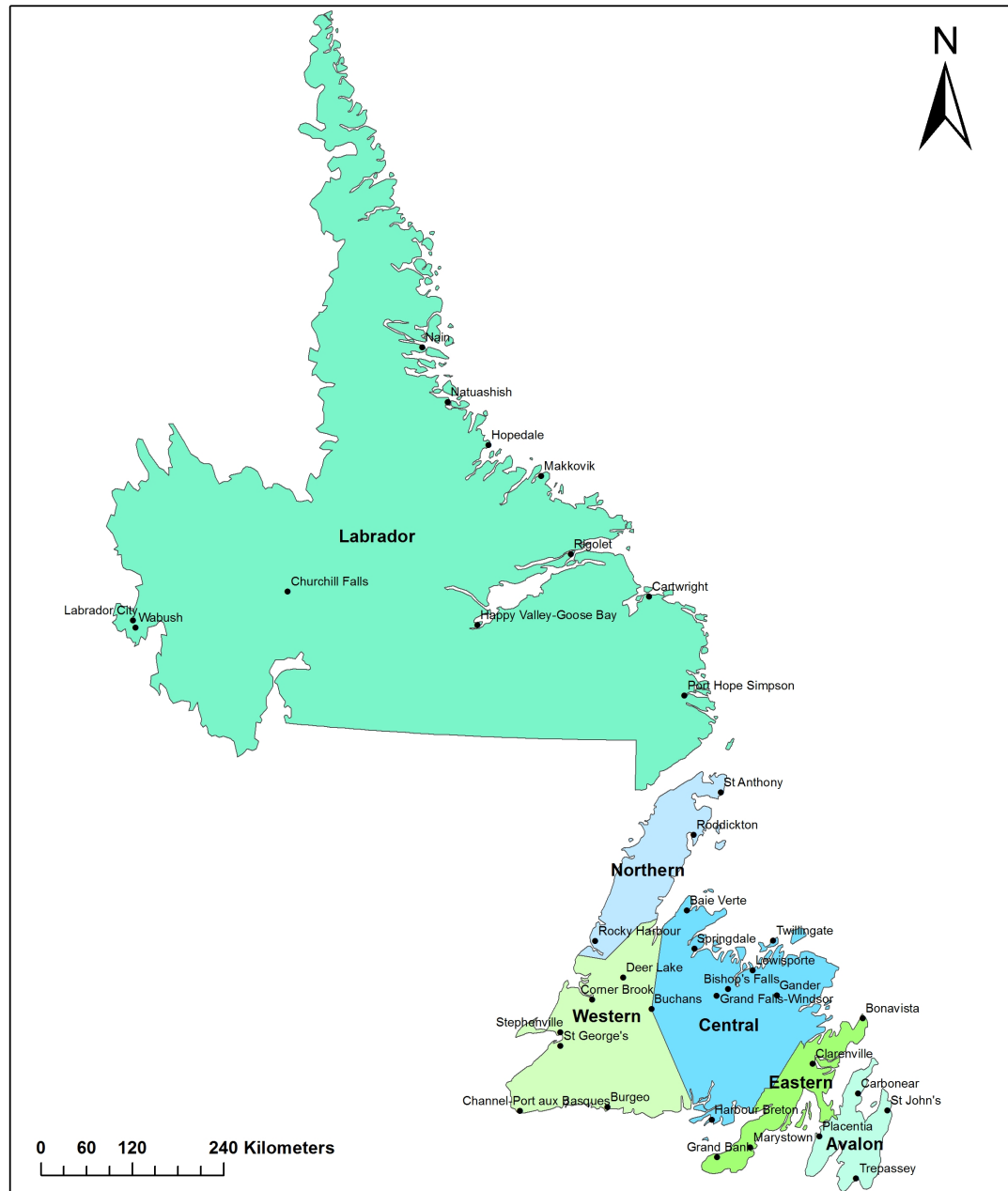


MNL Regions, Newfoundland and Labrador



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Regional Meeting Consultations

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Exploring Solutions for Sustainable Drinking Water Systems

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List of Abbreviations

Abbreviation	Explanation
BWA	Boil water advisory
DBP	Disinfectant by-product
DOEC	Department of Environment and Conservation
HAAs	Haloacetic acids
LSD	Local Service District
MIGA	Municipal and Intergovernmental Affairs
MIOX	Mixed oxidant solution
MNL	Municipalities Newfoundland and Labrador
MUN	Memorial University of Newfoundland
NL	Newfoundland and Labrador
PMA	Professional Municipal Administrators
PWDU	Potable Water Dispensing Unit
RFP	Request for proposals
THMs	Trihalomethanes

Introduction

In March 2013 Dr. Kelly Vodden received funding from the Harris Centre-RBC Water Research and Outreach Fund for the project entitled, *Exploring Solutions for Sustainable Rural Drinking Water Systems*. The main objectives of this research are to identify the types of risks and challenges influencing drinking water quality and availability in rural areas and to explore solutions for said risks and challenges. This study has a particular emphasis on communities of 1,000 residents or less in Newfoundland and Labrador (NL) and aims to direct future drinking water research in NL. This research project is in partnership with Memorial University of Newfoundland (MUN), Municipalities Newfoundland and Labrador (MNL) and the Professional Municipal Administrators of NL (PMA). For more on this research project, please visit the project website: <http://nlwater.ruralresilience.ca>

Consultation with municipalities is a key research method for this project, as it is critical to understanding the drinking water realities that local government face in their communities. Below are notes compiled from focus groups conducted at each MNL regional meeting attended in the winter of 2014, as well as the Labrador Combined Council meeting attended in February 2014. All references to specific municipalities have been removed in order to protect confidentiality. Due to the fact that these focus groups were coordinated in collaboration with the MNL regional meetings, no Local Service Districts (LSDs) were represented at the MNL meetings, only incorporated municipalities. However, the Labrador regional workshop was not planned with MNL. The Labrador workshop was conducted at the Labrador Combined Council meeting, which does welcome incorporated municipalities, LSDs and permanently recognized communities, Aboriginal Community Government and First Nations Communities. Therefore, some LSD perspectives could be represented in the notes for the Labrador meeting. Also, as all municipalities in the region were invited to these meetings, some feedback may be from communities that have a population of over 1,000. There were some limitations to these notes, as the meetings were not audio recorded; however, the notes provide a general idea of the topics discussed at each meeting and concludes with a list of common themes found throughout the province related to drinking water.

Central Regional Meeting- January 31, 2014

Water services

- One municipality indicated that there are houses in their municipality who are not connected to the municipal water distribution system and they would like to be. This has been an ongoing problem in the their municipality.
- On the other hand, one municipality indicated they had households who were not hooked up to the municipal distribution system and they did not see this as a problem. It was explained there is no demand for houses to be connected to the municipal system.
- Some participants did express the need for provincial funding for connecting households to the municipal water system, as the cost per house for a hook up is too expensive, especially for rural communities.

- When there is no municipal water system this becomes a fire protection issue, as there are no fire hydrants to hook hoses up to if/when a fire occurs.
- In some municipalities the space between houses is too far (up to 20kms) to have one water distribution system, some municipalities need up to 6 separate systems.
- Who pays for water system operation, maintenance, repairs and upgrades?
 - It was explained the issue is not as much about financing the construction or installation of new infrastructure, as it is about finding the funding or tax base to operate and maintain the infrastructure that has been installed.
 - This includes money for repairs and upgrades and sustained funding to retain a water operator.
 - There is a need to recognize that the tax bases in some small municipalities are often not large enough to sustain operational costs of water systems.
- One town said when they amalgamated the government paid their debt. This was mentioned as a potential solution to creating a sustained tax base.
- It was noted that municipalities need to prioritize drinking water; however, obtaining funding for sewer systems is also an issue in communities.
- It was brought up that LSDs do not always qualify for provincial/federal funding for infrastructure.
- One participant noted it is “insane” to waste money disinfecting and treating water used in toilets and/or for fire protection.
- Water metering was brought up during the discussion on sustaining adequate funding for the operation and maintenance of drinking water systems. The following comments were made concerning water metering:
 - One participant said that with a pay per use set up, municipalities actually might lose money due to residents who will “over conserve”.
 - One participant noted that “you would be surprised how much water a residential home uses in a day”, and that the money saved in treating and distributing water could be outweighed by revenues lost through conservation.
 - It was agreed by many participants that high water users such as schools, hospitals and fish plants should be metered rather than residents who cannot afford to pay for it.

Boil Water Advisories (BWA)

- It was suggested that the municipalities on BWAs that have lasted 5 or more years should look into a new source/water system.
- One municipality at the focus group was on a 20 year long BWA. It took 10 years to get a new system.
 - The new system cost \$5 million to fix.
 - During the BWA many residents would buy bottled water.

- One participant noted that residents were displeased when they had to buy water due to the long term BWA, yet they were still paying for the municipal system in their taxes.
- Another participant said that the municipality is still providing a service, as they can still use the water for washing, toilets, fire protection, etc., they just have to boil it before they drink it.
- One municipality mentioned issues with being able to pay for a new system: if the old system is not working, then residents may refuse to pay for a service they are not getting.
 - In this municipality they had to take down their water tank due to contamination and the residents complained about paying for unusable water. However, if the municipality did not charge for water services there would be no revenue to use to fix the existing infrastructure.
- Some participants noted that even if the municipal water is safe, some residents still use other supplies such as roadside springs. The use of roadside springs was noted as a common practice.
- It was noted by some participants that spring water tastes good, but these water sources are not regulated.
- One municipality's system cost \$11M and they have found that it is very costly to pump water to residents.
 - There are troubles with distances of the distribution line, where water has to be pushed, which can be a costly issue.
- Small municipalities often need boosters (end of the line issues).
- The Mayor of one municipality noted they had to get a new chlorine booster for one commercial high water user in their municipality, as water coming to the building was not being chlorinated properly.

Water System Concerns

- Dead ends (the houses at the end of the water distribution line) often pose an issue in many municipalities in the audience, as it is hard to maintain minimum chlorine residual levels throughout the system.
- Commercial woodcutting was also mentioned as being an issue in water supply areas.
- Cabin development and old already existing cabins are an issue, as their construction is often not regulated and outhouses may pose a threat to the water supply.
- Silt getting into the water supply is also an issue, as well as the impacts of gravel pits.
- Beavers were noted as an issue as they can contaminate source water and they also cause problems to the water supply when beaver dams block water flow to the intake.
- There were concerns about the Province overriding Municipal decisions regarding commercial woodcutting. It was noted these decisions are not always in the best interest of the drinking water supply.

- Leeches were found in one municipality's water supply and they had to get special screens to get them out.
- THMs (trihalomethanes) and HAAs (haloacetic acids) are still a huge concern in many communities.
- One solution to dead-end issues was putting temporary fire hydrants on dead ends.
- One municipality mentioned you do not need to flush your lines during the winter.
- Summer was noted as the season for the greatest risk of water system issues, especially contaminant-related issues.

Infrastructure

- There were complaints concerning access to infrastructure parts when a repair is needed. Parts often need to be ordered. For example one municipality said their part had to be flown in from Sweden.
- A solution one municipality employed for proper chlorine management was installing a buzzer at their fire hall that goes off if the chlorine levels drop overnight.

Operator Training

- Availability of the Operator Education, Training, and Certification (OETC) program is an issue, the same issue as volunteer fire departments. Most volunteers already have a full time job, and unlike town managers or clerks who can get time off work for training, these volunteers cannot get time off work.
- It was noted, the continuing need to re-certify after obtaining certification can be onerous.
- Many municipalities in the session could not believe that water operators were not legally required to be certified if serving a community of fewer than 1,000 residents.
- There was a suggestion that training should be provided over the internet, or be done with video to make it more accessible to water operators.

Moving Forward

- Participants were interested in the idea of regional water operators. However, the logistics of instituting regional water operators needs to be considered. Potential issues with this idea include the size of the region, costs of travelling across great distances and considerations of the impacts of weather conditions.
- There were inquiries about the feasibility of remote monitoring systems. It was suggested that the research team look into alternative and innovative technologies such as remote technologies.

Eastern Regional Meeting- February 7, 2014

Water services

- There are some significant geographic reasons why all households are not hooked up to the municipal system.
- Issues were raised regarding getting government funding in “phases” where the first, second or third phase is funded but the final phases are not, leaving some houses without a household hookup to the municipal system.
- It was explained by several participants that the cost of adding houses to a pre-existing system is almost as high as the whole system cost.
- One participant noted that there were no household water hook ups in their community.
 - A project was started to address this, but funding was discontinued before it was completed.
 - This municipality wants to be hooked up to a municipal supply due to droughts in the summer impacting water availability in their private artesian wells.
- One participant explained:
 - The cost of their water system is too high for residents.
 - It was explained that now the municipality can supply the whole town with water, but the respondent believes private artesian wells have better water quality than the municipal supply.
- Another municipal representative noted:
 - 3 or 4 houses are not hooked up to the municipal supply, and people on private wells are having problems with magnesium, iron, etc.
 - Wells are drying up in the summer.
 - There are also issues related to well owners not being educated on proper well liners and other best practices in well maintenance.
 - There is a need for more private well education for well owners.
 - Extending the municipal water distribution line to these houses would be very costly.
- Another municipal representative said:
 - Due to disinfectant by-product (DBP) concerns, they changed chlorine gas to a Mixed Oxidant solution (MIOX) disinfection system.
 - Cross connections are occurring when households connect their well water for drinking water purposes and leave the municipal water distribution connection for all other household water uses.
 - The respondent said town staff wanted to go and inspect houses for cross connections; however, a warrant is required for this.
 - The municipality currently has a Request for Proposals (RFP) out for a new system

- The Department of Municipal and Intergovernmental Affairs (MIGA) wanted them to get a PWDU, but this did not appeal to town residents, who perceived it as “a step backwards”.
- MIGA then advised the municipality in the RFP process that they could get filtration to deal with organic matter problems for \$4M, which would also cost an extra \$100,000 worth in operations per year.

Boil Water Advisories

- The rate of BWAs mattered to the participants. Concerning some of the statistics used in the presentation, it would be interesting for municipalities to not only know how many communities had BWAs per year in NL communities but how often these communities are on BWA and for how long.
- One municipal representative explained:
 - Their municipality has been on a BWA since 1989, which indicates that this is a chronic problem for them.
 - The BWA was due to lack of infrastructure funding, so the municipality received funding for a PWDU instead of investing in a new distribution system.
 - Occasionally, the container that holds water being transported from the PWDU becomes dirty and contaminated.
 - The municipality now has pamphlets at the PWDU about how to properly clean the water container and other drinking water safety tips.
- Loss of public trust was noted as a major issue with BWAs.
- The process of getting off a BWA can often be delayed. For example, it was explained that it takes at least five days to get the two clean water sample checks from the provincial government, which are required to get off of the BWA designation.
- There is a lot of public resentment about paying for a service they do not believe they are getting when their towns are on BWAs.

Water System Concerns

- One municipal representative noted:
 - After Hurricane Igor there was a great deal of debris from build up near the intake, they had to hire a diving crew to clean the intake out.
 - The same municipality also lost water twice this winter due to ice/silt.
- Another municipal representative explained in regards to their limited choice for source water supplies that:
 - Ground composition will not allow for artesian wells
 - Their gravity fed system is not working well; there is no water pressure for new houses on the line. The municipality looked into prices for a new pump and it was estimated to be \$350,000-\$450,000.

Infrastructure

- The large industrial system that was installed in the municipality is no longer needed due to a fish plant closure, meaning that the municipality is left maintaining a system that is too large for its current needs (e.g. a much lower population and less demand for water).
- Access to funding was noted as a difficulty in the region.
- Capital works funding is at times not feasible for small communities with limited tax bases. The capital works funding cost share of 90/10, still means the municipality pays 10%, which is a considerable amount of money for small municipalities and not always feasible.
 - One municipal representative noted they were concerned about their municipality's asbestos pipes, but there is no capital works funding to replace them.
- Infrastructure phases are increasingly elaborate, and since as infrastructure installation is often funded in phases, municipalities sometimes leave individual phases incomplete when funding is limited.

Operator Training

- It was noted as being important that all administrators, the town manager and council members are trained in water operations so that the workload can be more widely distributed throughout the community.
- Having more municipal representatives trained in water operations also helps when the water operator goes on vacation or is sick.

Labrador Combined Councils Meeting- February 21, 2104

* The Labrador regional consultation was not done in conjunction with a MNL regional meeting, but was conducted at a Combined Councils of Labrador meeting. This consultation was done in less time than the other consultations; therefore, the notes are limited.

- THMs and HAAs were a big problem for one community, but they now have a PWDU (installed in 2010).
 - Despite the PWDU, the colour of their municipal water is not very appealing (yellowish-brown colour that resembles apple juice/tea/urine).
- Some communities use rivers as their water source, so they have trouble treating it - their solution is to institute a continuous BWA. Residents buy bottled water.
- Water in one municipality tastes strongly of chlorine, so many residents will go to streams for their drinking water because it tastes better.
- Training water operators is a problem.
- Updating water systems is too expensive for many communities due to small tax bases because of out-migration, declining populations, and ageing residents on fixed incomes.

- To conduct water testing in some remote communities, samples have to be flown out, which can be a major logistical burden.
- There is insufficient capacity for water testing in Labrador. Communities can test for bacteria, but the official word on quality comes from the labs.
- Suggestion: create a manual from this research for communities on how to manage water quality.

Western Regional Meeting- February 28, 2014

Water Services

- A few participants said that some houses are not hooked up to the water system, but this is not viewed as a problem because they have wells/their own water system. Furthermore, some residents prefer the taste of spring water over the municipal supply, as it does not taste like chlorine.
- Some people live outside the service areas and there is insufficient funding available to hook up all houses to the municipal system.

Boil Water Advisories

- It seemed the common consensus among the room was that BWAs have widespread effects on residents, businesses, schools, senior's homes, hotels, etc.
- Municipalities bear the brunt of public criticism about BWAs, but sometimes municipalities are powerless to act because they are waiting for the provincial government to lift the advisory. Sometimes it takes a long time to hear back from the provincial government when trying to get off of a BWA.
- Barriers to getting off BWAs include:
 - Waiting for the provincial government to get involved and/or lift the advisory.
 - Ready access to Service NL labs.
 - No water testing at laboratories is available on the weekends.
 - No progress on fixing water systems that are necessitating BWAs in the first place.
 - Provincial government does not appear to be listening to municipalities (this has been an ongoing issue for years).
 - A need for backup systems (e.g. an ultra-violet system is being used in some schools).
 - The BWA system is inefficient and inadequate. Sometimes it is only called by the municipality for infrastructure repairs or regular maintenance, not a bacteriological contamination. Yet this still requires two visits from the Province to obtain two clean water tests to lift the advisory.

Concerns for Water System

- Dry periods in summers cause reserves to run dry.
- Skidoos and ATV trails are affecting water supply areas.
- Domestic and commercial woodcutting can cause water quality issues.
- Cabin building close to reservoirs can threaten water quality (the Province allows it on crown land, but sometimes flooding will result in septic system waste getting into municipal water reservoirs).

- Old cabins - sometimes municipalities will buy old cabins with the intention demolishing them, but they often lack the financial resources to complete the work.
- THMs have been an issue in some places due to high chlorine levels.
- Questions about who has the authority and/or responsibility to fix issues with THMs and HAAs were been raised. Should it be the municipality or the Province?
- Artesian wells are used in the region as a back-up solution.
- Chrome polls in one municipality was a problem because it is leaching into the water supply.

Infrastructure Issues

- Financing is a major barrier to completing repairs.
- One municipality received only 10% of the funding they applied for to upgrade their system.
- Another municipality has a new pump house, which cost \$360,000.
- Another municipality applied for funding for a feasibility study, but were turned down. The participant suggested that this could have been due to political reasons (having a Liberal MHA in a Progressive Conservative government).
- One municipal representative said his/her municipality was in the process of applying for funding
- LSDs are using municipal water but only pay a fraction of the cost; it was suggested they should pay more when sharing a water system with municipalities.
- More investments are needed to upgrade existing water systems (e.g. old pipes which are corroding).

Water Operator Training

- Staff turnover makes it hard to retain water operators.
- It was noted that timing of operator training is inconvenient. Some staff members have multiple roles (e.g. snowplow operator) and cannot leave for water training in the winter.
- There is a need for *local* training, as municipalities cannot afford to send someone to St. John's for training.
- It was noted by one respondent that municipalities cannot send volunteer water operators away for training; however, it was not specified why not.
- Comments on the Department of Environment and Conservation's (DOEC's) mobile training unit:
 - Municipalities need more information about the mobile training unit.
 - Sometimes this program provides general education about water safety, but not operational training specific to the water system for a particular municipality.
- It was explained by one municipal representative that municipalities do not usually find a water operator who is already trained/knowledgeable in water system operations. Someone is usually hired to be the water operator and begins their training/education then.

Moving forward

- Solutions explored include new wells and using an old water system as a backup for a new water system. It was noted that many residents simply rely on spring water for drinking water purposes.
- Financial support is needed for investigating drinking water solutions.

Closing discussion

- There needs to be a backup water system for when there is no electricity (as demonstrated this winter).
- A major problem noted is that there are no water testing labs on the West Coast.
- Water testing needs to be conducted more frequently.¹
- One municipal representative said they had to rely on a neighbouring larger municipality for water recently due to five days with no water. This municipality needs funding to construct a new water tower.
- Many people are tired of drinking water issues - it has been on the agenda for a long time. They want to see results from the provincial government. There is significant interest in how the Province will use this study and if a report is going to be made available for all involved.

Avalon Regional Meeting- March 21, 2014

Water services

- There are many instances in the region of artesian wells on large lots and there is concern in some communities regarding these wells' potential impact on aquifer depletion.
- Difficulties with partially complete systems were highlighted, particularly in cases where multiple communities have amalgamated over time, meaning that the current water system is composed of various sources and systems that were previously independent.
 - In these situations, it can be difficult to integrate everything into one system.
- One participant offered a cautionary note suggesting that communities need to be wary of low cost proposals (offered by consultants, builders, etc.), as these are not necessarily better for the community
 - On this note, attention must be given to the tax base that will have to sustain maintenance operations and the per capita costs of water service repair.
- Old systems are prohibitively expensive to replace, especially in small communities with a limited tax base that cannot cover current operation and maintenance costs.
- Engineers often cost far more than local contractors to do the same work:
 - There is a need for local solutions to reduce the cost of engineers to small communities, such as streamlining the model of developing/building a water system. For instance, engineers should maximize their time in a community

¹ It was not specified if this was testing by the municipal water operator or by the Province (either by Service NL or the DOEC)

- during a single visit rather than coming back multiple times to do the same amount of work.
 - A community engineer can reduce the costs significantly, but without proceeding along the “proper” channels/procedures, provincial government funding can be threatened.
 - It was noted that Capital Works automatically charges 15% of project costs for engineering costs.
- One municipal representative noted 60% of houses are on the main water supply and they are continuing to add houses. It was explained that they are struggling with the engineering costs and have found a local contractor who can do it for significantly less.
- Another municipal representative said that the age of the system is an issue; their main water source (a river) is often close to freezing. Only one household is not connected to the municipal system.
- Another municipal representative said there is 40 km of road running through their municipality, which equates to a very long water distribution pipe that cost \$25M to install for 800 people 25 years ago; currently the population of the municipality is 1200. Over the past 25 years the water system has been installed in five phases. In general, they find a lack of options in developing and maintaining their system.
- Another municipal representative said his/her municipality received an estimate for a gravel/sand based filtration system at the upper end of \$8M, and a \$200,000 per year operating cost, which was very expensive for the small municipality. After a three week visit [J.G. Calhill](#) proposed a system for \$2.2 M. They are currently awaiting MIGA approval. The representative said he was interested in moving to a “bid-build” model instead of the frequently used “design-bid-build” model. This way, municipalities can bypass some of the hold-up and much of the expense posed by the provincial government’s current process.

Boil Water Advisories

- A municipal representative said there are 86 residents year round and 110 summer residents in their municipality. 20 residents are on the municipal water system, and because their pump house is in such a poor state, they have been on BWA for the last 4 years. Their chlorination system is not working and it was estimated that it would cost \$300,000 to fix to service 20 residents. The prohibitive cost of engineers was also noted.
 - It was stated there is a need to search out other options, particularly those that fit their community (e.g. 20 artesian wells). The message is that place-specific, localized solutions are critical, especially for small towns.
 - Another suggestion was the need to share services between small towns where possible.
- Another municipality has two artesian wells. The municipality is mainly supported through a municipal gravity fed system. They have been subjected to BWAs while

flushing their system. The representative stated that it costs approximately \$175,000 to chlorinate each of these wells² so residents on the wells remain on a BWA. The municipality needs to figure out another system of treating these wells, as it is currently too expensive.

- A representative from another municipality suggested using UV light to disinfect water. However, others –including presenters- pointed out the high cost of this, often higher than chlorine in many instances.

Contaminant/Source Water Concerns

Discussion in this section was focussed on DBPs. This is not to say that there were no issues with source water, rather they were not brought up at this time.

- It was noted that there have been cases where no reports, or very late reports, from the DOEC were an issue.
- Some participants were not familiar with the terms THMs and HAAs.
- One solution to the lack of communication between town and residents is to post DOEC reports on community bulletins/main hallways in town building.
- In some communities there have been discussions between the DOEC and the municipality regarding water reports.
- There needs to be some kind of lobbying to get “safe” levels of DBPs, defined in applicable legislation and regulations in language that is less ambiguous than what currently exists. Currently all DBP levels given by the government are merely recommendations and there is no level that is deemed unsafe for consumption. It is also not clear who’s responsibility it is (the Province or the municipality) to ensure DBPs are kept to a safe level. One participant stated that we need to know more about the risks associated with DBPs, which is currently inadequate.

Infrastructure

*Presenters needed to move past this section to cover presentation. The topic, however, was covered throughout.

Operator Training

*Presenters needed to move past this to cover presentation.

Moving Forward

- There is a need to look critically at the efficiency (cost) of chlorination in newly installed water filtration systems.
- In speaking with a participant after the presentation, he/she specifically stated that he/she hoped that this work would have some direction/vision in providing informed policy recommendations given the concerns addressed throughout the discussion.

² It was not specified if this was the cost per year for chlorination or another time frame

Northern Regional Meeting- March 28, 2014

Water Services

- It was noted that access to water services can be difficult. One municipal representative said those outside the planning boundary for their municipal system are satisfied with their private wells. It was noted that due to the high costs of adding households onto the system, especially if they are far distances a part, residents are “happy enough” with their water.
- One municipal representative noted that there were residents in his/her communities who were fine with their Artesian wells when the water distribution system was being put in; however, now they want to be on the system. To add them onto the system after the fact would be very costly.
- Water systems in remote areas were also noted as being very costly.
- Regional options, such as regional water operators, were not always viewed as feasible solutions in all areas in the Northern region due to long distances between surrounding communities.

Boil Water Advisories

- One municipal representative said his/her municipality has been on a long term BWA because there was no chlorine at the end of line. Just recently this BWA has been lifted.
- BWAs are often caused by fast moving waters, debris from cliffs and during rainfall. Therefore, warmer temperatures lead to an increase in BWAs.
- A municipal representative noted that it is hard to get off a BWA because even though the municipality has the power to issue one, they do not have the power to lift it. Only a Provincial inspector can lift a BWA.
- One municipal representative said they do not have any problems getting off BWAs because Service NL allows them to bring their samples to the hospital for testing.
 - Another municipality said they wish they had known they could do this, as they were never given this option. It was said that more education on the options of getting off BWAs is needed.
- It was noted people do not trust discoloured water even if it is safe to drink.
- It was stated by several municipalities that if the water tastes like chlorine, residents will buy bottled water and go to roadside springs, instead of drinking the municipal water.
 - The presenter suggested putting water in a jug in the fridge so that the chlorine taste dissipates. It was noted by municipal representatives that this was a simple but good suggestion, and they would appreciate similar suggestions that residents can act on at home, for a low cost to improve their drinking water quality.

Concerns

- DBPs were noted as a concern in many of the region’s municipalities.
- It was noted by a municipal representative that the provincial government lacks the human resources necessary to adequately enforce Protected Public Water Supply Areas.
 - It was explained that you can report issues and violation of permits to the Province and they are not enforced.

- Snowmobile associations were also noted as being more organized than ATV associations, but they still create a great deal of trails in watershed areas.
- One municipal representative said, 90% of people using ATVs go where they want; there is no enforcement or perceived need for source water protection in many of these communities.
- It was noted by several participants that the best thing to do is to better inform and educate the public on their impact on drinking water quality.
- Discolouration and brown water was noted as a concern.

Infrastructure

- It was noted that it can be problematic when funding is only approved for two years. There is a great deal of red tape, especially concerning engineers, which impedes jobs from getting completed on time.
- It was noted by a municipal representative that his/her municipality needed a new water tank. They received a quote from an engineer that said the project would be a \$1M project. Yet, they have a construction company in the area that could fix the problem for a fraction of the price. However, provincial funding requires an engineer to do the work.
- It was said by another municipality that they applied for 6 projects and didn't receive funding for any of them. And now the cost of the water related project has gone up 83%.
- It was explained by several municipal representatives that when the power goes out, water does not pump through the system and pipes freeze and break.
- Also, one municipal representative said there is a lack of local contractors to respond quickly to the needs of municipalities in the region.

Training

- It was stated that it is hard when new water operators start because maps of the water system are not always accurate.
- It was a consensus that more water operator training opportunities should occur in the summer, as people who do snow clearing need to be in town during the winter months.
- There were concerns raised about the validity of online training, and how to ensure those doing the online course are actually the water operators.
- It was noted by a couple of municipalities that some people who may not be able to complete the certification requirements (e.g. if they are illiterate or do not have a high school diploma) are capable of doing the job. It was suggested that the certification tests be done orally if requested.

New Things

- To solve problems, municipalities need to know who to call. There needs to be more help with who to call in the region when certain problems arise.

Overall Conclusions and Common Themes

It was found through these regional consultations that, although there were some unique regional challenges, there were also several common themes regarding drinking water system concerns throughout the province. A list of common themes can be found below. These common themes

will be explored in greater depth in upcoming case study research in conjunction with this project. Case study reports, as well as all other reports associated with this research, can be found at: http://nlwater.ruralresilience.ca/?page_id=17

Preferences and Perceptions

- There is significant frustration around paying for water services that do not meet residents' basic expectations (e.g. if they are on boil water advisory, have an over-chlorinated taste or are discoloured). When water systems cannot produce clean drinkable water, residents may start to question the value of their systems.
- People across the province rely on various unregulated water supplies (e.g. roadside springs), even in cases where adequate municipal water systems exist. This is viewed as problematic by some, while others view it as acceptable as people are “happy” with their current water sources.
- Water taste and appearance are important factors for residents; there is a preference for alternative sources of drinking water due to unappealing chlorine taste or colour.
- BWAs have widespread effects and can erode confidence in the water system, especially when they are in place for long periods of time.

Financing and Funding

- Major water system infrastructure (and its component parts) can be prohibitively expensive.
- Current funding (e.g. municipal tax bases, provincial government funding) are inadequate; even with 90/10 funding agreements, finding the money in small municipalities can be difficult.
- Maintaining and expanding infrastructure over time can often be an even greater fiscal challenge than installing it, especially considering declining populations and ageing residents on fixed incomes.
- When repairs are needed, lack of ready access to parts can pose a problem.
- There were mixed messages concerning private wells. Some municipalities expressed a need to get these households on private wells on a municipal system, and some municipal representatives said residents were satisfied with their private wells. In both cases the cost of adding households onto pre-existing municipal systems was prohibitive, especially for small municipalities.
- Context matters; a number of participants stressed the need for customized, place-specific solutions at the local level (or highlighted specific reasons why a uniform solution would not work). In this vein, many municipal representatives were concerned with engineering costs and the ability of outside engineers to design context appropriate systems.

Operator Training and Education

- Standardization and accessibility of training is a concern for many municipalities:

- Ensuring consistency in the training of water operators is challenging given that certification is voluntary in small municipalities.
- It can be difficult to find time and financial resources to obtain and retain formal certification for water operators, especially those who work on a part-time, volunteer and/or seasonal basis.
- There was a desire for more flexible delivery mechanisms for training programs (e.g. online, video).
- A desire for more training opportunities to be offered in the summer months was expressed in several consultation sessions, as typically water operators are often in charge of snow clearing and cannot get away in the winter months for training.
- Regional operator programs were acknowledged as a potential solution when communities are close together; however there seemed to be some concerns over cost sharing and problems with the logistics of the program.

Process and Governance

- Intergovernmental cooperation, communication and coordination has been challenging at times:
 - It can take a significant amount of time for Provincial and municipal officials to reach mutually acceptable solutions on issues like funding proposals and BWAs.
 - Some communities feel as though the provincial government simply is not listening or has not prioritized drinking water issues.
- LSDs can pose problems for water system regimes:
 - Some municipalities feel LSDs are not paying their fair share, while municipalities also said LSDs themselves are ineligible for infrastructure funding and typically have smaller tax bases.
- It is often unclear who is specifically responsible for what parts of a water system in a given area, or what the regulatory or legislative requirements actually are and whether they are being enforced.
- Several participants expressed their view that more awareness, education and knowledge on drinking water issues are needed across municipalities, the provincial government and the general public.

Water System-specific Concerns

- Summertime temperature increases can often strain water supplies (both public and private).
- Cabins, both new and old, seem to be causing a strain on water systems in several areas of the province.

- Snowmobile and ATV usage can create issues for water supplies, as there is no monitoring or enforcement of source water protection or perceived need for staff to do monitoring.
- Municipalities seem to feel as though there is insufficient capacity within the Province to conduct timely and accessible water testing.
- THMs and HAAs are a major concern for several areas of the province.
- Several participants noted that well and spring water could serve as a back-up water supply.
- At all the regional meetings, municipal representatives expressed concerns about ageing and degrading drinking water infrastructure.
- Several participants expressed their hope that the results of this research would be published and used to help address drinking water issues across the province.