

**1.14: CHALLENGES WITH RURAL DRINKING WATER
INFRASTRUCTURE OPERATIONS AND MAINTENANCE IN
RURAL NEWFOUNDLAND AND LABRADOR DURING COVID-19**

**PREPARED FOR THE
CANADIAN
RURAL
REVITALIZATION
FOUNDATION**

**RURAL
INSIGHTS
SERIES:
COVID-19**

THE INFORMATION INCLUDED HERE IS A SUMMARY OF CURRENT KNOWLEDGE ABOUT THE CORONAVIRUS DISEASE (COVID-19) AND ITS IMPLICATIONS IN RURAL CONTEXTS. THE STATE OF KNOWLEDGE WILL EVOLVE AS ADDITIONAL INVESTIGATION AND RESEARCH IS CONDUCTED, SO CONTINUOUS REVIEW OF REPUTABLE SOURCES AND WEBSITES IS ADVISED.

FOR MORE INFORMATION, PLEASE CONTACT THE CANADIAN RURAL REVITALIZATION FOUNDATION AT WWW.CRRF.CA



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CRRF RURAL INSIGHTS SERIES: COVID-19

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DISCLAIMER:

The information included here is a summary of current knowledge about COVID-19 and its implications in rural contexts. The state of knowledge will evolve as additional investigation and research is conducted, so continuous review of reputable sources and websites is advised.

This report presents a high-level overview of areas of interest to key stakeholders and members of the Canadian Rural Revitalization Foundation and should be read as an exploration of challenges and opportunities that communities might consider as they consider their own unique circumstances.

Given the broad nature of the issues considered for this paper, individual communities and/or economic development professionals should take this paper as a preliminary starting point for their own investigations and planning processes. As such, this paper does not constitute specific recommendations for individual communities, and neither the authors nor the Canadian Rural Revitalization Foundation may not be held liable for any actions taken in response to this paper.

ABOUT THE CANADIAN RURAL REVITALIZATION FOUNDATION

The Canadian Rural Revitalization Foundation (www.crrf.ca) is a national charity that contributes to the revitalization and sustainability of rural Canada through collaborative research for rural leaders in the community, private sector, and in all levels of government. CRRF works to create credible insights and to improve our understanding of issues and opportunities that are of common interest to rural residents across Canada. Knowledge and better understanding are the fundamental pillars for the welfare of rural communities and environments.

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PREPARED BY

Dr. Sarah Minnes

Postdoctoral Fellow
Conservation of Change
Lab, Department of
Geography, Environment
and Geomatics
University of Guelph

Dr. Kelly Vodden

Professor (Research)
Environmental Policy
Institute
Grenfell Campus,
Memorial University

Dr. Deatra Walsh

Director, Advocacy and
Communications
Municipalities
Newfoundland and
Labrador

Dr. Kathleen Parewick

Community Collaboration
and Development
Coordinator
Municipalities
Newfoundland and
Labrador

Michael Asamoah- Boaheng

PhD Candidate
Clinical Epidemiology
Unit, Faculty of Medicine
Memorial University of
Newfoundland

Amy Hudson

PhD Candidate, Memorial
University
Director of Research,
Education and Culture,
NunatuKavut

CHALLENGES WITH RURAL DRINKING WATER INFRASTRUCTURE OPERATIONS AND MAINTENANCE IN RURAL NEWFOUNDLAND AND LABRADOR DURING COVID-19

KEY MESSAGES

- Many rural and remote Indigenous and non-Indigenous communities in Canada struggle with access to clean, safe drinking water due to inadequate drinking water infrastructure. The case of Newfoundland and Labrador (NL) highlights that these struggles can be exacerbated by a pandemic.
- Rural communities facing challenges with drinking water infrastructure should contact their provincial government representative and/or municipal associations and other advocacy organizations with questions they may have during the COVID-19 pandemic.
- The prevalence of long-term drinking water advisories and drinking water insecurity in Indigenous communities has received national attention yet remains a serious concern, including in NL.
- Local capacity to address rural water issues during a pandemic can be strengthened when rural communities have venues where they can learn from each other, share lessons learned and innovative approaches, and in some regional cases, share financial and human resources to address water issues.
- More research into rural-appropriate drinking water infrastructure innovations and alternatives is needed.

IMPACTS OF COVID-19 ON RURAL WATER INFRASTRUCTURE

Many rural and remote Indigenous and non-Indigenous communities in Canada face unique challenges with the operation and maintenance of drinking water infrastructure, thus impacting these communities' access to safe and clean drinking water¹. These challenges include (but are not limited to) source water quality and quantity problems, frequent or longstanding boil water advisories, aging and degrading infrastructure, recruiting, training, and retaining certified water operators, and demographics (e.g., small aging populations, population loss) impacting the financial capacity of local governments to maintain infrastructure². These challenges are exacerbated by policy approaches and decisions by senior level governments that have resulted in the downloading of responsibilities to local communities for ideological and/or financial reasons¹. Further, many rural communities do not have publicly operated drinking water infrastructure, meaning it is up to residents to maintain their systems properly (e.g., private wells, cisterns, etc.). This can bring to light added challenges with ensuring safe and clean drinking water³.

The recent COVID-19 global pandemic highlights the importance of access to safe and clean potable water. Clean, safe water is needed for hygiene purposes, such as for hand washing, one of the primary personal hygiene measures recommended to avoid transmission of COVID-19. The World Health Organization (WHO) states, "Existing WHO guidance on the safe management of drinking-water and sanitation services applies to the COVID-19 outbreak. Water disinfection and sanitation treatment can reduce viruses"⁴. Maintaining drinking water systems safely during a pandemic to ensure a clean, safe water supply is important but creates added responsibilities for staff and volunteers who are often already overloaded with responsibilities and may not have the information needed to respond safely and effectively. The COVID-19 pandemic exposes weaknesses in existing rural water systems. Most importantly, it highlights that access to clean, safe potable water across Canada is unequal.

Although increasing efforts have been made to improve access to potable water in rural communities across Canada, many communities lack access to clean water to practice effective hand washing, for example. In 2019, the majority (82%) of boil water advisories issued in Canada were issued in rural communities where drinking water systems serve 500 people or less⁵. Furthermore, some rural communities (including Indigenous communities in northern Canada), do not have household hookups to running water⁶. Many rural communities are dealing with long term and chronic boil water advisories⁷, with First Nations communities in Canada having 2.5 times more boil water advisories than non-First Nations communities⁸. The province of Newfoundland and Labrador (NL) provides an example where issues such as aging, degrading and inappropriate infrastructure; the use and misuse of chlorine; the use of untreated water sources; and long-term boil water advisories; are prevalent in rural communities⁹.

This type of unreliable or inconvenient access to sources of safe and clean potable water in Indigenous and non-Indigenous rural communities in NL poses challenges for proper sanitation practices during a pandemic, especially when protocols require you to wash your hands for at least 20 seconds or more frequently throughout the day^{10 11}. Though the COVID-19 virus has not yet been detected in drinking water^{12, 13}, “conventional water treatment methods that use filtration and disinfection, such as those in most municipal drinking water systems, should remove or inactivate the virus that causes COVID-19”¹⁴. Having reliable access to disinfection (such as chlorine) and advanced filtration in public drinking water systems is often a struggle in rural NL communities. For example, in 2013 a survey of water operators in NL found that 93% of water operators from local service districts and 46% of water operators from municipalities with 1,000 or fewer residents operate public water systems that do not use advanced filtration (i.e. anything other than basic screens)¹⁵. Indigenous communities are particularly vulnerable during the pandemic given higher rates of disease and illness (pre pandemic), all exacerbated by inadequate water infrastructure¹⁶. For example, a study done in the community of Black Tickle, NL in 2014 indicated that “disease management is compromised by the water problems”¹⁵ (pg. 18). Two important components of human health and hygiene is adequate water quality and quantity. Access to a reliable supply of clean and safe drinking water is essential for maintaining optimum health, managing existing diseases, and maintaining hygiene.

In NL, a group of rural communities (which includes rural, remote, northern, small island, and Indigenous communities) with potable water dispensing units (PWDUs) came forward to their municipal association - Municipalities Newfoundland and Labrador (MNL) - with particular pandemic-related water concerns. PWDUs are a small-scale water treatment system that makes treated water available at a centralized, sometimes enclosed, location, requiring residents to transport water in containers back to their homes. PWDUs apply multiple treatments to water, using treatment technologies such as ozonation, utilization of a multi-media filter consisting of anthracite and sand, activated carbon filters, reverse osmosis, and ultraviolet light¹⁷. Water is manually collected by users or can be delivered to residents in water coolers. PWDUs are overseen and maintained by municipalities and local service districts. In some cases, residents pay for the water based on volume. A growing number of small communities in NL have adopted these systems as they experienced challenges in safely maintaining large scale water systems. Currently, 32 communities in NL are served by PWDUs, and 10 of these communities are Indigenous communities. All communities served by PWDUs have populations of 2,395 residents or less¹⁸. Local leaders in these communities expressed concerns early in the pandemic regarding PWDU maintenance, operation, and sanitization as a result of the pandemic. In communities where PWDUs may be the only source of infrastructure that provides clean drinking water, interruptions in service impact human health and sanitation efforts to prevent or slow the spread of disease. This lack of access to safe and clean drinking water also impacts the health of individuals with respect to availability of clean water for human consumption to manage their own health.

RESPONSES

MUNICIPALITIES NEWFOUNDLAND AND LABRADOR (MNL) RESPONSES:

During early COVID-19 period consultations with their NL municipal membership, MNL received [questions](#) from community representatives about the recommended operating procedures for the sanitization and safety of their PWDU facilities during the pandemic. MNL brought these [questions](#) and concerns to the provincial Department of Municipal Affairs and Environment. In light of these concerns, the Department of Municipal Affairs and Environment issued an updated [guidance](#) document on standard operating procedures for PWDUs during the pandemic. MNL continues to organize regional calls for different regions in NL to share challenges and discuss solutions for a variety of issues rural communities are facing during the pandemic. The organization has also responded to the concerns of rural communities by providing webinars to members on key areas of concern and interest. A full list of these webinars can be found [here](#). MNL acknowledges that the COVID-19 pandemic amplifies the municipal issues that pre-dated it, including the vulnerability of municipal infrastructure, as well as the fiscal, human, and knowledge resources needed for supporting this infrastructure.

NUNATUKAVUT COMMUNITY COUNCIL'S (NCC) RESPONSE TO CLEAN WATER ACCESS IN BLACK TICKLE DURING THE COVID-19 GLOBAL PANDEMIC:

The COVID-19 pandemic highlighted unequal access to safe and clean drinking water in the remote Inuit community of Black Tickle on the southeast coast of Labrador. Black Tickle has a PWDU and this unit serves as the sole source of potable drinking water infrastructure in the community. The PWDU is often vulnerable to system breakdown and functional issues, and frequent water testing is required. This means that there are frequent interruptions in access to clean drinking water in Black Tickle. During the course of a pandemic, interruptions in access can exacerbate the vulnerability of residents by interfering with their ability to participate in prevention and respond to COVID-19 in their own homes. As a result of COVID-19 impacts in NunatuKavut, NCC developed a COVID-19 program response proposal and sought financial resources from the Federal Indigenous Community Support Fund (ICSF) to support an immediate and diverse response to COVID-19 based on needs throughout NunatuKavut. To address water access issues in Black Tickle specifically, NCC chartered multiple twin otter flights from Happy Valley-Goose Bay to Black Tickle to deliver bottled water for use as an emergency source. NCC also assisted with the supply of sanitation products to the PWDU site and has hired community workers (short term), to assist with access to clean drinking water and other priority matters impacting elders and vulnerable persons in the community. Thus far into the pandemic (as of August 2020), there has been one PWDU system interruption for a period of approximately one week in the community.

COLLABORATIVE RESEARCH PROJECT: EXPLORING WATER INSECURITY IN RURAL AREAS DURING A PANDEMIC: EXPERIENCES WITH POTABLE WATER DISPENSING UNITS IN NEWFOUNDLAND AND LABRADOR:

A growing group of researchers and leaders in NL (currently including staff from MNL, NunatuKavut Community Council, and researchers from Memorial University and the University of Guelph), are now working with PWDU communities to better understand their experiences and challenges with PWDU operation and maintenance during the pandemic. This research will help inform rural potable water practices, expose gaps in water systems, and further contribute to concentrated efforts to address unequal access to potable water.

RECOMMENDATIONS

- If you are a leader in a rural community and you do not have proper guidance for maintaining your drinking water infrastructure, seek help from your provincial government representatives and/or municipal associations and other advocacy organizations to find answers for your questions during the COVID-19 pandemic.
- If possible, work with neighbouring communities and try to think regionally about solutions to drinking water issues and questions. Furthermore, find ways to share your drinking water successes and challenges with other rural communities. Rural communities are constantly coming up with rural innovations, but they are not always shared.
- Indigenous Services Canada, Government of Canada has provided this guidance for communities on a boil water advisory or do not consume advisory during the pandemic:
 - "If your community is on a boil water advisory or do not consume advisory, you should still use your water to wash your hands with soap and water and for personal hygiene. Infants and toddlers should be sponge bathed in order to avoid accidentally swallowing the water. If you are on a do not use advisory, your water is not safe for any use. Use bottled water with soap or hand sanitizer with at least 60% alcohol to wash your hands. If you do not have access to running water, wash your hands in a large bowl and then throw out the water from the handwashing bowl after each individual use. Coronavirus is not known to spread through water." - *More information can be found here:* <https://www.sac-isc.gc.ca/eng/1581964230816/1581964277298>
- Continued research on alternatives and innovations for rural drinking water systems is needed so that already vulnerable communities, with inadequate or inconsistent access to clean and safe drinking water, are not made more vulnerable during health emergencies such as a pandemic.

NEXT STEPS FOR THE AUTHORS

The authors of this report will carry out a research project entitled: *Exploring Water Insecurity in Rural Areas During a Pandemic: Experiences with Potable Water Dispensing Units in Newfoundland and Labrador*. The objectives of this research are:

- To understand the types of experiences rural and remote communities with insecure access to water are having during the COVID-19 pandemic, by specifically investigating the experiences of communities with PWDUs and any specific challenges these communities may be having in regards to following sanitization guidelines and standard operating procedures during the COVID-19 emergency.
- The project seeks to identify safe operating procedures and measures that have been taken by communities that use PWDUs in NL and to share these experiences with other rural communities.

This project will provide insights for other communities struggling with insecure access to water during pandemics. The experience of NL PWDU using communities can provide lessons learned for other communities experiencing rural decline and water security issues. This document will be updated when new information is available from this research project.

FURTHER RESOURCES

- **World Health Organization**- Water, Sanitation, hygiene and waste management for COVID-19 virus: Interim guidance: <https://www.who.int/publications-detail/water-sanitation-hygiene-and-waste-management-for-the-covid-19-virus-interim-guidance>
- **Global Water Research Coalition**- COVID-19 Virus Water, Sanitation and Wastewater Management: http://www.globalwaterresearchcoalition.net/_r4285/media/system/attrib/file/826/GWRC_Factsheet_COVID-19%20Virus_25May2020.pdf
- **Public Health Agency Of Canada**- Reduce The Spread Of Covid-19: Wash Your Hands Infographic: <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/reduce-spread-covid-19-wash-your-hands.html>
- **Center For Disease Control And Prevention**- When and How To Wash Your Hands: <https://www.cdc.gov/handwashing/when-how-handwashing.html>
- **Government of Newfoundland and Labrador**-Guidance for Potable Water Dispensing Unit (PWDU) Operation during COVID-19: <https://municipalnl.ca/site/uploads/2020/04/PWDU-Guidance-Document-COVID-19.pdf>
- **Government of Canada**- Coronavirus (COVID-19) and Indigenous Communities: <https://www.sac-isc.gc.ca/eng/1581964230816/1581964277298>

ENDNOTES

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RURAL INSIGHTS SERIES: COVID-19

The information included above represents a summary of current knowledge about COVID-19 and its implications for economic resilience and recovery in rural contexts. The state of knowledge will evolve as additional investigation and research is conducted. Continuous review of reputable sources and websites is advised.

CRRF is producing a series of insight reports on key issues impacting rural communities as they face the challenges of managing the pandemic and look to future recovery. CRRF will be publishing reports through the *Rural Insights Series: COVID-19* on a rolling basis throughout 2020. Topics to be covered by these reports include (but are not limited to):

- Agriculture
- Rural Health
- Well-Being & Mental Health
- Employment & the Labour Force
- Local Economic Development
- Immigration
- Digital Divide
- Gender-Based Implications
- Localism & Supply Chains
- Islands
- Tourism
- Fisheries
- Mining
- Manufacturing
- Drinking Water
- Infrastructure Investment

Please visit www.crrf.ca regularly to access the *Rural Insights Series: COVID-19* as well as updates to emerging research and additional resources on the implications of COVID-19 for rural Canada.