profile shows as **Certified** your 2025 dues are paid, and you've met the CEU requirements for the 2022-2023 reporting period.

There are five months left in the current CEU reporting period. It ends **December 31, 2025**. If you haven't already met your CEU requirements for the 2024 - 2025 reporting period, please look for training opportunities from your preferred training providers or look for options in the EOCP CRM at:

<https://crm.eocp.ca/ManageCourses>

The EOCP 2025 Tradeshow and Education sessions are worth up to 1.2 CEUs and is core for WD, WT, WWC, and WWT.



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We're grateful for the generous support of our sponsors, whose contributions will help make EOCP2025 a success. Be sure to visit their booths on September 22nd & 23rd during the event to learn more about their innovative products, services, and support for operators.

A special thank you to our **Media Partner**, Environmental Science & Engineering magazine, whose collaboration helps us share important updates and industry insights with an even broader audience.

Your support helps us bring together operators, educators, and industry leaders to learn, connect, and grow. Thank you!



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Registration opened on April 15, 2025. This event will be held in-person.

Comments from 2024 Attendees:

"I would like to commend the EOCP office staff for a great job with the conference. It was very informative and well planned."

"Always fun to attend in person"

"That was awesome!"

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