

Middle River, BC

August, 2018



A remote fishing community of the Tl'azt'en First Nation in central BC received an upgraded water system after years of boil water advisories. Dzit'lain'li or Middle River, is in the beautiful Lakes District near the historical Hudson's Bay fur trading post of Fort St. James. The water treatment upgrade is to provide additional treated water and a system to address organics in the existing water supply. The organics create disinfection byproducts by reacting with chlorine.

Researchers from RES'EAU WaterNET piloted, then chose a Biological Ion Exchange process to filter Total Organic Carbon before the UV. As a northern fishing community, temperatures and population vary. BIE can work in these conditions

but the system is designed to operate continuously with at least a low flow in winter.

RES'EAU WaterNET brought their pilot testing equipment and "Community Circle" approach to Middle River to work closely with the community and operators to understand their priorities and constraints for the new water treatment system design. Indian and northern affairs (INAC) chose to go directly to BI Pure Water of BC for a design-build approach in order to expedite the delivery of the least expensive system. WSP were the engineering consultants on the project.



Top: The new water treatment package building beside the storage and distribution building in Middle River.

Above: nearby forest fires in Northern BC in summer 2018

CASE STUDY

The BIEX system is air scoured and backwashed with unchlorinated water. The system can also operate in standard ion exchange (IEX) in case the BIEX is found unfavourable. IEX requires regeneration with a brine solution, so a piped-in salt tank is included in the chemical room of the plant. The same Purolite media inside pressure vessels is used for both BIEX and IEX mode.



Above: Biological exchange vessels with manual flow meters and backwash piping

Left: Separate ventilated chlorine room with salt tank and safety shower and eyewash

Operators were involved throughout the building and commissioning of the plant. A submersible pump draws water from Middle River at 24 L/minute and sends it to the new plant. The raw water is treated with sand filtration, cartridge filtration, biological or ion exchange (IEX or BIEX), UV, and chlorine disinfection. The treated water is sent to another Storage and Distribution building with a chlorine analyzer.

The community, engineers, and support workers celebrated the commissioning of the water treatment system and the lifting of the 14-year-old boil water advisory. However ash from nearby fires were falling on vehicles. It was just days from commissioning when the community was evacuated due to one of the largest fires burning in BC in August 2018.

Although an operator lives on-site year round, they can also access the remote monitoring visual control, and remote service staff can login to view and help troubleshoot via the control system.

BI Pure Water specializes in custom engineering, build, install, and servicing of package water treatment plants for remote communities.



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