

## 2014 CCCR national summit case studies

### Newfoundland and Labrador Drinking Water Studies

**Institution** Memorial University

**Researchers** Black Tickle: Maura Hanrahan, Atanu Sarkar, Andy Fisher, Amy Hudson and research assistants, Memorial University

Indian Bay: Kelly Vodden, Atanu Sarkar, Stephen Holisko, Memorial University; Johann Pickett and Stephen Moss, Indian Bay Ecosystem Corp.

Sunnyside: Jennifer Daniels, Kelly Vodden, Steve Holisko, Joshua Barrett and Sophie Carter, Memorial University

Provincial project: Kelly Vodden, Sarah Minnes, Maura Hanrahan, Michael van Zyll De Jong, Atanu Sarkar, Bing Chen, Andreas Klinke, Mano Krishnapillai, and research assistants, Memorial University; Ryan Gibson, St. Mary's University; Derrick Bragg, Professional Municipal Administrators; Robert Keenan and Craig Pollett, Municipalities NL

Authors: Kelly Vodden, Joshua Barrett, Sarah Minnes and Maura Hanrahan Environmental Policy Institute, Grenfell Campus, Memorial University

**Locations** Community studies: Black Tickle, Indian Bay and Centreville-Wareham-Trinity, Sunnyside; Provincial project: Black Tickle, Greenspond, Old Perlican, Woody Point, Port au Port East, Makkovik, Sunnyside, Centreville-Wareham-Trinity, Steady Brook and communities throughout NL (with an emphasis on those with 1000 or fewer residents)

**Projects** The Black Tickle-Domino Water Insecurity Project  
Developing A Community-Based Monitoring Program For Drinking Water Supplies In The Indian Bay Watershed: A Baseline Study Of Surface Water Quality, Contamination Sources And Resident Practices And Perceptions

### Newfoundland and Labrador Drinking Water Studies

Seeking Innovative Policy And Governance Solutions For Sustainable Drinking Water Systems In Rural And Small Town Newfoundland And Labrador

But What Do The Residents Think? Exploring Resident Perceptions, Preferences, Behaviours And Consequences Related To Drinking Water In The Town Of Sunnyside, NL

**Dates** 2000—the present

**Partners** Black Tickle: Local Service District, NunatuKavut Community Council

Indian Bay: Indian Bay Ecosystem Corporation, Towns of Indian Bay and Centreville-Wareham-Trinity

Sunnyside: Town of Sunnyside

Provincial project: Municipalities NL, Professional Municipal Administrators, Corner Brook Pulp and Paper Ltd., Ducks Unlimited, Compusult Limited, Townsuite Municipal Software—PROCOM Data Services Inc.

**Funders** Black Tickle: RBC Water Fund/Harris Centre; Special Award, Office of the President, Memorial University; and the Labrador Institute

Indian Bay: Harris Centre – RBC Water Research and Outreach Fund; IBES

Sunnyside: Harris Centre – RBC Water Research and Outreach Fund

Provincial project: Harris Centre – RBC Water Research and Outreach Fund; MITACS

**Research methods** Questionnaires, household surveys, key informant interviews, secondary data on water quality, water quality testing and visual inspection of potential threats to water supplies, literature and document review, media scans, DPSIR analysis, consultation and advisory committees, policy workshop, case studies

## 2014 CCCR national summit case studies

### Introduction

Due to challenges such as regular and long-term boil water advisories, aging and inadequate infrastructure, a number of research projects have been initiated by researchers from Grenfell Campus' Environmental Policy Institute and community partners to gain a better understanding of barriers to providing clean, safe drinking water in rural Newfoundland and Labrador (NL) as well as potential solutions.

### Background

Dr. Maura Hanrahan's project Brooks, Buckets and Komatikis: The Problem of Water Access in Black Tickle was a defining step for collaborative rural drinking water research in NL, especially pertaining to Southern Inuit communities of Labrador. Beginning with this study, published in 2000, Hanrahan and her local collaborators began to examine socio-economic issues related to the drinking water insecurity in Black Tickle-Domino, where residents retrieve water from shallow, unmonitored community wells, an unreliable potable water dispensing unit, or a brook twenty-five kilometres away. The research shed light on the reality that residents in this isolated community have little access to clean, safe water, and more generally on the need to examine water needs in Indigenous, rural, and remote communities. Findings provide an illustration of small, often remote, racialized spaces now occupied by Canadian Indigenous peoples, contributing to a tendency by mainstream society and their governments to ignore conditions that deny access to clean drinking water, a basic human right. Community leaders have used the results of this research to lobby provincial and federal governments for adequate access to safe drinking water. Subsequent projects have continued to highlight these still outstanding issues while exploring potential solutions for the community's severe water challenges.

In 2012, Dr. Kelly Vodden, together with the town councils of Indian Bay and Centreville-Wareham-Trinity and the local watershed management organization, Indian Bay Ecosystem Corp., initiated a collaborative research project to examine potential threats and population perspectives and practices related to drinking water and drinking water supply areas. Possible measures to enhance drinking water security in the communities were also explored, taking into account a long-term boil water advisory in

the Town of Indian Bay, concerns related to backcountry recreation in the water supply area, and widespread use of unmonitored and untreated roadside springs as drinking water sources. The project also examined the potential role non-profit community-based watershed management groups could play in helping to ensure drinking water security in a government-driven water governance system.

### Research purpose

Building on this previous work, in 2013-2014 both researchers together with additional academic, community and government team members and partners undertook the Exploring Solutions for Sustainable Rural Drinking Water Systems in NL project. The study examined drinking water conditions in communities with populations of 1,000 or less province-wide. The study focused on four interrelated aspects of drinking water systems: source water supplies, public perceptions, awareness and demand; infrastructure and operations; and policy and governance. The project has been successful in bringing researchers, community organizations and all levels of government together to examine the drinking water needs of communities, share their collective knowledge and ideas, and devise recommendations for moving towards more sustainable drinking water systems in rural NL.

### Research methods

These projects have employed multiple research methods. The establishment of project advisory committees involving community partners and representatives from professional associations and all levels of government with water-related responsibilities has proven to be an important early step. Literature and secondary data review has included review of previous related reports in all cases. The provincial project also included a media scan of articles from January 2003 to March 2013 to identify common themes and public perceptions of drinking water quality throughout the province. Based on document review and a policy workshop, Drivers-Pressures-State-Impacts-Responses (DPSIR) analysis was also conducted to provide a holistic understanding of the state of drinking water systems in rural NL. Interviews with residents and key informants involved with drinking water systems governance have also been an important element of the research. Surveys have also been

## 2014 CCCR national summit case studies

employed, including a household survey in the Indian Bay-Centreville-Wareham-Trinity study and two surveys administered to municipal representatives throughout NL in the provincial study to uncover information about local drinking water systems that could not be derived from existing data. Community case studies provided more in-depth insights of circumstances faced in specific locations. Lastly, community and partner consultations throughout the projects allowed for suggestions and recommendations to be incorporated at all stages.

### Lessons-learned

Despite the many successes the research teams involved have faced multiple challenges. Communications within collaborative projects can be strained, for example, when team members and partners come from differing perspectives. They may feel threatened by research findings and/or their limited ability to address identified issues due to resource constraints, creating a need for respectful and carefully managed dialogue to allow these concerns to be heard and addressed where possible. Project timelines can also be a barrier to CBR projects that attempt to address difficult, complex issues such as drinking water system sustainability and security. After each of these projects, further work has remained to explore outstanding questions and examine potential solutions to identified challenges. This adds pressure to community and university partners to sustain CBR efforts, to ensure action for positive change and to seek the resources to do so. Advocating for and assisting with movements towards change requires university researchers to step outside of common roles. This creates a need for training and skills development, in media relations for example, as well as in institutional supports. Similarly, community and government partners face their own challenges in sustaining efforts to complete and act upon CBR results.

#### **In summary, lessons learned from this research include:**

The importance of funding support for CBR. CBR can have significant costs, for example, for university partners to travel to remote communities. These projects were made possible with support from Harris Centre – RBC Water Research and Outreach Fund, established in 2009 to help increase drinking water research in rural NL, along with other university and government sources.

The importance of a multi-disciplinary approach to water and community development research. Researching complex community issues appropriately includes ecological, anthropological, health, engineering and other perspectives.

Productive community-university relationships are facilitated by long-term relationships and commitment (e.g., fourteen years of CBR in Black Tickle, eleven in Indian Bay, and ten years of collaboration with Municipalities NL). As one community partner explained, "In the past, researchers ran into communities, got what they wanted and that was the end of it. If you want to effect change, you have to develop trust and that takes time."

Given stretched local governments and high turnover of staff and council members, community engagement can be difficult and there is often an ongoing need for relationship development. Assistance from support organizations such as Municipalities NL or Indian Bay Ecosystem Corp. can also help to address this challenge.

### Domains of research excellence

These research projects reflect each of the four domains of excellence in CBR (community relevance; equitable participation; action and change; and research design).

#### Community relevance

With respect to community relevance, highly publicized events such as the deaths and illness associated with the *Escherichia coli* (*E. coli*) contamination of the drinking water in Walkerton, Ontario in 2000 have drawn attention to the importance of clean, safe drinking water across Canada. Drinking water concerns are especially relevant for municipal partners and agencies with related jurisdiction and responsibilities. While drinking water is also critical to the health and well-being of individuals, one challenge identified by project partners and in research findings is that the general public is often unaware of drinking water system concerns or risks associated with drinking untreated water. Public awareness is a challenge for achieving more broadly recognized community relevance and in advocating for change to enhance drinking water security. It should be noted, however, that this is not the case in all communities. In Black

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## 2014 CCCR national summit case studies

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Tickle, for example, community members are well aware that limited access to and testing of drinking water have contributed to making their home a “sick community” (Hanrahan 2000, p. 18).

### Action and change

Despite low levels of public and even municipal awareness in many communities, the projects described above have contributed to changes in behaviors, policies and priorities. In the case of the Indian Bay and Centreville-Wareham-Trinity project, for example, CBR has contributed to increased awareness of the drinking water quality in the communities, and risks associated with using roadside springs that have not been treated for personal consumption. Some residents also report changing their drinking water choices after E. coli was detected in a popular spring as part of the project. The project also brought attention to the town of Indian Bay and its six-year boil water advisory. This attention resulted in a new local council making water their top priority and subsequent action to address problems with the community’s disinfection system and lift the long-term advisory. Provincially, armed with the results of recent collaborative research, Municipalities NL Small Towns Caucus has made improvement in drinking water systems a top priority for 2014-2015.

### Additional indicator of success

An additional indicator of success in these projects has been the development of networks and relationships that build capacity for future research and community development. While there is much left to be done, the research community focusing on rural drinking water issues in NL is growing, bringing researchers and communities together to address the serious challenges facing drinking water systems in rural NL. Through the relationships new opportunities for further community-based research collaborations arose. For example, the town of Sunnyside initiated a partnership between Memorial researchers in 2014 to better understand resident perceptions of their municipal drinking water and concerns related to high levels of disinfectant byproducts. Research also continues in 2014 as part of the ongoing Black Tickle-Domino Water Insecurity Research Project, most recently through a project with engineering colleagues titled Engineering Solutions to Improve Water Security for

Black Tickle, Labrador that is exploring alternative technologies for improved water supply in the community.

### Links

Black Tickle-Domino Water Insecurity Research Project: [http://grenfell-epi.com/?page\\_id=3330#1396545233-2-49](http://grenfell-epi.com/?page_id=3330#1396545233-2-49).

For reports from other projects see <http://ruralresilience.ca/>

Indian Bay: [http://ruralresilience.ca/?page\\_id=239](http://ruralresilience.ca/?page_id=239)

Sunnyside: [http://ruralresilience.ca/?page\\_id=1239](http://ruralresilience.ca/?page_id=1239)

Provincial project: <http://nlwater.ruralresilience.ca/>