British Columbia Branch | SPRING 2024 | |

BC PAGE

News for the Canadian Institute of Public Health Inspectors

Reducing the risks of high indoor temperatures during heatwaves in British Columbia

Sarah Henderson, BCCDC and NCCEH

Climate change is leading to hotter, longer, and more frequent heatwaves in British Columbia (BC). The 2021 heat dome has been the most extreme example so far, but there may be even severe events in the years ahead. People in BC remember the 2021 heat dome for its record-setting temperatures, impacts to emergency healthcare services, and the hundreds of heat-related deaths that occurred across the province. The event also contributed to catastrophic drought, wildfires, and flooding in the days, weeks, and months that followed.

Before and during a heatwave, there is often a lot of public and media attention on the outdoor temperatures, including daytime highs and overnight lows. However, most people in BC spend most their time indoors, so they are not directly exposed to the outdoor temperatures. Instead, they experience the outdoor environment as mediated by whatever building(s) they occupy. For example, a home with central air conditioning can maintain an indoor temperature of 22-24°C all day, regardless of the outdoor temperature. On the other hand, a home with no air conditioning and no shade might reach dangerously hot temperatures over 30°C, 40°C or even 50°C.

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President's Message

Dear members,

Spring is already upon us and it is looking like we are already in for an active fire and drought season. The last few years have been extra challenging for our profession and despite these challenges, our collective efforts continue to make significant strides toward safeguarding public health and preventing illness and disease. Please remember this and how important our roles are as we embark on this next season and the specific challenges it may present. We play a vital role and impact the following areas of focus in important ways over the spring summer seasons.

Climate change mitigation and adaption:

We continue to be faced with the many challenges and health impacts that come along with effects of climate change. An increase in fires and droughts has been one effect seen over the last few years. With this comes outdoor air quality concerns and heat related illness and injury

Air Quality:

Air pollutants and effects of wildfire smoke remain a pressing concern affecting public health. Air quality monitoring and collaboration with government organizations and weather/air quality alerts helps us work with communities, educate and notify people of the concerns and health effects that may be present

Water Quality:

Access to clean, safe water is fundamental to human health. Our ongoing efforts to assess drinking water and ensure safe drinking water quality are vital to public health

Emerging Environmental Health Challenges:

The emergence of new environmental health threats require proactive and collaborative responses. We continue to play a role in issues such as; vector borne diseases, emerging pathogens, and health impacts of extreme weather events. Our interdisciplinary approach enables us to play an important role and develop effective strategies to mitigate health impacts

The spring of 2024 will bring challenges but also opportunities for our profession. By remaining steadfast in our commitment to protect public health and the environment, we can have an impact on creating a healthier future. Take a moment to appreciate yourself, your colleagues, and all the hard work you do.

Advocacy

CIPHI will be continuing with their advocacy initiatives with a Recruitment focused campaign that will be run over the summer. Previous campaigns have focused on bringing awareness to our profession and what we do to protect public health. This campaign will be more directed at recruitment and retention. We plan to maintain the momentum set by the National Advocacy Committee in continuing working towards recruitment and retention within our profession. The CIPHI BC/YK branch will continue to promote the materials provided by national and I encourage you to keep your eyes out for the advocacy campaign promotional materials throughout the summer. If you know of any career events or educational sessions that you think could be beneficial for CIPHI to attend or host a booth at, please email me at president@ciphi.bc.ca

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Wildfire Preparedness

As we approach wildfire season, it's crucial to prioritize our safety and preparedness. One of the most effective ways to stay safe during emergencies like wildfires is to have a "Go Bag" ready and an emergency plan in place. Here's a quick reminder on how to prepare:

Create Your Go Bag: Prepare a backpack or bag with essential items you might need to evacuate quickly. This could include:

Build an emergency kit and grab-and-go bag - Province of British Columbia (gov.bc.ca)

- Copies of important documents (ID, insurance papers, etc.)
- Non-perishable food and water for at least three days
- Medications and basic first aid supplies
- Clothing and sturdy shoes
- Flashlight, batteries, and a portable phone charger
- Whistle or signaling device
- Cash and credit cards
- Important phone numbers and contacts

Develop an Emergency Plan: Sit down with your family or household members to discuss and create an emergency plan. This should include:

Make your emergency plan - Province of British Columbia (gov.bc.ca)

- Evacuation routes and meeting points
- Contact information for emergency services and local authorities
- Designated responsibilities for each household member
- Plans for pets or livestock, if applicable

Communication plans, including a designated out-of-area contact person

Remember, preparedness is key to staying safe during wildfire season. By taking these simple steps to create a Go Bag and develop an emergency plan, you can help protect yourself and your loved ones in the event of a wildfire or other emergencies. Stay safe and be prepared!

Keep up to date on the latest news at the BC Branch website:

www.ciphi.bc.ca

The page also contains information on membership, conferences, career opportunities, documents, and much more. Check it out regularly.

Did you know the BC Branch is on Facebook and Instagram?

Click on the icon to find the BC Branch on Facebook and *Like them* .

Click on the icon and *Follow* the BC Branch on Instagram.

Reducing the Risks of Indoor Temperatures

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High indoor temperatures are the cause of most heat-related illness, injury, and death in Canada, not high outdoor temperatures. In BC, we recommend that indoor temperatures should be less than 26°C for the thermal safety of occupations who are susceptible to heat. We further advise that sustained indoor temperatures over 31°C are dangerous for susceptible people. The best way to keep track of indoor temperatures in different locations is to keep a small thermometer handy. Much more information can be found in the provincial Extreme Heat Preparedness Guide, designed to help individuals, families, and communities prepare for heatwaves.

We know that high indoor temperatures pose a significant risk, but there is limited public data available on temperatures inside people's home. Agencies such as Environment and Climate Change Canada (ECCC) are only mandated to measure outdoor temperatures. To address this gap, the BC Centre for Disease Control (BCCDC) is establishing a pilot Sentinel Indoor Temperature Network (SITNet) across the province. Survey data have been used to identify 30 low-income homes without air conditioning that will host internet-connected thermometers throughout the summer of 2024. These data will be used by the BC Health Effects of Anomalous Temperatures (HEAT) committee to better understand public health risks during heatwaves.

Many households in BC do not have central or portable air conditioners (or heat pumps), especially in regions where the climate has historically been cooler. As the climate changes, however, there is a growing need to ensure indoor thermal safety during heatwaves through new programs and policies. In 2023, the BC government partnered with BC Hydro to launch a new program that provides free portable air conditions to low-income households. In 2024, the BC Building Code changed to require that all new homes have at least one living area that can be maintained at a temperature no higher than 26°C. Much more work is needed, but these are important steps in the right direction for protecting public health.

YOU KNOW WHAT

REALLY GRINDS MY GEARS. . .

"When you walk into a kitchen and the chef says 'Don't worry, we just cleaned everything this morning,' as you notice a layer of dust on the ventilation hood"

Please submit your "heard it a thousand time before one-liners" that you hear in the field over and over and your EPHP pet peeves to bcpageeditor@ciphi.bc.ca. Let's all share in the hilariously annoying joys of our environmental public health experiences.

Breathing Easier: Empowering First Nations Communities with DIY Air Cleaner Workshops

Anne-Marie Nicol, SFU and Casey Neathway, FNHA

Across B.C., we know that each summer is likely to bring poor air quality as a result of ever-worsening wildfire seasons. Last year (2023) marked the "worst-ever" wildfire season in the province, yet again, with smoke from the wildfires in the Interior and Northern parts of the province spreading across the continent. While some communities have the resources and ability to stand up cleaner air spaces, the reality is that often individuals aren't able to access those spaces due to their locations, their hours of operation, or their mobility. Enabling cleaner indoor air, especially for those individuals who have additional vulnerabilities to wildfire smoke (such as those with COPD, asthma, or other respiratory illnesses, pregnant women, and infants), has been a priority for the First Nations Health Authority (FNHA) since the 2017 wildfire season. In each subsequent year, FNHA has provided portable air cleaners and replacement filters to First Nations communities to distribute to individuals who have those additional respiratory sensitivities and are unable to access cleaner air spaces within their communities. A partnership approach between Simon Fraser University (SFU), FNHA, and First Nations has shown how a collaborative approach can add further opportunities for reducing the public health impacts of poor air quality, while building community and individual knowledge and capacity.

The Partnership

While FNHA has managed to distribute thousands of portable air cleaners across the province over the past seven years, there is simply not enough capacity to ensure that every individual has access to a cleaner air space within their home. Anne-Marie Nicol's team from SFU has developed a community-based process to reach community leaders and members how to build simple, effective devices to improve indoor air quality using box fans and MERV-13 furnace filters, while also providing knowledge translation on the impacts of wildfire smoke and poor air quality on human health. This DIY air cleaner model, which is backed by BCCDC and UBC research on effectiveness, allows FNHA to support additional cleaner air capacity in First Nations in preparation for wildfire smoke events, with the health authority providing the raw materials for the kits and the SFU team providing the facilitation and knowledge translation.

The other key partner in the success of the workshops is the host First Nation, who provide the space for the workshop and share the messaging to Community members to engage and build participation. In a community-driven, Nation-based fashion, the workshops are most effective when the Nations lead the planning and coordination, and the support agencies (FNHA and SFU) attend in a way that works best for the community.
support teams.

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Northern St’át’imc Workshops

After attending a presentation by Dr. Nicol and her team, Darryl Adrian, Emergency Program Coordinator for the Lillooet Tribal Council, reached out to FNHA to explore the possibility of developing a workshop for the communities he supports. The St’át’imc Nation has seen significant wildfire smoke over the past wildfire seasons, being right between the Kookipi Creek and Casper Creek wildfires in 2023. Recognizing the opportunity to build capacity within the Nation and improve public health for residents impacted by wildfire smoke, FNHA and SFU partnered with the Lillooet Tribal Council to host two workshops: one in Lillooet, for the St’át’imc Communities of Sekw̓el̓wás, T̓ít̓q̓et, Xwísten, Xaxli'p, and Ts̓kw̓aylaxw; and one in the Community of Tsal̓álh, so residents didn’t need to travel the ninety minutes on narrow, winding roads to attend. While the original plans were for approximately twenty DIY air cleaners per workshop, the interest from the First Nations was greater than expected, and additional materials were procured to ensure as many residents as possible were able to participate. The SFU team of Dr. Nicol, Prem Gundarah, and Riley Condon were joined by FNHA Environmental Health Officer Alan Leung to not only create air cleaners, but also to share knowledge and build relationships between Community members and public health support teams.

The DIY air cleaner workshops not only provide participants with a means to create cleaner air spaces within their homes, but also to be creative in the design and decoration of the air cleaners, a benefit that isn’t possible with commercially-available portable air cleaners. Sandra Terry, Day Treatment Assistant with the Lillooet Tribal Council is pictured here with her air cleaner, which incorporates local designs and artwork.

Sustainability and Future Direction

While the Northern St’át’imc Nation projects were intended as a pilot project to explore partnerships between FNHA, SFU, and Nations to create community-led cleaner air spaces, the success of the workshops as measured by community feedback and participation has highlighted the potential to develop a more sustainable, long-term program that supplements FNHA’s provision of portable air cleaners. Engaging with community members as a means of building individual capacity and empowerment reduces barriers to improved public health outcomes, and creates new opportunities for citizen science. The workshops also align with FNHA’s directives to provide services that are community-driven and Nation-based (Directive 1), to foster meaningful collaboration and partnerships (Directive 4), and to develop human and economic capacity (Directive 5).

A step-by-step guide to build your own DIY air cleaner can be found here: https://bclung.ca/sites/default/files/Simplified%20Air%20Cleaner%20Instructions%20%28ALL%20SPONSORS%29-compressed.pdf.pdf, and the evidence of their effectiveness as compared to portable HEPA air cleaners can be found on the NCCEH website, here: https://ncceh.ca/resources/evidence-reviews/do-it-yourself-diy-air-cleaners-evidence-effectiveness-and.

In Memoriam—Alan Leslie de Rosario

It is with great sadness that the family of Alan Leslie de Rosario announce his sudden passing as a result of a tragic motor vehicle accident, on November 7, 2022, at the age of 69.

Alan was born in Poona, India in 1953 to Lt. Col. Leslie and Vivienne deRosario. Prior to his retirement he served as Public Health Inspector for the North Island. He was also a Port Hardy City Councillor for a term.

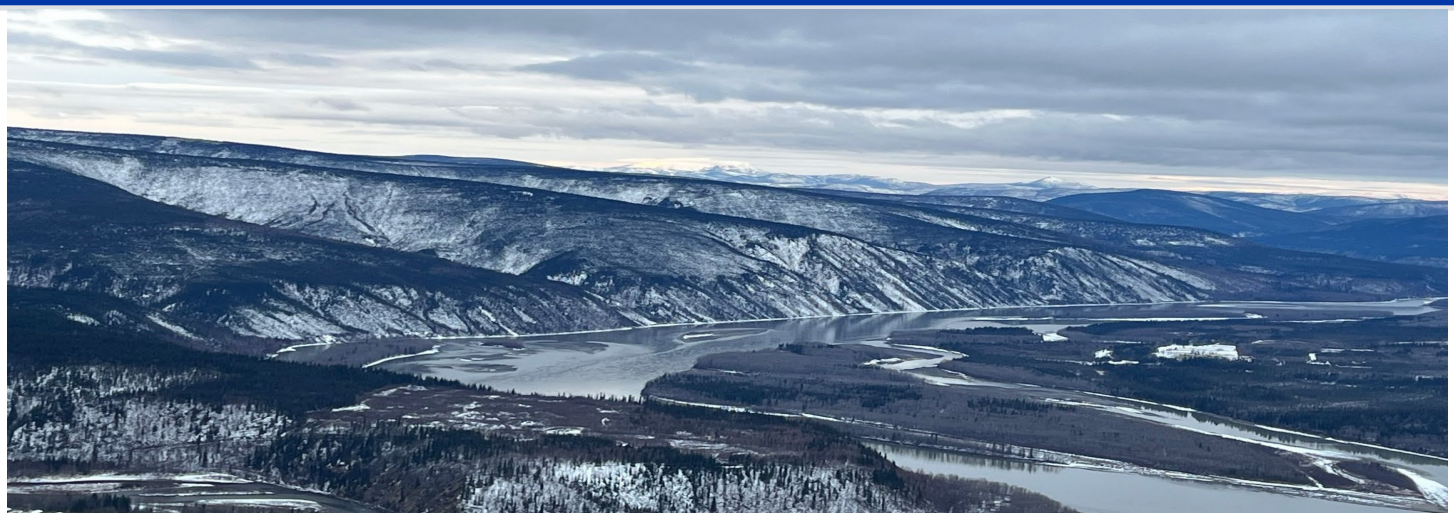
Alan would often be seen with his white lab in Port Hardy. His dog Jillye survived the crash and is now living in Victoria. Alan enjoyed travel, having visited many countries around the world. He was also a published author, loved nature and exploring the many trails around Port Hardy. Cooking was also one of Alan's loves, he was an accomplished cook and professional baker. Alan knew a great deal of the North Island history and places of interest.

Alan will be greatly missed by his former wife, Nancee and their children Barbara (Steve), Lesley and her two children, Connor and Isabelle. Siblings, Donna-Kay Brown (Jerrard), Jennifer Little and Robyn deRosario (Virginie). Nephews, Ashley, Adrian, Allen and Austin and his Neice, Andrea Carlson.

Susan Harvey indicated she was the owner of the Rough Bay Ritz many years ago in Sointula and had met him at that time. She indicated he was fair, a good communicator and she enjoyed working with him.

Our deepest sympathy to the family and friends of Alan.

Tim Roark
BC Branch Historian



Kalpna Solanki CPHI(C), BSc, MBA - EOCP

Visiting Canada's North

On a recent trip to Whitehorse, I decided to take a bit of a 'detour' to the City of Dawson, and the trip was well worth it. Dawson City, with a population of 1,577 (2021 census), is a fascinating northern community at the confluence of the Klondike and Yukon Rivers and boasts a mixture of First Nations heritage and Gold Rush history. The city is marked by Beringia, an Ice Age period which formed its unique landscape, the Tr'ondëk Hwëch'in, who have called this area home for centuries, as well as the Klondike Gold Rush, that put this city on the tongue of stampeders worldwide.

Some things you notice about Dawson City are that the roads are not paved within the historic section of the city, retaining the Klondike Gold Rush town ambience. Also, most of the buildings in the historical area have frontier-style building façades, and there are also several well-preserved frontier-style buildings. Dawson City is also part of the Tr'ondëk-Klondike UNESCO World Heritage Site, announced in September 2023. The Klondike Gold Rush in the late 1800s only lasted a few short years, but its legacy and impact on this region and its indigenous people lives on. More than a Century later, gold mining remains an economic mainstay and has produced close to 14 million ounces of gold in the past 120 years. More recently, tourism has become the main economic driver in this gold rush town and in 2023, Dawson City was chosen by Frommer's Travel Guide as "One of the best places to go" in the World.

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So, what about water treatment, water distribution, wastewater collection, and wastewater treatment?

My day started off with a meeting with Jonathan Howe, Public Works Manager with the city of Dawson, and I found out that water and wastewater are handled by different groups. Water Treatment, Water Distribution, and Wastewater Collection are overseen by the City of Dawson. However, Wastewater Treatment is overseen by the Government of Yukon.

Water Treatment

The town's 40-year-old drinking water treatment plant was unable to treat water to meet the Canadian Drinking Water Quality Guidelines. Thus, the Yukon Government started the process to replace Dawson City's aging water treatment plant with a modern facility.

Although the Water Treatment facility is new, consultation with the city's Heritage Advisory Committee was needed to ensure it fit in with the architecture of the surrounding buildings. The Yukon Government retained Associated Engineering to provide design and construction services for a new water treatment facility.

The building façade was designed to replicate an early 1900s cold storage building, reflecting the town's character and rich history. The design also ensured that local materials and trades could be employed for construction to benefit the local economy.

The water source is four GUDI wells around 200 metres away from the facility. Being GUDI wells in close proximity to the river, the water quality is heavily influenced by the river. As is unique to other northern cities, Dawson City has a process to prevent water freezing in the lines during the winter. For larger services such as a 20 plex, there are recirculation systems. However, most homes have a bleeder system that allows for bleeding of water at a rate of around 1 L/min. Whilst bleeders keep the water flowing, they also result in increased demand for treated water, increased volume in the wastewater collection system, as well as an increased load for the wastewater treatment facility.

First, the raw water goes through three banks of cartridge filters. The system involves a two-stage filtration system using 5µ and 1µ filters. The 5µ filters are washable and reusable, cleaned every three months, and replaced every 6 months. The filtered water goes through a UV system, and then is treated with chlorine gas. Due to the proximity of the facility to the residential area of the city, there is a chlorine scrubber in place in case there is a leak.

The treated water then goes to two reservoirs with a total volume of 5,560 m3 to allow for a contact time of 6 hours. If the system's distribution pumps cannot keep up with demand, the fire pump kicks in.

In the Winter, water comes in at a temperature of around 2.5°C and goes out at around 5°C. But the heating of the water in the facility during the winter is not enough to keep water flowing through the distribution network when the temperatures drop below freezing, thus the use of bleeders in most of the distribution system.

Water from the facility is distributed throughout the city via a water distribution system, but also via Bulk Water Delivery trucks. This well designed and well operated facility will enable Dawson City residents and visitors to enjoy a safe and reliable source of drinking water for many years to come.

Wastewater Treatment

For several decades, Dawson City had the ignominious award of being one of Canada's poorest performers on wastewater treatment. The historic city pumped raw sewage into the nearest major water body. A federal search warrant and raid in 2000 found that tested water, screened only for big 'lumps' before hitting the Yukon River, was potentially toxic to fish. The town pleaded guilty to a subsequent Fisheries Act charge, for which the fine was up to $1 million.

At that time, Yukon's territorial chief justice, Heino Lilles, decided to order the city to build an appropriate wastewater treatment plant rather than paying the fine. Little did he realize that this decision would result in a multi-million- dollar boondoggle, where years later, the discharge from the facility meets the quality parameters but not the volume parameters in the winter months and in the summer meets the quantity parameters, but not the quality parameters.

The complications began around the time of the sentencing, when planners concluded the proposed sewage treatment plant would cost several times the initial estimate. Lilles's judgment required the facility be completed by September 2004, but he granted the first of many extensions when Dawson said it was back to the drawing board. To confuse matters further, the territorial government removed Dawson's mayor and council in 2004 after multiple ambitious projects helped tip the city into bankruptcy.

In 2008, planners got the court-ordered deadline for the sewage project completion pushed back once again, to 2011.

But then, a month later, residents voted overwhelmingly in a referendum to block the $17-million lagoon from being completed at a site near the entrance to town. So, forced back to square one. With the clock ticking, the Yukon government inked a deal with Vancouver-based Corix Water Systems to build a mechanical treatment plant in town, at an estimated cost of $24.8 million. But deadlines needed to keep being pushed back and costs kept on going up.

The plant was designed and constructed by Corix Water Systems at an estimated cost of $34.3 million. On 7 July 9, the project broke ground when Dawson City partnered with the Yukon government by signing a Memorandum of Understanding to build the project. Start-up testing of the boiler was undertaken in August 2012 and the plant commenced operations by Corix in 2013 following completion of tests. This wastewater treatment facility is the most unique one I have ever visited, and the challenges borne by the Operators who run the facility are quite significant.

The plant is a mechanical plant located at the lowest part of the city allowing for gravity flow except for a few areas where some lift stations are needed.

There is an influent sump and pumps push the wastewater through various stages of treatment in the plant. There are mechanical and manual screens in parallel in place. However, typically, only the mechanical screens are used, and the manual screens are used only when the mechanical screens are being serviced.

Unfortunately, servicing is needed on a regular basis due to the flushing of wipes.

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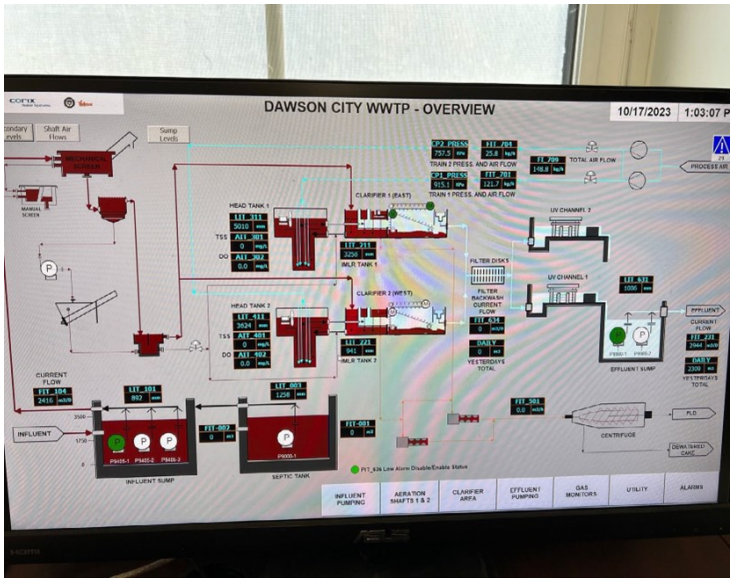
While I was there, the facility was still in recovery mode from a major process upset due to some local upgrades involving excavation together with a torrential downpour that resulted in large volumes of rocks, gravel, and silt being washed into the system fatally damaging the mechanical screen… and the manual screen needed to be used for almost 8 months.



Exacerbating the problem is that while the mechanical option has a 4mm screen, the manual has a larger aperture bar screen which allows larger objects such as wipes to come through. These are then sometimes found further

along in the process in the clarifier and even the aeration tank. When the mechanical screen is offline, wipes need to be removed every other day from the impeller in the aeration tank. Adding to the woes, there is also a problem with flammable liquids coming into the system. To handle this, there is a Flammable Liquid Diverter and organics are evaporated off.

What makes the City of Dawson's wastewater treatment plant so unique is its use of an aerobic activated sludge process called Vertreat (vertical treatment), which consists of two 1.4m diameter shafts installed 100m deep in the ground.

There is an impeller in each tank and the contents are agitated somewhat. The next in the process is a clarifier, then filter disks, and then UV. The solids go through a vertical filter press.

Thus, in addition to not being able to solve some of the critical issues this plant was designed and built for, there are also major challenges related issues such as the 10 filter plates that did not have a process in place for maintenance. These plates weigh around 200 kg when dry, but more than 900 kg when wet. The filter plates need maintenance every two months at the best, and twice weekly the worst times. In addition, the parts are difficult to get, and are expensive costing around $60,000 during the Summer.

Corix continued to operate the plant, under contract, until February 2017 when Dawson Community Services took over operations and maintenance. Originally, the plant

was to be operated and maintained by the City of Dawson, but in 2015 it asked the Government of Yukon to manage the plant until it was fully functional and financially sustainable, and the plant continues to be operated by the Government of Yukon.

Currently, it costs the Government of Yukon and City of Dawson approximately

$950,000 annually to operate the facility. This cost is significantly higher than anticipated and is higher than any other community in Yukon, including the City of Whitehorse. Keep in mind that this is for a population of fewer than 2,000 people usually with an absolute peak of around 5,000 people in the Summer.

In 2019, the Yukon government realized that maybe it needed to cut its losses and pursue a new wastewater treatment plant option. Now, the plan is to go back to the idea of what works in that climate – a sewage lagoon. But where? To date, agreement on a location has not been

achieved, and it is unlikely that the project will be completed by the 2026 target date.

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