

WATER CANADA

Think Small, **Think Big**

**Restoring Water
in Indigenous
Communities**



**Small System Solutions
for Wastewater**
(page 20 and 32)

**Federal First Nations
Drinking Water Regulations
at a Crossroads** (page 10)



A communal, decentralized sewage treatment system is constructed in Shakespeare, Ontario.



By Ontario Water Resources



A view from the inside of the communal sewage treatment building.



Remote Control

Communal water systems may be a viable solution for remote locations and harsh conditions in Canada. **BY IRENE HASSAS**

TYPICALLY, when a small community's conventional water system approaches the end of its lifespan, the community either has to replace it with a water treatment system in every household

(such as septic systems) or implement the “big pipe system” to service the community as a whole. One of the key objectives for decision makers is to put in place a cost-effective system that will meet effluent quality standards but can also be operated and serviced by the existing staff to minimize third-party involvement. Recently, buzzwords like “communal,” “distributed,” “decentralized,” and “cluster systems” are gaining popularity among the consultants, developers, and decision makers who understand the advantages of these systems.

Over the past couple of decades, there has been dramatic progress in the advancement of technologies to fit small systems, but the key to success has been in the development of sophisticated levels of automation within a number

of different types of packaged plants. Minimizing the requirements for the operator and lowering the cost of the control systems have finally made the use of communal and prepackaged treatment systems practical for remote communities with a small resource base.

Small-town Ontario

When the Town of Shakespeare—located in the county of Perth East, Ontario and home to approximately 1,000 people—hired a consulting firm to identify the best solution for delivering future wastewater services, a decentralized approach was recommended. The community's septic systems were set to expire, compounded by flooding and a variety of other technical issues that impelled the town council to search for an alternative solution.

According to the 2011 Census, more than 6.3 million Canadians (19 per cent) were living in rural areas, which are defined as areas with fewer than 1,000 inhabitants and a population density below 400 people per square kilometre.

John Donders, project manager at Aslan Technologies, said options were limited since it was an “off-grid, small” municipality. “They were forced to either replace their existing septic systems or implement the big pipe concept with a pump station connected to another county,” he said.

This was the first wastewater system Perth East had considered, and so all available options were reviewed from technological, financial, operational, maintenance, and site considerations to meet their existing needs and for future growth. The decision was made to move ahead with an Aslan Technologies integrated solution that utilized a sequencing batch reactor (SBR) system as the core treatment, “saving the town approximately \$2.4 million in avoided costs of 9.1 million for the piping extension to connect the town to a larger centralized municipal system,” said Wes Kuepfer, Perth East’s manager of public works. By installing a local communal

system, it also meant that user fees were retained in Perth East.

Northern exposure

Another area where small systems can prove to be appropriate is in small resource communities in the North. In 2012, Northwest Territories Power Corp. (NTPC) embarked on a project to replace its Bluefish Hydro dam at the headwaters of the Yellowknife River. This three-year project was one of the largest construction projects in the history of the utility. In 2011, NTPC acquired a membrane-based system from Aslan Technologies in collaboration with other consulting and technology companies to address the drinking needs for residents and camp personnel. “Recent stats show that there are close to 300 remote communities across Canada, and most of these could benefit from turn-key, simple, and easy to operate water systems,” Aslan Technologies president Mike Myers said. “The advantage is that they are designed,

built, and transferred to the site in an enclosure, such as a container.”

For NTPC, the small system was equipped for colder climates with insulation and heating features, along with remote monitoring sensors that are crucial for minimizing systems outages, site visits, complexities, and any unforeseeable challenges resulting from climate and site conditions. For Shakespeare, the cost efficiencies of a communal system made this option attractive.

Across Canada, there are many towns, villages, and temporary settlements in need of a cost-effective, durable, and hands-free water solutions. “Thinking small” may be the key. WC



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