

## Water Insecurity in Indigenous Canada: A Case Study of Illness, Neglect, and Urgency

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### Abstract

Water insecurity in Northern Indigenous communities in Canada is pervasive and complex with multiple dimensions and impacts. Yet the relevant literature is sparse, especially for Labrador. Our case study aimed to understand the multiple dimensions, health risks, and coping strategies of long-term water insecurity in the Southern Inuit island community of Black Tickle-Domino<sup>1</sup>, Labrador, where there is no household running water system and people rely on an under-funded potable water dispensing unit (PWDU) and unmonitored shared shallow wells. Using qualitative and quantitative methods, our exploratory work included research on water quality, access, contamination, uses, preferences, and cultural interpretations. In Black Tickle water security was chronically and severely compromised and the community did not meet the World Health Organization (WHO) guidelines for safe drinking water. Some water samples had contaminants and there were past records of outbreaks of water-borne illnesses. Water insecurity was linked to poverty, food insecurity, men's health, and mental health and posed major health risks. There is an urgent need for a sustainable strategy to improve water quality and quantity in these communities, such as that outlined by WHO in 2005. Yet these communities lack the economic and political means to implement such strategies. Our materialist approach and ongoing commitment to this work has led to early-stage work with engineers and the community to identify possible solutions.

**Keywords:** Aboriginal, Indigenous, Labrador, Southern Inuit, water security

### Introduction

Water security is defined as “ensuring freshwater, coastal, and related ecosystems are protected and improved; that sustainable development and political stability are promoted; that every person has access to adequate safe water at an affordable cost to lead a healthy and productive life; and that the vulnerable are protected from the risks of water related hazards” (World Water Council, 2000). The World Health Organization has outlined a safe drinking water framework with the following key components: health-based targets, system assessment, operational monitoring, management plans and independent surveillance (WHO, 2005). Despite Canada's status as a first world country, many of Canada's Indigenous communities experience water insecurity on an extreme scale. Yet this topic is rarely the subject of academic research and there is no sense of urgency regarding the need for a water strategy to alleviate these problems. This

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<sup>1</sup> The community is made up of two parts (Black Tickle and the much smaller Domino area): it is usually referred to as Black Tickle.

case study examines the multiple dimensions of water insecurity in the Southern Inuit community of Black Tickle, Labrador and how they intersect. We also identify the impacts of extreme water insecurity and recommend the urgent adoption of a long-term water security strategy.

## **Materials and Methods**

We began with a literature search on water insecurity in Indigenous communities in Canada, including academic and grey literature. We travelled to Black Tickle in April, 2013 and again in October, 2013. We employed a case study approach, focusing mostly on qualitative data. We conducted intensive open-ended interviews with community leaders, elders, the nurse, and women residents. We carried out three semi-structured focus groups with community members, a women's group, high school students, and the Local Service District (the community leadership organization run by volunteers). In these semi-structured discussions, we focused on the emerging themes of water use patterns, water quality, community health, and coping strategies. This approach allowed us to present residents' perspectives as articulated and prioritized by them, thus more closely reflected Indigenous world-views. We tested all the major water sources for microbiological (coliform) contaminations, metals and hydro-carbons and analysed provincial government water reports. The microbiological testing was conducted in cold and warm weather. The next phase of the project (to be reported elsewhere) involved engineering research aimed at identifying possible small-scale solutions appropriate to the sub-Arctic climate of Labrador.

Throughout the project, we worked closely with the Local Service District of Black Tickle and with the regional Indigenous political organization of which they are part, NunatuKavut Community Council. We continue to communicate with these entities as we seek funds for future research, which will take a materialist approach with the goal of identifying specific solutions and seeing such solutions implemented.

## **Results and Discussion**

### **Indigenous People and Water Insecurity**

Approximately 4.3% of Canada's population identify as Indigenous -- First Nations (status and non-status), Inuit or Metis (Statistics Canada, 2014). The Indigenous population of Canada experiences lower health status than members of the dominant society, suffering a disproportionate burden of morbidity and mortality, with many social, economic and health indicators similar to those in middle income nations (O'Neill, 1986). In 2001, Canada ranked eighth on the UN's Human Development Index. Using the same index, Canada's Aboriginal population ranked 32 (United Nations, 2009). Although a comprehensive discussion is beyond our purview here, these disparities result from the longstanding power imbalance between Indigenous governments and political organizations and the Governments of Canada and its provinces.

Water insecurity is a serious issue for many Indigenous communities. In 2011, the Auditor General of Canada said that more than half of water systems on the lands reserved for Indigenous people posed a medium or high risk (Auditor General, 2011). As of August 2012, almost one out of five First Nations communities in Canada was under water advisories requiring residents to either boil their water or to stop drinking it (Auditor General, 2011). Indigenous households are

90 times more likely to be without piped water (Auditor General, 2011). The water security problems in Indigenous communities are not limited to drinking water quality but extend to accessibility and wastewater and sewage management. According to the Assembly of First Nations (AFN), 75% of the 740 water treatment systems and 70% of the 462 wastewater treatment systems on reserves posed a medium-to-high risk to drinking water and wastewater quality (White *et al*, 2012).

The situation in Indigenous Canada is not unique. Approximately one-quarter of Alaskan Native households lacks complete plumbing facilities (Gasteyer and Vaswani, 2004). Although Canada and the United States have 100% access to improved water and sanitation, both countries have failed to provide such services for all their Indigenous populations (World Health Organization, 2009). In both countries, this points to environmental racism, which has usually been defined as the disproportionate proximity of non-white people to pollutants (Bullard and Wright, 1993). Concepts of environmental racism must also include state neglect of Indigenous people and the failure to provide basic services for health and life, such as drinking water. We note that the human right to water was formally affirmed by the United Nations Human Rights Council in 2010, making it equal to all other human rights and legally binding and enforceable in existing human rights treaties (Gerlak, 2012). In Canada the enforceable right to water is based on the right to life, liberty and security of the person under section 7 of the Canadian Charter of Rights and Freedoms and governments' obligation to provide "essential public services of reasonable quality to all Canadians" under section 36 of the Constitution Act, 1892 (Boyd, 2011).

### The Community of Black Tickle

According to our spring 2013 census, 126 people live in Black Tickle while 12 live in nearby Domino, although the transient nature of settlement patterns makes population measurement challenging. The descendants of Inuit women and British men, there was no consistent name for the people of NunatuKavut or for their ancestors; they were variously called Eskimos, half-castes, breeds, half-breeds, Metis, Eskimo Indians, and natives (De Boilieu [1861], 1969; Goudie 1983; Wallace [1905], 1983; Rompkey 1996; Kennedy 1995) with all of these terms reflecting their Indigenous ancestry and their status as 'other.'

Black Tickle is a former summer fishing station that was settled year-round in the 1960s as part of a push of Indigenous people into year-round settlements. This paralleled the Government of Newfoundland's centralization and resettlement programs and the federal policy thrust towards the assimilation of Indigenous people. Yet, as in the case of Black Tickle, the receiving sites were not always well chosen.

In Black Tickle, there are more multiple family households than in the general Canadian population, fewer one person households, and more five person-plus households (our census and Statistics Canada, 2011). Black Tickle also has a lower median age (38) -- is 38 -- than Newfoundland's (44) and Canada's (40.6) (our census and Statistics Canada, 2011). Thus, the demographics of Black Tickle reflect Indigenous rather than general Canadian patterns. Unemployment is widespread since the 2012 closure of the fish plant so there is a high reliance on government transfer payments, which is a source of financial and mental stress.

### Community Location

Island of Ponds is a small once glaciated island off Labrador's South Coast; it is made up almost entirely of igneous rock with insufficient sediment cover to support trees. None of the 366 shallow ponds on the island contain potable water and there are no rivers or flowing water. All the ponds freeze over in winter. The climate is sub-Arctic with high winds, a significant wind chill factor, and heavy snowfall.

In common with most Northern Indigenous communities, there are limited options for transportation. There is no fixed link to the island; nor are there commercial flights. The seasonal ferry service operates between five and six months of the year, depending on ice conditions. Like other Labrador Coastal communities, Black Tickle is not connected to the province's electrical grid and relies on expensive diesel. Firewood retrieval necessitates a journey to the former winter stations, 20 and 25km distance respectively.

#### Water sources, access and quality in Black Tickle

There was no piped water system or water truck in the community. Since 2004, residents have used a potable water dispensing unit (PWDU) that is irregularly funded by the provincial government. Residents paid \$2CDN per litre of drinking water, making cost an access issue. Bottled water is irregularly available at the two stores but its cost is prohibitive. In April, 2013 the PWDU had just received an operating grant after a long time of being unfunded. For water, residents relied on several unmonitored shared shallow wells within the community as well as brooks, and ponds. Distrust of the PWDU was high due to longstanding attachments to a favoured brook 25km away, the cost of purchasing PWDU water, and the frequent breakdowns and closure periods due to lack of funding. Distrust was compounded by animal activity (especially muskrat and, beaver) in and around the PWDU's source water, Martin's Pond.



**Figure 1.** The Potable Drinking Water Unit, Black Tickle, April, 2013.

Because of the distance and the physical effort required to load, move and unload water (a gendered male activity in Black Tickle), water retrieval was labour-intensive. The location of the PDWU, between one and two km from most houses, meant that travel by snowmobiles and all-terrain vehicles (ATVs) and the associated costs of gas and maintenance were also significant obstacles to water access. Hostile weather further constrained access. Therefore local shallow water pits (called ‘wells’) emerged as were the most reliable water sources, though some wells became buried under snow and thus inaccessible. The wells were vulnerable to contamination by wild animals’ faeces and urine; E coli was present in two out of seven wells. Yet, wells are communally shared and use is free, a consideration when poverty is a factor, as it is here.



**Figure 2.** A community well in Black Tickle, providing unmonitored and untreated water.

Water samples from the PDWU contain a high level of disinfection by-products (DBPs), i.e. Trihalomethanes, and Haloacetic acids (Government of Newfoundland and Labrador, 2009). DBPs are known to have carcinogenic properties and this may point to natural organic materials remaining in the water before chlorination (Government of Newfoundland and Labrador, 2009).

Black Tickle residents used approximately one-third of the Canadian average of 274L of water/day/person (Environment Canada, 2011). In Canada about one-third of water usage was for

toilets (Canadian Geographic, 2000), which points to the lack of sanitation practices in Indigenous communities such as Black Tickle. When WHO standards are applied, the necessity to travel more than 100 metres to access water means that the health risk of community members is between high and very high (World Health Organization, 2008).

The PWDU required annual operating funds of approximately \$38,000 CDN to cover labour, electricity, filters, chlorine, pump parts, soda ash, etc. The PDWU is unsustainable even with the user fee, given the high rate of unemployment and poverty. In May, 2014 the Local Service District's funding request to the provincial government was met with the offer of a special assistance grant to be cost-shared 70/30 between the province and the community, as follows:

“. . . requests for funding of an operational nature are not generally approved under any of our departmental funding programs. Exceptions have been made, in extraordinary and emergency circumstances; but they are rare. Communities are expected to plan for and ensure adequate local revenue is generated to deal with these expenses. Recognizing your current circumstances and in the spirit of assisting you while you prepare a plan to self-sustain the operations of your system, I am prepared to approve a **Special Assistance Grant** in the amount of **\$30,000** on a 70/30 Provincial/Municipal cost-shared basis . . .

This is one-time transitional funding to support your operational requirements while you establish to independently fund the operations and maintenance of your water system” (Kent, 2014).

Thus, the province would provide a maximum of \$20,070.79 with an expected community contribution of \$8601.77. According to the Local Service District, residents would have to pay \$10L to raise the \$8601.77, which is impossible. The province seems not to recognize water security as a right but as something to be earned and provided at the local level. In this case, there is no provision for the contextualization of specific situations. Since the PDWU is again unfunded, the people of Black Tickle are once again relying on unmonitored shallow wells for drinking water (Canadian Broadcasting Corporation [CBC], 2014).

Yet the ministry was quick to respond to a short-term water security situation at Pigeon Cove, a non-Indigenous community, caused by cold weather conditions and freezing pipes:

“Municipal Affairs Minister Steve Kent expects the people of Pigeon Cove and St. Barbe will have running water within a couple of days. . . The two towns have been without water since last Wednesday . . . The plan involves the installation of an overland piping system to the nearest available water supply,” said Kent. The pipes will be run to a pond about 1.3 km from the current source.

“I didn't want to wait several days longer. That's a more expensive add-on, but it provides water to residents in the quickest possible way.” In all, Kent said, restoring water to Pigeon Cove and St. Barbe will cost more than \$100,000” (CBC, 2014).

## **The Impacts of Water Insecurity**

### **Health Risks**

Most conversations about water in Black Tickle turned to food security. The local water had a brown case due to its high iron content and/or natural organic matter, which make it visually

unappealing. For this reason parents added Kool-Aid™ to water to encourage children to drink it. Alternatively they offered pop (Pepsi™/Coke™), which is cheaper than bottled water and is more consistently available. Residents understood the health compromises they were making but felt forced to make these compromises.

Although no statistics for the local level were available, the nurse confirmed a high rate of diabetes in Black Tickle, in common with many Indigenous populations that have made the epidemiologic transition (Hanrahan, 2008). Several residents with diabetes and other chronic illnesses regrettably restricted water intake.

Women taking part in a focus group estimated the obesity rate to be 80%, which was confirmed by the nurse. “A lot of the obesity has to do with the fact that there’s not enough water, there’s an access problem to water,” said one resident, referring to the high intake of sugary drinks. One woman explained, “I gave up diet drinks over a year ago and I was doing very well but then we (the community) ran out of water and when I had to drink water at \$1.25 a bottle and I needed four (bottles) a day -there was no water available from the treatment plant (PWDU) – well, I couldn’t get fresh or clean water – I couldn’t afford to buy four bottles of water a day just for me. Pepsi was all that was available and Pepsi was cheaper, so I went back on it. The boiled water is disgusting; it tastes disgusting. Pepsi is \$1.10 compared to water, which is \$1.25.”

Gastro-intestinal infections were common and there was an outbreak through the fall of 2012, with every household and demographic affected. Because of the lack of a piped sewer system, waste is carried on the same komatiks (Inuit sleds) that are used for water retrieval and then dumped in the harbour or the designated landfill site.

There is a sexual division of labour with men responsible for water retrieval. Virtually every man in the community was in chronic pain due to back and shoulder injuries. Some men required surgery, but they indefinitely postponed it because of their families needed them to retrieve water (and wood).

Mental stress was associated with water insecurity. Two residents were reported by family members to be suffering from obsessive compulsive disorder, which was aggravated by lack of water. Water was “always on peoples’ minds”, especially before storms and in summer when wells tended to dry up. People knowingly consumed untreated water and unhealthy high sugar drinks and worried about men’s health.

### Coping mechanisms

Water conservation practices were pervasive in Black Tickle with weather factored in. Stacks of salt-beef buckets filled with distilled water were in almost every house. One woman said she drank only one cup of coffee per day and one glass of water, having “no other choice.” Another said, “No one is drinking enough water in the community,” with all other focus group participants agreeing. Bath water was shared and re-used to wash walls.

There was a great deal of culturally-reinforced sharing: of water retrieval duties, of food, water, and vehicles. Such sharing occurs throughout Inuit society with the sharing of Inuit country food being particularly important (Ford and Beaumier, 2010). It meant that lone parents and elderly people were protected to some degree from extreme water insecurity.

Residents adopted short-term strategies such as water conservation and long-term strategies such as advocacy. They demonstrated remarkable resilience in that their volunteer efforts have led to few successes but they continued to lobby for improved water security.

## **Conclusions**

Our study has identified and explored several issues pertaining to water insecurity in Black Tickle-Domino and related adverse health outcomes. Contrary to the WHO's Water Safety Plans, there are no health-based targets, monitoring plans, or independent surveillance and there is inadequate operational monitoring and very little system assessment. Further, the scale of water deprivation in this and other Indigenous communities in Canada amounts to a serious violation of human rights. We strongly urge government authorities to take bold and forward-looking decisions that would recognize community contexts and lead to water security. We recognize the complexities and challenges involved in identifying and implementing solutions. In fact, we have begun working with engineers to find sustainable ways to end the decades-old water problems faced by the community; this involves assessments of the system, energy requirements, and the identification of possible options. The scenario in Black Tickle-Domino is not unique in Canada with many remote Indigenous communities in Canada facing similar levels of water insecurity. Given its widespread nature, water insecurity in Indigenous Canada also requires further attention from academic researchers committed to interdisciplinary and materialist approaches.

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