

# Water and Sanitation in First Nations Communities: Economic Analysis

Diane Dupont (Economics, Brock University), Morgan Vespa and Shianne McKay (Centre for Indigenous Environmental Resources), Russell Anthony (ex-Vice President, Stantec), Khan Islam (Economics, University of Manitoba), Raymond Harper (St. Theresa Point First Nation) and Melanie O’Gorman (Economics, University of Winnipeg)

In our work, we use an economic approach to highlight the importance of water infrastructure investments on reserve. This analysis emphasizes that the cost of providing improved water and sanitation infrastructure is high, however the cost of *not* providing such infrastructure is also high.

## National study: off-reserve

Our first study uses the 2001 and 2006 Aboriginal Peoples Survey (APS) to analyze the potential association between water quality and health conditions. The APS is a national survey conducted by Statistics Canada of First Nations people living off-reserve, Métis and Inuit. We used the adult survey (aged 15 and over).

We find that:

Safe drinking water...

- increases the probability of having good health by up to 8 %
- decreases the likelihood of suffering from a stomach problem by 4%
- decreases the chance of being unemployed due to a health problem by 4%

Contaminated water...

- decreases the probability of having good health by 7%
- increases the likelihood of suffering from a stomach problem by 3%

## National study: on reserve

Next we explore the relationship between self-reported health and water access/quality in First Nations communities using the First Nations

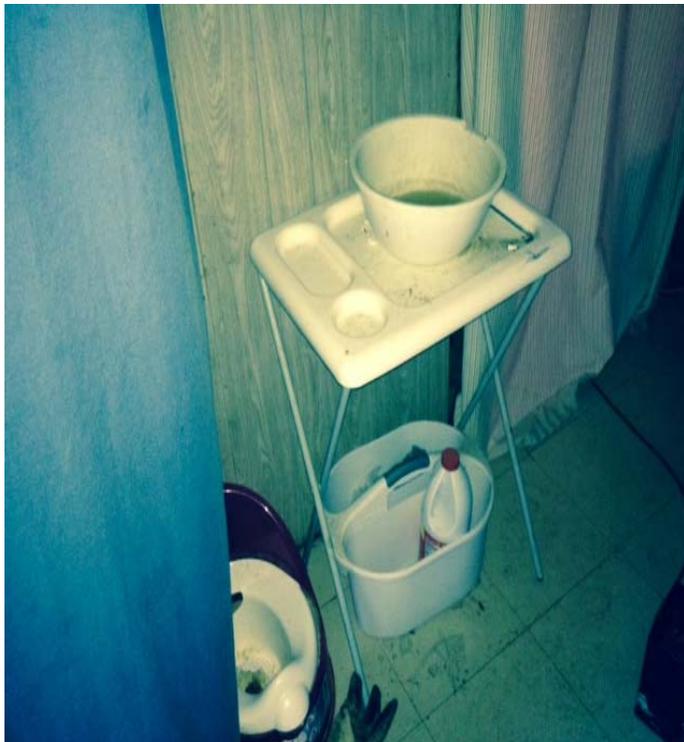
Regional Health Survey (RHS) (2002 and 2008). The RHS is the only First Nations-governed, national health survey in Canada (<http://fnigc.ca/our-work/regional-health-survey/about-rhs.html>).



We analyze whether different indicators of water quality/access are associated with good health. We find that:

- an individual is on average 10% more likely to report having excellent, very good or good health if they have a piped water system rather than having water delivered by truck.
- those with “sanitation” (a working flush toilet and a septic system) are 38% more likely to report good health relative to those who don’t have sanitation.
- Those with piped water from the water treatment plant are 31% less likely to report

- having a stomach/gastro-intestinal issue relative to those with trucked-in water.
- An individual with running water is 40% less likely to report feeling distress.
- A piped water system is also associated with less distress – an individual is 10% less likely to report feeling distressed if they are on the main water line compared to those with trucked-in water.



### Understanding the Implications of Inadequate Water Infrastructure in St. Theresa Point First Nation

Another objective of our research team is to work with First Nations communities in Manitoba to develop evidence-based advocacy strategies. We are working with St. Theresa Point First Nation in the Island Lake Region of northeast Manitoba. In March 2016, we conducted a survey in St. Theresa Point First Nation to document the daily implications of a lack of funding for water infrastructure. With this survey we asked:

- What are the day-to-day impacts of improper water infrastructure?
- Are there health implications?

- Is a lack of proper water infrastructure affecting schooling?
- Are there still homes that need to be retrofitted?
- How much are people spending on bottled water/filtration systems?
- Do you have concerns about cisterns (water holding tanks)?

We hope answers to these questions will highlight the many costs of inadequate water infrastructure/plumbing, or rather, the benefits of infrastructure/housing investments. In turn this information may assist with acquiring increased federal funding for infrastructure.

We conducted four focus groups – with Elders, nursing station staff, teachers and Council. The purpose of these focus groups was to obtain participants’ views on interventions that would improve the safety and reliability of drinking water in St. Theresa Point First Nation, and to talk generally about the impacts of a lack of running water/improper sanitation on the community. We then surveyed 145 people. We first went door-to-door – stopping in at peoples’ homes and interviewing them there. We also had a booth at the Northern Store. We summarize the findings below.

#### Access to water

The survey revealed the following statistics related to access to water:

Water Source for Survey Respondents	
Pipe	53%
Water tank	36%
No running water	11%

While the majority of individuals were connected to the main water line, a sizeable portion of those interviewed have water delivered by truck. Wells are rare in the community. Despite large investments in home retrofitting over the past 5 years, there are still homes without running water in their home.

In terms of other indoor plumbing, 88% of individuals have a working flush toilet, while 5% use an outhouse and 11% use a slop pail. 87% have a working shower, and 74% have a septic tank. These figures indicate that some households in St. Theresa Point First Nation are still living in “developing country” conditions, without basic water and sanitation facilities in their homes.

If water runs out (a tank needs to be refilled), 30% of people stated that they get water from a neighbour’s house. 39% reported hauling water from the lake or community tap – either because they lack running water or because they don’t trust the water that comes from their water tank.

People who haul water reported that they spend between 1 and 2 hours daily doing so. We asked these people **“What would you do with the extra time if you weren’t hauling water?”** Some responses:

“I would focus on my family, spending time with them.”

“I would clean my home and yard during the summer.”

“I would relax.”

“I would exercise.”

“I would play video games.”

“I would watch TV or visit friends.”

The most prominent response was: “I would work.”

### Defending Against Unclean Water

Only 65% of survey respondents said that they trust their water to be clean. 32% of respondents boil their water before drinking it and 68% purchase bottled water.

### Water and Health

30% of people who participated in the survey say they’ve missed work or school because they or a family member was sick from a waterborne illness. 18% say they’ve missed school or work for another water-related reason (e.g. hauling water). Survey respondents and health officials reported many health conditions resulting from contaminated

water or a lack of indoor plumbing. Some children don’t attend school because of boils, as it’s painful to sit down. Many children get sores even though they bathe daily. Some comments related to water and health are:

“Babies with rashes – but so many babies look like that. Then racism happens – because such issues are blamed on parents’ mistreatment.”

“People are desensitized – because it happens all the time here.”

### Dealing with Water Tanks

Those using water tanks reported many concerns regarding their tank and the water trucks used to deliver their water. The main complaint is that tanks get dirty and need to be cleaned more often. As the table below illustrates, very few homes have their water tank cleaned more than once per year.

<b>How often is your water tank cleaned? (proportion indicating response)</b>	
More than once a year	20%
Once a year	58%
Less than once a year	22%



Source: <http://www.stpfirstnation.com/>

## Impact on Schooling

“The water situation does make a difference when you’re talking about the quality of life of the students.”

Another common complaint was that tanks are not refilled often enough. Given household sizes, a water tank only lasts so long until it needs to be refilled, and there aren’t enough water trucks to deal with the demand for refilled tanks. It costs \$25 to refill a water tank, while those on the main water line do not have to pay for water – a number of people noted this inequity.

Many focus group participants and interviewees noted impacts of improper water infrastructure on education.

The water pressure at the school is very unpredictable. There isn’t enough water to flood the skating rink so it does not function. Because the eye wash stations don’t work, science teachers can’t perform experiments. Some students go to the washroom every hour – they have diarrhea – but still manage to come to class. If the water is off for many hours, the school shuts down for the day, and this happens often.

**Our final question on the survey was “What, in your view, is most important for improving the water/sanitation situation in your community?”**

The most prominent answer was “for all to be directly connected to main water line” – 38% of respondents indicated this. 29% of people indicated a general desire for clean water. 10% of people demanded more water trucks.

Other responses are below:

“I would like water to run in pipelines in each home for convenience like washing clothes or daily shower”

“Water filtration systems”

“Need more trained workers to work at the plant”

“Clean cisterns”

“Better water delivery”

“Workers need to check levels of chlorine in the water we drink”

“More water trucks - people left waiting for weeks”

“Need bigger water treatment plant”

“Better water pressure”

“Better roads”

“More septic tanks”

“Improved water pressure”

“Water that I could trust so I don’t need to boil it”

“More retrofitting of homes”

“Hooked to main water line instead of worrying about saving every last drop of water”

“More frequent testing of water”

**“If everyone got water from the main line – how would things change?”**

For more information, please contact: Dr. Melanie O’Gorman at (204)786-9966 or [m.ogorman@uwinnipeg.ca](mailto:m.ogorman@uwinnipeg.ca) or visit the Centre for Human Rights Research website at [chrr.info](http://chrr.info).

