

OPERATOR DIGEST

SUMMER 2019 | NUMBER 141



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

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CAPITAL REGIONAL DISTRICT

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OPERATOR DIGEST

The **Operator Digest** is the official newsletter 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 inquiries about the program should be addressed to:

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Publications Mail Agreement
No. 41498030

The Environmental Operators Certification Program is a charter member of the Association of Boards of Certification and is a registered society with more than 4,500 active members.

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OPERATOR PROFILE

Tony Smerychynski
Wastewater Operator



How did you become an Operator?

Random chance really. Was failing at chemistry in university so took a year to retake it. Ironical huh, as I taught the subject years later! My parents told me to get some more school or get out of the house so I grabbed three pamphlets randomly at the Okanagan College Registrar. One didn't interest me, the other program had a wait list, and I thought the Water Quality Program (now WET) looked easy. It wasn't easy, but I really enjoyed it, and I was able to get a job with GVRD as part of the Secondary Treatment Upgrade for Annacis and Lulu Island WWTPs when they needed staff. If I picked up a different pamphlet, I would have missed out on this exciting and important industry.

How long have you been an Operator?

Longer than I care to admit. I started with my first co-op at the Kelowna Pollution Control Centre in 1996, and my first full time job with GVRD (now MetroVancouver) just shortly after graduation in 1998. So more than 21 years of operations, with stints in Whistler and Edmonton as well.

What do you most enjoy about the work?

That most of the time I can't predict my job even being in it for so many years. I have had days where I went from planning a crew's work, to making a hose adapter, to determining treatment chemistry, assisting SCADA programming, and then sweeping the floor. Actual day! Operations gives an amazing balance between physical and mental, predictable, and surprising.

What has surprised you most about your job?

The moral responsibility of the healthcare nature of our industry. We, as Operators, look after everyone in our

systems. When I was a Foreman at the Seymour Capilano Filtration Plant I was responsible for the health of everyone who drank our water, a region of 2.2 million people. At Lionsgate Wastewater Treatment Plant, I could look across at Ambleside Beach and look at all of those tourists walking on the pristine beaches knowing what we did to prevent the beaches from being cesspools. As an Operator, I am directly responsible for people living happy and healthy lives, and this is a massive moral duty.

What do you wish other people knew about working as an Environmental Operator?

How much work we put in to make sure the public doesn't have to think about just flushing the toilet and running the tap. Our teams are tiny, and put in a ton of work on miniscule budgets to deliver a quality product. It's incredible what we accomplish with the resources we have. And don't use wipes. #\$\$\$%#% wipes....

Can you tell me about any initiatives you have been involved with? With Northern Alberta Institute of Technology (NAIT) teaching water and wastewater treatment, I had the honour of being part of a pilot program, called the Men at NAIT, or MAN program. This was a program designed to foster positive masculinity in the trades programs run at NAIT. To teach the students about concepts of consent, respect, finding positive role models, and most importantly to develop community. This really resonated with me, as I've always tried to foster a culture of respect and responsibility. If anything wastewater has taught me, is that regardless of race, creed, religion, we're all the same at the bottom of a hole. We shovel the same feces, and always end up getting 'baptized' by our profession. I am looking forward to hopefully fostering that culture of respect and collaboration at McLoughlin Point WWTP. Even more importantly, the CRD team is fully behind this as well, with a special shout out to Jacqueline Weston, our future Plant Manager.

What are some opportunities regarding the field of Environmental Operators?

Here in Victoria, we're getting a shiny new tertiary wastewater treatment plant at McLoughlin Point. We at the CRD are going to be looking for a few good Operators in 2020 to staff this exciting state-of-the-art facility. We want people who we will look forward to sharing a lunchroom table and solving problems with every day for the next 20-30 years. At the CRD, we want staff to grow, and as such, pay is directly linked

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MESSAGE FROM THE DIRECTORS AND STAFF



Mike Firlotte, Chair Kalpna Solanki, CEO

It gives us great pleasure to introduce some new Board Directors, and the new Board Executive. Our new directors are:

1. Anna Agnew, Principal, LAVO Water & Wastewater Services
2. Peter Coxon, Senior Project Leader/ Principal, Urban Systems
3. Christopher Lawrence, Public Works Superintendent, New Hazelton

At the Annual General Meeting the newly elected Directors were appointed to the Board. Subsequently, at the July meeting of the new Board of Directors, the Board Executive was elected. Page 14 lists the new Executive.

The EOCP continues its work on a compliance initiative with government agencies, specifically related to:

4. Non-Compliance – No certified Operator at the Facility
5. Non-Compliance – No Certified Operator at the Level of the Facility

This has been an arduous process, but we are delighted to be able to report that within three months of the launch of this process, more than 35% of the facilities contacted have achieved compliance, or have firm plans in place to achieve compliance by the end of 2019.

Recently, the EOCP was able to pull together significant information on facility classification and Operator certification for the BC Provincial Health Officer's Drinking Water Report. This report evaluates drinking water protection activities in BC for fiscal years 2012-2013 through to 2016-2017, and contains 32 recommendations for advancing drinking water quality across BC, and is available at <https://tinyurl.com/y6spal69>

The EOCP also worked closely with BC's Auditor General for Local Government (AGLG). The AGLG has been compiling

information for booklets related to drinking water, and the EOCP provided information for two documents: 'Primer on Drinking Water Management in British Columbia' (released in December 2018) and 'Considerations for Local Government Administrators-Integrated Drinking Water Management' (March 2019). These booklets can be viewed/downloaded at <https://tinyurl.com/y6ed5rv9>

Most recently, a new document has just been released. The Auditor General of BC has released 'The Protection of Drinking Water: An Independent Audit'. A YouTube synopsis of the findings of the report is available at: <https://tinyurl.com/y26qyf25>, and the full report is available at <https://tinyurl.com/y6zjfneq>

The EOCP continues to be extremely busy with exam sessions across BC and YK. To date, 120 sessions have already been held! The EOCP now also has exam accommodations in place, and the guidelines related to accommodations can be viewed at <https://tinyurl.com/y54597n4>

Regarding exams, the EOCP has been in touch with every training provider listed in its Customer Relationship Manager to ensure their course materials are aligned with the 2017 version of the ABC's Need to Know Criteria. Along with the NTK Criteria, there are a plethora of other resources available to Operators to

prepare for exams at <https://tinyurl.com/y2m34axg>. While the NTK Criteria will not be changing, Operators should be aware that there will be an 'exam refresh' later in 2019 when the Associated Boards of Certification releases a new set of exams.

In terms of facility classifications, the EOCP is continuing its work to re/classify facilities across BC and YK. Any facilities with overdue classifications will have their classifications expire in June 2020. If your facility was last classified prior to 2015 and/or has undergone significant changes since 2015, please reclassify your facility via the CRM, or contact us if you need assistance on the process.

For Small Systems, even though most regulations stipulate a population size of 500 as a determinant on whether a system is small or not, in recognition of the fact that some Small Systems are complex and others are not, the EOCP and a team of experts is working on revamping the Small Systems classification models. It is expected that the new models will be launching later this year.

The EOCP continues with its work for its Operator members and to ensure there is prudent management of water and wastewater in BC and YK. We enjoy hearing from you, so please stay in touch!

Mike Firlotte, Board Chair
Kalpna Solanki, Chief Executive Officer



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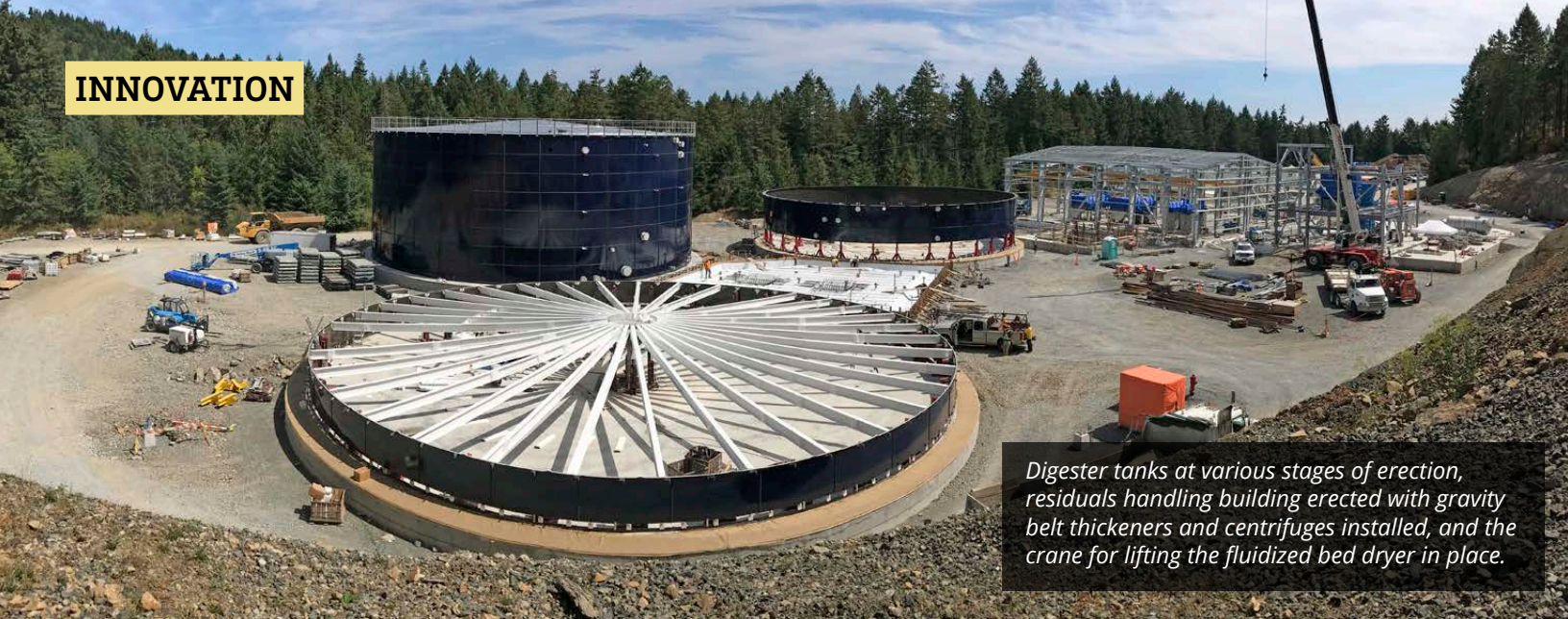
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Digester tanks at various stages of erection, residuals handling building erected with gravity belt thickeners and centrifuges installed, and the crane for lifting the fluidized bed dryer in place.

CAPITAL REGIONAL DISTRICT

A new, state of the art Residuals Treatment Facility by Hartland Resource Management Group is under construction in Saanich.

The Capital Regional District (CRD) is busy with construction of the Wastewater Treatment Project which is making signification progress on its three different components: a wastewater treatment plant (see Winter 2019 issue of the Operator Digest), upgrades to the conveyance system, and a residuals treatment facility.

When municipal sewage is treated, the settled solids captured are termed sludge or residual solids. This sludge has historically been used in agriculture as a nutrient rich fertilizer. In recent times, sludge is treated to eliminate pathogens and vector attractants, and then under strict regulations, can and is still used in agriculture across much of North America and Europe. The BC Organic Matter Recycling Regulations govern the treatment necessary for municipal sewage sludge in BC to produce safe Class B or higher standard, Class A Biosolids that have reduced or eliminated pathogens and can then be beneficially reused in a variety of ways. The Capital Regional District's new state-of-the-art Residuals Treatment Facility (RTF) that is currently under construction, with a projected completion date of Fall 2020, will produce thermally-dried Class A Biosolids that can be beneficially used.

Unlike the McLoughlin Point Wastewater Treatment Plant that will be operated by the CRD, the Residuals Treatment Facility is being designed, built, operated, and financed by Hartland Resource Management General Partnership (HRMG). Located within the footprint of the Hartland Landfill in Saanich, the facility site was selected in 2013, after an assessment of



Construction of the Digested Sludge Storage Tank with a Flexible Membrane Roof Adjacent to the Residuals Drying Facility.



Overview rendering of facility.

potential locations that included technical, environmental, social and economic considerations. The Residuals Treatment Facility contract is performance-based, with payment tied to the quantity of residual solids treated.

HRMG is a consortium of Synagro, Maple-Reinders and Bird. Maple-Reinders and Bird, in joint venture, are providing design-build services and Synagro will be providing operator services through Synagro BC Operating Company. Once HRMG has completed design, construction and commissioning of the CRD Residual Treatment Facility, a 20-year service period commences. HRMG will use Synagro BC Operating Company to operate the RTF during this service period.

The CRD's Residual Solids Conveyance Line will comprise of two pipes connecting the CRD McLoughlin Point Wastewater Treatment Plant to the RTF. The first pipe will be 250mm (10 inches) in diameter and 19.3 km long carrying residual solids from the McLoughlin Point Wastewater Treatment Plant to the RTF. The second pipe will be 300mm (12 inches) in diameter and 12.4 km long carrying the liquid removed from the residual solids from the RTF into the existing sanitary infrastructure that will transport the liquid back to the McLoughlin Point Wastewater Treatment Plant.

Residuals Receiving: In addition to the residuals arriving via pipe, residual solids from other municipal sources as directed by the CRD will be received via truck at the RTF. The facility has been designed to handle both liquid and solid residual deliveries. This in practice means deliveries to the facility by vacuum tanker truck containing residual solids slurry at various solids percentages, or by dump truck as previously dewatered cake at a much higher solids percentage. The two feed streams will be handled at the same unloading point, checked and then pumped to the receiving tanks for mixing with residual solids from the McLoughlin Point Wastewater Treatment Plant.

The CRD is generally obligated to provide residual solids from the McLoughlin Point Wastewater Treatment Plant to the Residuals Treatment Facility with a solids concentration of between 1% and 3%; where 1.5% solids is the design target. HRMG is generally obligated to operate a dryer system that provides thermally dried Class A Biosolids with a minimum solids concentration of 90%; where 92% is the design target.

Gravity Belt Thickeners: The RTF is designed to receive a volume of up to 2M



Inside view of digester tank

litres per day in 2021, and up to 3.7M litres per day in 2040. The Gravity Belt Thickeners that are designed to increase the concentration of solids prior to digestion will take slurry from ~1.5% solids up to ~6% solids. Water removed from the slurry will be collected in a sump for re-use in the system prior to discharge, and a flocculant will be added to aid in separation.

Mesophilic Digestion: Three Mesophilic Anerobic Digesters and one Storage/Gas Collection tank are designed for Volatile Solids reduction. The process runs in an anaerobic and mesophilic (kept heated at ~37°C) conditions with controlled agitation. Microorganisms break down volatile solids - essentially eating them and producing gas. To be effective they like a stable pH (near 7) and a consistent temperature. This process is designed to take the slurry from ~6% solids down to ~3% through digestion. The storage/gas collection tank is designed with a flexible membrane roof to accommodate gas production and storage, and the gas will be re-used as fuel for the dryer.

Dewatering: Decanter Centrifuges are designed to operate at high RPMs for efficient water removal and solids concentration. These centrifuges will take the slurry from ~3% solids back up to ~25% solids. Centrifuges run at speeds of up to 2600 RPM creating higher than 3000 Gs of force. The water recovered will be sent to the sump for eventual discharge. Flocculant will be added to aid in separation.

Drying: The Fluidized Bed Dryer is designed to utilize the heat generated from burning the digester gas to efficiently remove water from the slurry. The Dryer is designed to take the slurry from ~25% solids up to ~90% solids. The slurry is fed into a hot bed (85°C) of already dried product and macerated upon entry to maximize exposed surface area. In addition, large fans blow air up from the bottom into the bed of solids causing the mass to become fluidized. Water is evaporated and then collected through hydro-cyclones and a condenser for re-use as a heat source to maintain digester

Class A Thermally Dried Biosolids.



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temperatures prior to discharge. The Fluidized Bed Dryer is a specialty piece of equipment from a leading technology provider based out of Austria. This dryer technology has been incorporated into municipal operations in Europe for more than 15 years and continues to expand throughout North America and Asia. This particular dryer technology was chosen over other dryer technology because of its ability to handle variable feed rates and its efficiency in utilizing digester produced biogas for thermal energy.

Although BC's Organic Matter Recycling Regulations would allow for the Class A Biosolids generated from the CRD's facility to be used for land application, the CRD Board of Directors passed a biosolids land application ban in 2011. In the short term, the CRD intends to transport biosolids from the RTF to cement plants in the BC Lower Mainland where they will be managed through co-combustion to heat cement kilns. However, the CRD has indicated that it is establishing a process for determining a long-term biosolids management strategy. The CRD intends to develop an implementation plan to ensure that biosolids management under a long-term management strategy commences no later than December 2025.

Solids Load Out: The Dried Solids are stored in a silo specially designed for

safe/clean loading of trucks. The facility is designed for drive-through access with a top loading retractable chute for effective dust and product management.

Effluent: All water recovered on-site is collected through the sump network and returned through the effluent tank for discharge back to the Mcloughlin Point Wastewater Treatment Plant. Water is collected from the thickeners, dewatering, and dryer along with plant collection points. Water will be tested to meet acceptance criteria and metered to match desired flows at the Mcloughlin Point Wastewater Treatment Plant.

Odour Control, Propane, and Flare: Ancillary plant processes work to keep the plant safe and minimize impacts to the environment. Odour controls designed to collect potential foul air from the source locations and utilize a scrubber to neutralize prior discharge. Propane acts to provide start-up fuel for the dryer and as a back up heating fuel. The flare is to handle any pressure/volume increases from the digesters' gas production or as a back-up in the event of dryer upset.

Administration Building: This building will support the RTF staff and provide educational space. It will be equipped with offices and a multi-purpose presentation space, a machine shop for repair work done at site, and a laboratory for

bench-top testing and lab analysis.

Synagro is the foremost North American provider of thermally dried Class A biosolids and residuals solutions services since 1986. Headquartered in Baltimore, Maryland, Synagro employs more than 800 people in 34 states and provinces and services more than 600 municipal and industrial water and wastewater facilities. Synagro manages 11 million tons of thermally dried Class A biosolids each year across its facilities. Synagro's experienced staff provide solutions for all aspects of thermally dried Class A biosolids and residuals management, from land permitting and soil analysis to facilities development.

The RTF is about to undergo pre-classification as a wastewater treatment facility. Concurrently, the EOCP with Synagro is investigating a residuals treatment classification process that may better reflect the complexities of facilities that produce thermally-dried Class A Biosolids for beneficially use.

This project will provide a unique opportunity to see new technology in action in British Columbia, and Canada. Biosolids management will always need to be addressed, and use of new technologies provides valuable options for management.

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WHO'S ON THE MOVE

Anna Agnew

LAVO Water & Wastewater



Growing up on Okanagan Lake, Anna connected with the world of water at a young age. She knew her passion for business and the environment would drive her career choices - and they did. Anna has been an EOCP certified Operator since 2003 and currently holds Wastewater Treatment IV, Water Treatment II, Water Distribution II and Wastewater Collection I certificates.

Always wanting to improve services for users, for 14 years Anna held roles across Metro Vancouver Regional District where she sought to learn and share best practices. One of her career highlights was as a Utility Systems Controller ensuring supply to 22 local governments by working with SCADA and field Operators. Linking with so many dynamic and committed field Operators to develop emergency response manuals and procedures may not sound like a swim in the lake, but it was because Anna could use multiple experiences to

improve plant processes and knew she could deliver on her project planning!

Anna has now created her own company, LAVO Water & Wastewater, to support small water and wastewater Operators as they advance their operational systems. She has diversified her skills to create a one-stop-shop where she provides expert advice on all operating facets. For instance, she

develops day-to-day operating plans, conducts permit testing, writes monthly compliance reports, trouble shoots, develops emergency response plans, and trains current Operators. Anna can even facilitate conversations with environmental health officers to get systems back into compliance.

A natural communicator, Anna is now an EOCP approved instructor for Jameson Water Services. She always enjoyed training and teaching new Operators in her past roles so this is a natural progression. She takes great pride in sharing her knowledge but her favourite discussions are created when Operators share their own experiences in the classroom - Anna's philosophy is that we learn best from each other!

As the next step in her career, Anna is both thrilled and honoured to have been recently elected to the EOCP Board of Directors by her fellow Operators. She is looking forward to working with Directors and staff to deliver on the organization's mandate. A fitting responsibility as Anna continues to spend her days keeping BC an amazing place to be, one water and wastewater system at a time.

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- Wastewater Collection 2
- Water Distribution 1
- Water Treatment 1
- Small Water Systems
- Small Wastewater Systems
- Dam Inspection & Maintenance
- Chlorine Handling

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Operator Profile continued from page 2

to certification. A WWTPO III is paid as a III even if it's a WWTPO I position that is posted. That being said, we are primarily looking for people who fit into the culture we are trying to create, and that extends over just the bar of certification. Collaboration is key as good ideas and hard work can come from anywhere, and we'll need that at the plant. So, if you're interested in living in a vacation destination, play nice with others, and love the technical/moral aspects of our profession, we're hoping to find you.

What do you do when you aren't working? I'm a dad who's a bit of a playground aficionado. I play volleyball when I can and I love to bike. I have also been known to enjoy local craft beer, cooking, and board games. And most importantly, just sitting around and talking about darn near anything. Mostly at the moment, looking after my wife, four-year old son, and one-month old daughter.

What else can you tell us about working as an Environmental Operator? As I told my students at NAIT, you do your work, look out for each other, and you will have

a career and a clan few will ever know. We are a proud society that works hard, is humble, and isn't afraid to not take itself too seriously. After all, you never know what's coming down the pipe...

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CITY OF WHITE ROCK

New Water Treatment Plant removes trace amounts of arsenic and manganese.



Until October 30, 2015, The City of White Rock's water utility was privately owned and operated. The water supply for the city that comes from the Sunnyside Aquifer has naturally occurring arsenic and manganese. Although the maximum acceptable concentration (MAC) of these elements were within Health Canada's guidelines, the City took immediate steps to improve water quality. One of these steps was studying which water treatment techniques could reduce these elements in the drinking water.

The City collaborated with RES'EAU-WaterNET, to develop a mobile water treatment pilot plant to conduct testing of various combinations of technologies and identify a sustainable and robust water treatment system capable of removing naturally occurring arsenic and manganese from the groundwater sources. The mobile facilities allowed for faster, accurate, and more cost-effective assessment of potential technologies than traditional methods.

The City submitted grant applications towards the construction of a water treat-



City staff and elected officials at White Rock's new Water Treatment Plant

ment plant for arsenic and manganese treatment, under Canada's and the Province's Clean Water and Wastewater Fund (CWWF). In March 2017, the City of White Rock received \$11.79 million in grant funding from the Government of Canada and Government of British Columbia. The funding went towards the City's \$14.2 million arsenic and manganese water treatment plant to address the City's water quality and ensure a healthier community.

Arsenic is a natural element that is present in the earth's crust. It is often found naturally in groundwater, through erosion and weathering of soils, minerals, and ores. Higher arsenic concentrations are usually present in ground water and could pose a serious threat to human health. Arsenic is one of the many chemicals for which Health Canada has set guidelines. The guideline has been established at 0.010 mg/L (10 µg/L). The guideline is based on lifetime exposure to arsenic from drinking water and takes into consideration the ability to measure arsenic and to remove it from drinking water supplies (Health Canada, 2006).

The Guidelines for Canadian Drinking Water Quality includes an aesthetic objective for manganese in drinking water with a value of 0.05 mg/L (50 µg/L). At higher concentrations, manganese could have an impact in causing stains on laundry and leaves deposits on supply pipes in the distribution system and in residential plumbing that may give water a metallic taste. The presence of manganese in water may lead to the accumulation of microbial growths in the distribution system. Even at concentrations below 0.05 mg/L, manganese may form coatings on water distribution pipes that may slough off as black precipitate. In May 2019, Health Canada established a new guideline for manganese. An MAC of 0.12 mg/L for total manganese in drinking water, and an aesthetic objective (AO) of 0.02 mg/L (20 µg/L) for total manganese in drinking water.

The White Rock Water Treatment Plant is designed to treat the City's existing groundwater supplies to remove naturally occurring manganese and arsenic. The drinking water sources are the Sunnyside Uplands Aquifer and 7 wells located throughout the



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City. The utility serves a population of approximately 20,000 people.

The water treatment plant process is multi-stage and includes the following key treatment components:

- **Pre-Oxidation with ozone for arsenic and manganese in the raw water supply;**
- **Removal of manganese using Greensand Plus media filters;**
- **Removal of arsenic using Bayoxide E33 media filters;**

The treatment objectives of the White Rock Water Treatment Plant are to deliver drinking water meeting the following operational targets:

- **Mn < 0.02 mg/L**
- **As < 0.002 mg/L (95% of the time, 0.005 mg/L for 5% of operation)**

All other water quality parameters shall

meet the objectives of the Guidelines for Canadian Drinking Water Quality (GCDWQ).

The research conducted by the City of White Rock and Res'eau-WaterNET showed that the use of ozone as a pre-oxidant, followed by greensand and adsorption filter media for the removal of manganese and arsenic, respectively, is effective for groundwater sources like White Rock's water supply. The design team chose filtration using Greensand Plus media for manganese reduction, and AdEdge E33 adsorption media, for arsenic polishing to achieve the low target levels required by the City.

The system is designed to provide up to 1 mg/l of ozone dose for up to 15 MLD of water to treat. The design of the White Rock Water Treatment Plant includes pre-oxidation with ozone injected via side stream injection; the concentrated ozonated water is injected into the raw water

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ONLINE HELP CENTRE FOR BC SMALL WATER SYSTEMS

By Satwinder Paul,
B.Sc, M.EVDS

Small Water System owners and Operators have been indicating that they need resources to address challenges they face with operations and maintenance of systems. To meet this need, the Thompson Rivers University Water and Wastewater Technology program together with a team of volunteer technical experts has developed BC's very first 'Online Help Centre for BC Small Water Systems'.

The Help Centre provides on-line technical expertise, operations and maintenance resources, and tools to help small systems develop a multi-barrier approach to delivering reliable and safe drinking water. These self-help tools will assist Small Water Systems to carry out technical and operational

assessments from source, to treatment, to distribution, and also recognize and assess operational, maintenance, and water quality risks in water systems, and review options for system improvements.

The website also provides guidance documents on emergency response planning, as well as templates and videos on water quality monitoring. The Help Centre is designed to offer the tools to plan, construct, and understand the legislation and regulations that they need to consider and achieve in order to deliver safe drinking water. Furthermore, there is also information on establishing the business, governance, and financial processes to support the system, so that it remains sustainable in the long term.

In addition, Operators and

owners can also access free courses and webinars that qualify for CEUs with the EOCP. As the website matures, it is anticipated that there will be more course offerings and webinars, as well as networking opportunities for all Small Water Systems in BC. Plans are currently underway to hold a Small Water Systems workshop in the Spring of 2020 in Kamloops and more information will be provided closer to the event date.

In the meantime, Small Water System owners and Operators are encouraged to utilize the tools and resources provided at Online Help Centre for BC Small Water Systems website to develop and operate a multi-barrier approach to drinking water, from source to tap.

The site can be accessed via <https://smallwatersystemsbc.ca>

through an in-line mixer to oxidize metals in raw water. On-site generated ozone is used to pre-oxidize the arsenic and manganese in the raw water. The ozone converts the arsenite form As(III) to the arsenate form As(V). It also converts Mn(II) to Mn(IV). Both oxidized forms are more readily removable in downstream filtration and adsorption processes.

Greensand Plus filter media was selected for removing manganese from groundwater supplies. A Greensand Plus manganese

dioxide coated surface acts as a catalyst in the oxidation reduction reaction of manganese. The silica sand core of Greensand Plus allows it to withstand waters low in concentrations of silica, TDS, and hardness without breakdown.

AdEdge Water Technologies Bayoxide E33 was selected for Arsenic removal. The E33 media provides significant reduction of total arsenic, including both arsenic (III) and arsenic (V). It is also effective in reducing other heavy metals such as lead, antimony,

and others. This ferric oxide-based product has been successfully used in hundreds of installations around the globe.

The Engineering and Operations staff at the City of White Rock worked with the EOCP to pre-classify, and officially classify the plant as a Level III water treatment facility. The facility became fully operational in May 2019. Detailed information on water quality and testing can be found at the City of White Rock's Water Page - <http://whiterockcity.ca/230/Water>



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STATISTICS

January 1 to June 30, 2019



EOCP

Environmental Operators
Certification Program

The figures in the Operator certification report reflects those Operators who have met their certification requirements for the 2016 -2017 reporting period, as well as having paid their 2019 Operator dues.

We have 6 months remaining in the current CEU reporting period, and Operators have been working hard to get their course completion certificates to the EOCP office before December 31, 2019. So far, 1,030 Operators have submitted certificates and have earned 1,847 CEUs as of June 30, 2019. That is 18,470 hours of training!!

You can check your status by logging into your profile at

FACILITY CLASSIFICATION as of June 30, 2019

Classification	IV	III	II	I	Other	Total
WT	19	43	120	64		246
WD	34	62	174	143		413
WWC	6	22	79	122		229
MWWT	30	32	89	62		213
SWS					904	904
SWWS					223	223
Total	89	159	462	391	1,127	2,228

<https://crm.eocp.ca/> and clicking on ACCOUNT to see if your dues have been paid, and CEU under the LEARNING STATUS tab to confirm that your CEUs have been met.

Exam Statistics

- **365** Operators wrote certification exams in 120 exam sessions between January 1, 2019 and June 30, 2019.

Facilities

- **240** facilities were newly classified or reclassified from January 1, 2019 to June 30, 2019.

OPERATOR CERTIFICATION as of June 30, 2019

Classification	IV	III	II	MUII	I	MUI	OIT	Total
WT	51	99	236	7	362	19	40	814
WD	82	189	757	14	787	28	42	1,899
WWC	16	62	456	12	641	22	34	1,243
MWWT	109	123	252	7	301	24	39	855
BWD								52
SWS								785
SWWS								309
Total								6,007



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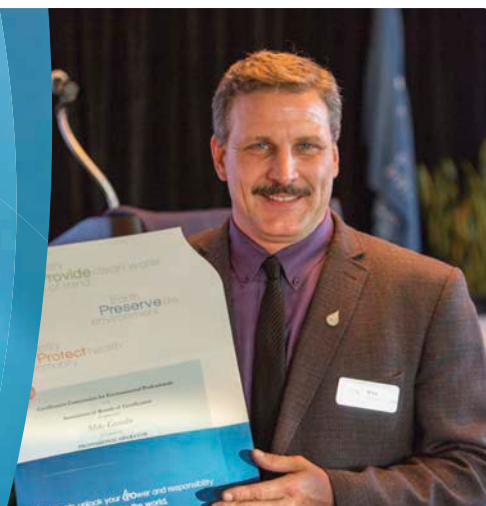
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