

# From Source to Tap: Developing a community-based monitoring program for drinking water supplies in the Indian Bay Watershed

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## Scope

In rural Newfoundland, our watersheds are integral to our identity and way of life as well as providing critical drinking water supplies. Drinking water issues in rural areas are inextricably tied to the health of watersheds. Land-use practices occurring in watersheds have an impact on water quality and health of the overall ecosystem, including the individuals that rely on these resources for subsistence, culture, and recreation.



Figure 1. Indian Bay River  
Photo source: Indian Bay Ecosystem

The occurrence of boil water advisories is widespread throughout the province. Baseline studies examining water quality, the presence of toxins, and contamination source points act as a tool in identifying potential health concerns in regards to drinking water and in informing future land-use management practices and policies.

As part of a community-based approach to grappling with these issues, the Indian Bay Ecosystem Corporation (IBEC) is collaborating with Memorial University's Environmental Policy Institute and other partners to find solutions to persistent challenges relating to rural drinking water supplies.

## Objectives

- To determine the presence of microbiological and/or chemical contaminants of surface waters and roadside springs in the Indian Bay watershed
- To determine population perspectives and practices related to water consumption and contamination, environmental management and sustainable solutions
- To research community-based watershed water quality monitoring models employed elsewhere that may be applicable in Indian Bay along with their relative strengths and weaknesses

Funding support from the Harris Centre RBC Water Research and Outreach Fund and the Institute for Biodiversity, Ecosystem Science, and Sustainability (IBES) is gratefully acknowledged.

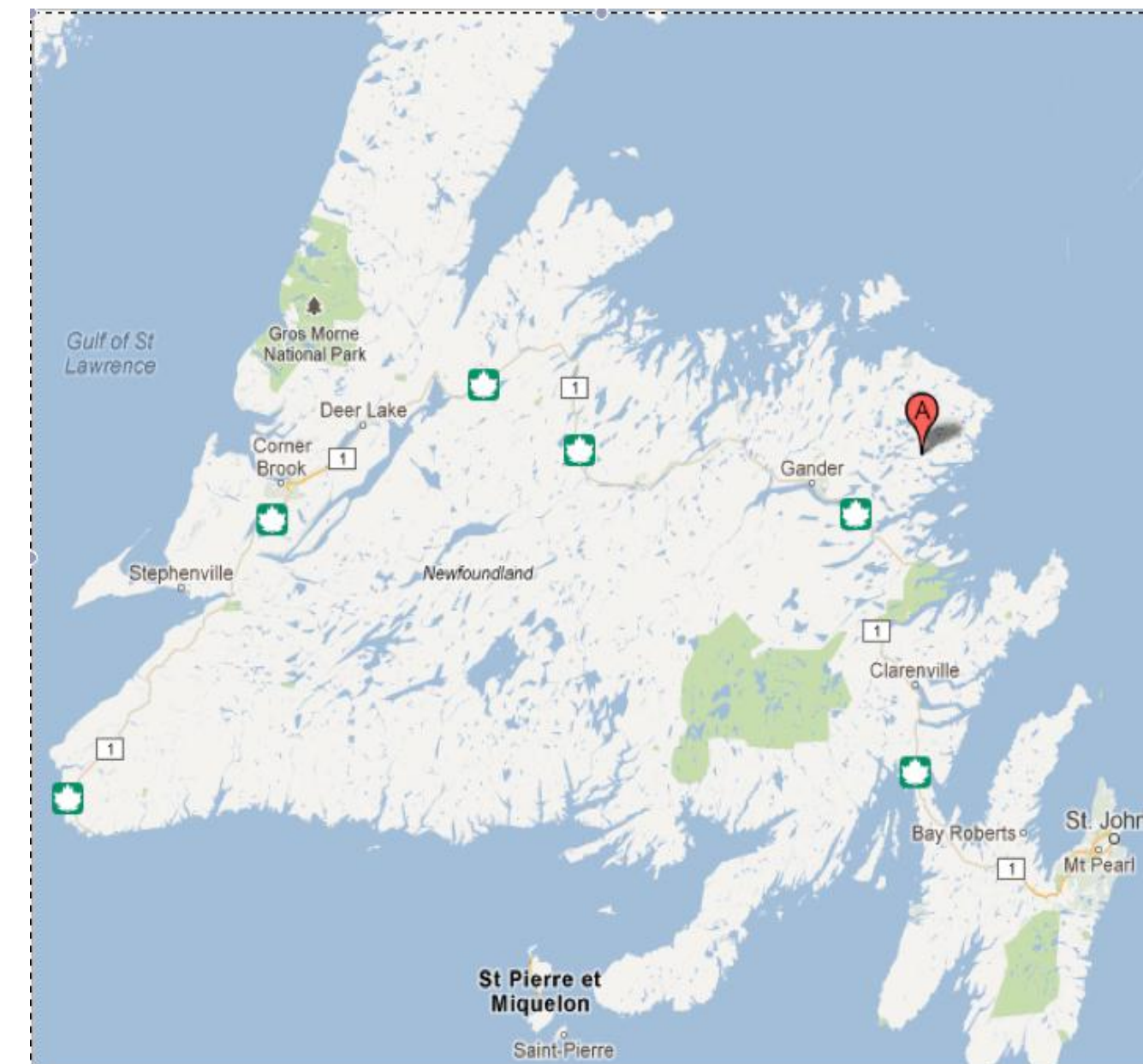


Figure 2. Study location  
Source: Google Maps

## Methods

- **Population survey**  
A household survey is being conducted on residents of Indian Bay and Centreville-Wareham-Trinity (CWT) to better understand habits and perceptions towards public drinking water supplies.
- **Multiple site sample testing**  
Chemical and microbiological analysis is being conducted on 7 source sites throughout the watershed and roadside spring sources to determine levels of metals, nitrates, sulphates, E. coli, and coliforms in the water systems.
- **Community stakeholder engagement**  
In concert with IBEC's efforts, an advisory committee of community and government representatives has been established to ensure public representation and relevant expertise is incorporated into the ongoing dialogue.
- **Research on other watershed groups**  
Researchers are examining other similar groups and their water quality monitoring efforts to seek lessons for IBEC.

## Preliminary Results

- **Sample testing**  
To date, 3 rounds of testing have been completed based on seasonal variance, with 2 more rounds scheduled for this summer and fall 2013. Tests indicate that chemical contamination is not an issue, though there has been recurrence of unacceptable microbiological contamination at 3 of the 7 sites. This suggests the justification for the ongoing boil order in the Town of Indian Bay, as well as the need to boil water obtained from the watershed during cabin and backcountry recreation use.

## Population survey

Of 120 households surveyed to date, approximately 70% of these households are obtaining their drinking water from roadside springs – only 15% are drinking tap water, and the remaining 15% purchase bottled water. Reasons for averting from tap water are “taste” and “smell,” though concern has also been expressed regarding the “safety” or “trust” of the public supply. Safety and trust issues are traced primarily to concerns over chlorination and old pipes in the system which contain asbestos. The frequency of past boil orders is also a concern; boil orders are disruptive to household habits and strongly affect future decision-making. Frequent boil orders tend to erode future trust in the public system.



Figure 3. Roadside spring  
Photo source: S. Holisko

## Discussion

Multi-use watersheds pose significant challenges for the management of public drinking water supplies. In no small part because of these challenges, there exists a strong distaste for public drinking water, for reasons relating both to tastes and concerns over safety. Concerns over safety are both real and perceived: the Town of Indian Bay has been on boil order since 2008, while the Town of CWT has been on and off boil order for several years. As roadside spring water is a strong household preference, ongoing community-based monitoring of these sources will prove necessary to ensure safe consumption.



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