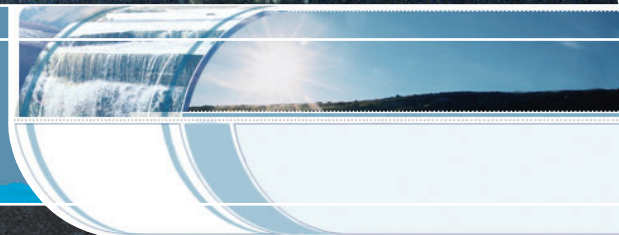


REPORT OF THE EXPERT PANEL ON SAFE DRINKING WATER FOR FIRST NATIONS

NOVEMBER 2006



The views and opinions expressed in this document represent those of the authors and do not constitute the views of either the Department of Indian Affairs and Northern Development or the Government of Canada.

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November 15, 2006

The Honourable Jim Prentice
Minister of Indian Affairs and Northern Development
House of Commons, Ottawa

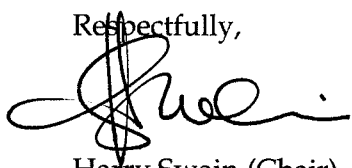
Dear Mr. Prentice,

We are pleased to present to you our report on options for regulating water quality in First Nations communities.

We would like to acknowledge the valuable contributions of many individuals, organizations and communities to this report. The advice and suggestions they provided through the engagement process were very helpful in guiding us through our deliberations. We would also like to express our gratitude to the many public servants within the federal, provincial and territorial governments who assisted us.

We hope that our analysis will assist the federal government and its First Nations partners in crafting a regulatory strategy that will build on the traditional stewardship role of First Nations, both to improve water safety and to help preserve the quality of all waters in Canada.

Respectfully,



Harry Swain (Chair)



Stan Louttit



Steve Hruddy

**REPORT OF THE EXPERT PANEL
ON SAFE DRINKING WATER
FOR FIRST NATIONS**

VOLUME I

NOVEMBER 2006

Wisdom harnessed to technology can go a long way in creating a better social order, a world in which all creation can survive and enjoy life to the fullest.

Chief John Snow
These Mountains Are Our Sacred Places

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INTRODUCTION

The Expert Panel on Safe Drinking Water for First Nations was established in June 2006 by the Minister of Indian and Northern Affairs with the support of the Assembly of First Nations. Our biographies appear as Appendix A.

The creation of the panel was one element of an action plan announced by the federal government that also included:

- a protocol for safe drinking water for First Nations communities, covering a number of standards and requirements for drinking water systems;
- mandatory training for operators, and a regime to ensure that all systems are overseen by certified operators;
- specific remedial plans for communities with serious problems and high risks; and
- a commitment to report on progress on a regular basis.

This plan reflects pressures to increase drinking water safety that all jurisdictions in Canada have felt, following a water-related tragedy in Walkerton, Ontario, in 2000. Contamination of drinking water in that town led to widespread illness that resulted in seven deaths and ongoing illness for hundreds of residents. A subsequent inquiry by Associate Chief Justice Dennis O'Connor of the Ontario Court of Appeal not only probed the causes, but also set out detailed recommendations on how to prevent a recurrence.

The federal plan also reflects issues that are specific to First Nations. The October 2005 evacuation of the community of Kashechewan, in northern Ontario, brought to national attention concerns about the water in this remote community. The evacuation came close on the heels of a report from the federal Office of the Auditor General that found that residents of First Nations communities did not benefit from a level of drinking water protection comparable to that of people living off reserves.

As an element of the federal plan, our mandate related to the relatively narrow, but important, aspect of regulation as a means of ensuring water quality. We were directed to consider the options for a regulatory framework for First Nations communities located on reserves. As the Auditor General report noted, no such framework exists at present. Efforts to ensure water quality rely mainly on a patchwork of policies, directives and funding conditions.

The scope of our work was to:

- review examples of regulatory frameworks and regimes from other jurisdictions and countries;

- collect suggestions from stakeholders, through public hearings and written submissions; and
- draft a paper for the Minister of Indian and Northern Affairs that would
 - examine options for a regulatory framework;
 - analyze the benefits and drawbacks of each option;
 - indicate issues outside the mandate of the expert panel that would need to be addressed to implement the option; and
 - provide a comparative analysis of all options.

Our analysis was to take into account the size of drinking water systems in First Nations communities and their geographic locations. While we were directed to include drinking water regulation in our analysis, it was left to us to decide whether to include wastewater systems in our discussion and analysis. We have chosen to do so.

Several matters were deemed to lie outside our mandate:

- we were not to initiate discussions on or otherwise abrogate or derogate from Aboriginal or Treaty rights to water;
- while we could consider how a regulatory framework might apply to self-governing First Nations, we were not to try to define water-related elements that should be included in future self-government agreements;
- we were not to undertake the actual drafting or wording of any legislation that might follow from our report; and
- we were not to address any internal federal government policy issues that might arise from our report.

We were asked to consider several issues without, however, addressing or resolving them, except that we might note in our analysis the problems caused by these issues. We might also recommend that further work be done to address them. These issues included:

- human, financial and infrastructure resources required by First Nations to implement the regulatory framework;
- Indian and Northern Affairs policy not to fund private, individual systems (wells and septic systems); and
- implications of the ongoing devolution of responsibilities and authority to First Nations.

Details of our terms of reference appear as Appendix B.

The engagement process

In response to the need to engage First Nations, we held a series of public hearings across Canada over the summer of 2006. We made it clear that this was not a broad consultation, but rather an effort to gain a better understanding of the existing challenges, possible regulatory directions, obstacles to effective regulation, and related issues that have an impact on water quality. To supplement the hearings, we also called for written submissions from interested parties. Those making presentations and providing submissions were asked to focus on the following questions:

- What should be regulated: source water protection, training and certification of operators, drinking water quality, effluents, treatment, testing, wells, health protection, emergency preparedness, plant and system design, other?
- What standards should be used?
- What legal framework should be used: First Nations', federal, provincial, territorial?
- What roles should various governments play in implementation?

Despite the very short notice for the hearings, the presentations and written submissions – the majority of which came from First Nations communities and organizations – provided us with valuable insights, experiences and advice on all of these questions. This speaks not only to the dedication of those working in the First Nations water sector, but also to the growing capacity within First Nations to plan, manage and operate their own water systems.

Over the course of the hearings we heard from more than 110 invited presenters. These comprised representatives from:

- 39 individual First Nations communities;
- 31 First Nations organizations, including tribal councils, regional councils, technical services associations, environmental and health organizations, and Assembly of First Nations regional offices;
- the three federal departments most closely involved in funding and overseeing water and wastewater systems on reserves – Indian and Northern Affairs Canada (INAC), Health Canada and Environment Canada;
- many of the provincial and territorial ministries with responsibility for drinking water standards and, in some cases, source water protection;
- private-sector organizations with in-depth experience in the First Nations water sector; and
- non-governmental organizations with particular expertise in public health, environmental or legal issues relevant to our mandate.

We should add that while officials of Public Works and Government Services Canada were not formally invited to present, they made themselves available at most of the hearings to answer questions.

We also received more than two dozen written submissions, most of which were from First Nations communities and organizations. Some of those who wrote did so because the short timelines had not allowed them to present, while others supplemented their presentations with additional thoughts and analysis. A number of further submissions were volunteered by other individuals and organizations.

At the time of this report, presentations and written submissions were available on the website of the panel at http://www.eps-sdw.gc.ca/inlv/sbms_e.asp?uDscIm=1.

These materials comprise a valuable cache of information, analysis and opinion not just on regulatory issues, but also on all aspects of the First Nations water sector, and we urge INAC and the Assembly of First Nations (AFN) to provide a long-term home for it on this site or elsewhere on the web.

As valuable as the hearings and submissions were to us, we must reiterate that we do not regard our activities over the summer as a consultation process, but rather as the first step in engaging First Nations in the development of regulatory options. Now that the report is complete, the Minister of Indian Affairs and Northern Development will determine if and to what extent consultation with First Nations and other key parties will be required.

Quotations and examples

The text includes quotations from the transcripts of the panel hearings, with the aim of giving a flavour of the engagement process. Both the content and the opinions expressed in a quotation are those of the speaker and have been selected from much longer and more detailed presentations. Where available, longer versions could be accessed through the website of the panel at the address provided above, at the time this report was submitted.

Longer sidebars are also included as examples of particular points. Every reasonable effort was made to ensure that these situations were presented as accurately as possible, within the time constraints of the reporting deadline.

Our thanks

To undertake even a cursory engagement process with the more than 600 First Nations in Canada and to gain a workable level of understanding of such a complex field as water quality on reserves over just a three-month period would not have been possible without the dedication and commitment of a large number of people. To the extent that our efforts

will be helpful and the government's subsequent actions successful, a great deal of the credit must go to those who supported us.

First and foremost, we must thank the AFN and the regional offices of INAC and Health Canada for carrying a great deal of the logistical burden for the hearings. They helped to get the word out to all First Nations communities, suggest which could provide the most useful input for our mandate, and encourage presenters to come forward. In many places, the regional political or tribal councils, and other umbrella groups, greatly supplemented this help. We note that all of these organizations provided us with logistical support as well as producing excellent background materials and presentations themselves. We also thank the head offices of INAC, Health Canada and Environment Canada for initial briefings, and INAC for ongoing support over the summer.

The front-line perspective of regional INAC and Health Canada officials, with additional support from Public Works, was extremely helpful as we attempted to grasp all the complexities of the existing arrangements, as well as understand the options, in the short time available. In addition, we found that most private-sector presenters were able to set aside their commercial considerations and provide background and advice that was both frank and illuminating.

Our legal team from Willms & Shier Environmental Lawyers LLP, aided by Professor Roderick A. Macdonald of McGill University and by the Department of Justice, helped us find our way through the legal maze surrounding questions of regulating water safety both on and off reserves.

We also thank the elders and other First Nations members who provided opening and closing prayers for the hearings and contributed their wisdom and guidance.

We owe a huge debt of gratitude to First Nations individuals, whether elected officials or staff, from both individual communities and larger organizations, who took the time to prepare, present and submit their thoughts on regulatory options. If our work is to lead to a successful outcome, theirs is the perspective that must lead the process.

Our perspective

The foregoing comment about the importance of the First Nations perspective in this process leads to a final note about our own perspective. The membership of every successful expert panel must reflect a range of experience and viewpoints, and ours – a former deputy minister, a Cree grand chief, and an engineering professor in a school of public health – is certainly no different. Each of us brought to our discussions differing points of view, based on our own experiences. What was remarkable, however, was how seamlessly these perspectives generally meshed as we worked through each option.

A final note: It is as inappropriate, of course, to think of all First Nations as a homogeneous group as it would be to think of all of Canada's provinces and territories that way. To the extent that a First Nations perspective is woven into this report, it can only represent the small sample from our engagement process, as well as the experiences of a panel member who has been both an administrator and elected official in a First Nation. We have tried in the text to signal that any First Nation perspective is that of a particular group or individual and may not represent all First Nations in Canada.

I. WHAT IS SAFE AND HOW IS IT ACHIEVED?

Defining safe drinking water

Our terms of reference described our work as developing options to regulate safe drinking water for First Nations. Finding an explicit definition of “safe drinking water” in Canada, however, proved difficult. The most recent Guidelines for Canadian Drinking Water Quality (March 2006) do not provide a definition,¹ nor did we find one in any provincial or territorial legislation.

This is an important point because it touches on two of the central questions asked during the engagement process: What should be regulated, and to what standards? These questions required consideration of the threats to safe drinking water. In other words, what contaminants, and how much of them, might take water from safe to unsafe? Answering those questions effectively, however, called for a definition of safe drinking water.

Within Canada, the most useful source for a definition may be the second report of the Walkerton Inquiry, *A Strategy for Safe Drinking Water*.² The report, which responded to a tragedy that occurred because drinking water was clearly unsafe, noted that the goal of the report’s recommendations was “to ensure that Ontario’s drinking water systems deliver water with a level of risk so negligible that a reasonable and informed person would feel safe drinking the water.”

This approach implies two obligations: first, to assure that risks are negligible; and second, to provide consumers with information about drinking water risks. The notion that safety is defined by a risk being so small that one need not worry about it originated with a Yukon First Nations councillor, Malcolm Dawson.³

The goal of reducing drinking water risks to a level that a reasonable and informed person would not worry about is a thoughtful and achievable objective for First Nations drinking water. It provided the working concept of safe drinking water used in this report.

Safe does not mean risk-free

Any definition of safe drinking water must allow for the reality that risks cannot be completely eliminated. The Walkerton report, for example, points out that “it is not possible to utterly

¹ Health Canada. 2006. Guidelines for Canadian Drinking Water Quality. Federal–Provincial–Territorial Committee on Drinking Water. Website accessed September 17, 2006. www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html

² O’Connor, D.R. 2002. Part 2 Report of the Walkerton Inquiry: A Strategy for Safe Drinking Water. Ontario Ministry of the Attorney General. p. 5. Website accessed September 17, 2006. www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part2/

³ Cited in Hrudey, S.E., and D. Krewski, 1995. Is there a safe level of exposure to a carcinogen? *Environmental Science and Technology*, 29(8), 370A-375A

remove all risk from a water system.”⁴ The World Health Organization (WHO) Guidelines for Drinking-water Quality, 3rd edition, define safe drinking water as water that “does not represent any significant risk to health over a lifetime of consumption...”⁵ The word “significant” acknowledges, as did the Walkerton report, that there is always some degree of risk, even if very small, in providing drinking water. “Safe,” then, does not mean “completely without risk.”

Driving provides a useful analogy. Most people would agree that going through a red light is unsafe – done often enough, it will result in a crash. On the other hand, we generally regard driving through a green light as safe, but it is not entirely free of risk. Accidents do happen to drivers obeying the lights: the goal of traffic planners, lawmakers and police is to minimize the risks of this happening.

Similarly, there are a number of ways to reduce the risks of illness caused by drinking water. The following sections describe these in more detail. This will provide the non-technical reader with a better understanding of how water is made safe to drink.

This explanation of how risks are reduced should also help to show why it is impossible to draw a clear line between safe and unsafe. To return to the traffic-light analogy, driving through a yellow light is not as safe as driving through a green, but it is much safer than running a red. The yellow represents a transition from a low-risk situation to one that is clearly unsafe. Keeping drinking water always in the “green” requires that decisions about water safety be made cautiously.

A comprehensive approach

The Walkerton Inquiry Part 2 Report explains that the risks of unsafe drinking water can be reduced to a negligible level by:

- putting in place multiple barriers aimed at preventing contaminants from reaching consumers;
- adopting a cautious approach to making decisions that affect drinking water safety;
- ensuring that water providers apply sound quality management and operating systems; and
- providing effective provincial government regulation and oversight.

A key reason for adopting this comprehensive approach is that relying solely or mainly on water-quality monitoring (also called compliance monitoring) has proven ineffective in preventing waterborne disease outbreaks.⁶

⁴ Walkerton Inquiry Part 2 Report, p. 5.

⁵ WHO. 2004. Guidelines for Drinking Water Quality (3rd Edition). World Health Organization, Geneva. Website accessed September 17, 2006. www.who.int/water_sanitation_health/dwq/guidelines/en/index.html

⁶ Hruday, S.E. and E.J. Hruday, 2004. *Safe Drinking Water – Lessons from Recent Outbreaks in Affluent Nations*. IWA Publishing, London. 514 pp.

The multiple-barrier approach described in the first bullet above has come to be termed “source-to-tap” protection. The main Canadian reference on the subject outlines source-to-tap protection as consisting of:

- source water protection;
- effective drinking water treatment; and
- secure distribution of treated water to consumers.⁷

These steps rely on effective monitoring of drinking water quality, as well as enlightened management of the various systems involved in producing, protecting and delivering drinking water.

All of this must, of course, take place against a background of good governance, suitable legislation and policies, clear guidelines, standards and objectives, effective research and technology development, and meaningful public involvement and awareness. Together, all of these elements create the comprehensive framework that the Walkerton report recommended.

The panel was established because of criticism from the Office of the Auditor General that at least one element of the comprehensive framework – suitable legislation governing water quality on reserves – is lacking. Before turning to legislative issues, however, it is helpful to look at the other elements of a comprehensive framework because these must be in place and working properly before legislation to ensure drinking water quality can be effective.

Source water protection

Source water protection involves managing the release of contaminants from human activities into water sources (rivers, lakes and groundwater). Effective source water protection must deal with a range of threats to water, including sewage, industrial effluents, farming, forestry and urban development.

Regulations require wastewater from municipal sewage and industrial facilities to be treated to reduce contaminants to levels low enough to prevent harm to aquatic ecosystems. Other activities, such as fertilizing fields, raising cattle and cutting lumber, and even the run-off from roads and built-up areas, create “non-point” sources of contamination. Controlling these calls for rigorous land use planning and activity controls.

⁷ CCME. 2004. *From Source to Tap: Guidance on the Multi-Barrier Approach to Safe Drinking Water*. Canadian Council of Ministers of the Environment. Winnipeg. Figure 2.1, p. 16. Website accessed September 17, 2006. www.ccme.ca/assets/pdf/mba_guidance_doc_e.pdf

The diffuse nature of contamination arising from non-point sources, combined with the number of parties and jurisdictions that are typically involved, make source water protection particularly challenging, and best undertaken on a watershed basis. Source water protection is at various stages of evolution across Canada.

Treatment of drinking water and wastewater

The treatment of drinking water has been the linchpin of safe water for communities for more than a century. The quotation that opens this report came from the late Chief John Snow of the Stoney Nakoda Nation: coincidentally, it was another John Snow, an English physician, who first recognized more than 150 years ago the need to kill dangerous disease-causing bacteria and other pathogens before water was consumed.

Now, as then, the most serious threat to public health arises from contact between human or animal wastes and drinking water, which can result in serious, even fatal, illness. This was the case, for example, in the outbreaks in Walkerton, where the contamination came from cattle manure, and North Battleford, where the source was human sewage. Worldwide, diarrheal diseases caused by unsafe water supply, sanitation and hygiene are estimated to cause more than 1.8 million deaths a year, mainly among children in the developing world where drinking water is routinely contaminated by wastes and not treated to any degree.⁸ Such deplorable outcomes continue to define the meaning of unsafe water.

Treatment protocols recognize the serious nature of this threat. The Guidelines for Canadian Drinking Water Quality note: “In general, the highest priority guidelines are those dealing with microbiological contaminants, such as bacteria, protozoa and viruses.”⁹ A main focus of drinking water treatment is to remove microbial pathogens by filtration and to inactivate them by disinfection. Conventional water treatment uses chemicals to clump together particles in the water (flocculation) and sand to remove them (filtration). Newer technologies use membranes for filtration, but these technologies are not suitable for every water source. The effectiveness of filtration is reflected in the turbidity of drinking water. Turbidity is a sensitive measure of small particles that, in high concentration, make water cloudy.

Chlorine, either in the form of gas or in solution, is the most commonly used disinfectant. Ultraviolet light and ozone are gaining acceptance as supplements to chlorine. As treated water leaves the plant, it should contain a small amount of chlorine, which is called the “chlorine residual” and is a vital marker to show that enough chlorine was dosed to achieve adequate disinfection.

⁸ WHO. 2006. Water, sanitation and hygiene links to health - Facts and figures updated November 2004. World Health Organization, Geneva. Website accessed September 17, 2006. www.who.int/water_sanitation_health/publications/facts2004/en/index.html

⁹ Health Canada. 2006. Guidelines for Canadian Drinking Water Quality.

Drinking water may also carry risks from chemicals that either occur naturally or result from industrial and agricultural activity. A few have been proven to cause human illness through the consumption of drinking water heavily contaminated with them. Arsenic can occur naturally in groundwater and, in drinking water, is recognized to cause various forms of cancer. Lead, used in the past in plumbing and other materials, can be particularly dangerous to children. Nitrites and nitrates, usually resulting from fertilizer use, can cause an acute and potentially fatal condition in babies. Naturally occurring selenium or fluoride, both of which are beneficial at low exposures, can cause health problems if present in drinking water at excessive levels.

We note that each of these contaminants is highly localized, unlike the pathogens from human or animal wastes. Decisions about whether to treat water to remove chemical contaminants or routinely monitor for them in treated water must therefore be based on an assessment of whether any of them are found in source water, and at what levels.

Because the greatest threat to drinking water safety arises from contact with wastewater, most communities also have sewage collection and treatment systems. These vary a great deal in complexity, depending on the size of the community and where the treated sewage will end up. They commonly mimic the natural processes that water bodies and soil systems use to cope with limited quantities of human and animal wastes. Natural processes were sufficient to cleanse natural waters when human populations were nomadic and their settlements small in relation to the natural water that their activities and wastes affected.

Secure distribution

Once treated, water must be kept safe from contamination as it is delivered to users. In most communities, delivery relies on a distribution system of buried pipe through which water is pumped under pressure. Keeping the chlorine residual at a measurable level throughout the distribution system is a good indicator that the water has been protected from bacterial contamination.

There are several sources of possible contamination in a piped distribution system. Sewage from leaking wastewater lines can make its way into joins in drinking water mains when water-line pressure fluctuates. Water contaminated by individual consumers can be siphoned into the distribution system if backflow prevention valves are missing or not working. In the absence of proper cleaning and disinfection, pipe and meter repairs can lead to contamination. Water towers or standpipes used to maintain system capacity and pressure can become contaminated by birds or small animals. In the past, even the pipe and plumbing materials could be a source of contamination – for example, from the use of lead for piping or in solder.

When looking at First Nations water systems, it is important to consider other means of distribution than high-pressure piping. Many First Nations communities rely on low-

pressure systems or truck delivery to on-site storage tanks (cisterns). In trucked distribution there is the potential for contamination at the loading, transport and unloading steps. As well, cisterns themselves must be made of and coated with safe materials, and need regular cleaning and other precautions to ensure that they do not become contaminated.

Monitoring

Sampling and testing drinking water for contaminants is an important part of the multiple-barrier approach. But routine monitoring of treated water against contaminant standards does not, by itself, guarantee safety.

Any monitoring program must consider a number of issues:

- how often to take samples, if monitoring is not continuous, because contamination can be intermittent;
- the location where the sample is taken, because contamination can occur at any number of points in the system, possibly beyond a sampling point;
- timeliness, because results may not be known until after the water has been consumed; and
- which contaminants pose a significant risk, because trying to monitor for everything is futile.

To be as effective as possible, monitoring must be strategic: the monitoring program should include regular assessment of the risks that might arise from various sources of contamination. It may not be necessary to monitor for some contaminants because they simply do not occur in the community's source water. In addition to monitoring treated water quality, there should be monitoring of:

- raw water quality, to understand the seasonality and frequency of contamination episodes and to help develop a monitoring program based on known threats to drinking water;
- the performance of the treatment process, with such measures as chlorine residual and turbidity, preferably by using continuous monitors with alarms and automatic shut-offs;
- distributed water quality, using a consistent sampling program in the distribution system; and
- any reports of adverse water quality from consumers.

Finally, making the results of monitoring public can play an important role in assuring consumers that their drinking water is safe.

Training and certification

Ensuring that drinking water is safe around the clock, day in and day out, is challenging because there are so many ways that water can become unsafe. This makes the training and dedication of operators critical.

Gary Draschenberg, Associated Engineering, Calgary

...you can have a great plant, a Cadillac, and a not-so-good operator, and you can have a terrible plant and a great operator. I'll take the latter anytime because they have a passion....

Training methodologies for water and wastewater operators vary across Canada, but the goal is generally to certify the level of training that an operator has achieved. Although a plant operator may be trained but not certified, certification is increasingly a requirement. Certification is based on standard examinations. Normally, at least one

operator in each system must hold a certificate of the same class or higher than the class of that system.

These requirements are a challenge, especially for operators in small systems. To use Ontario's requirements as an example, the operator must progress through a step-by-step certification process, beginning with Operator in Training (OIT). The minimum qualifications for an OIT are Grade 12 (or its equivalent, as achieved by passing courses approved by the provincial training authority). The next step is Class 1 certification, needed for the most basic system technology. The highest level of certification is Class 4.

Each level of certification requires the operator to pass an exam and put in a specified number of training hours each year. As the certification level of the operator progresses, more hours of annual training are required. The annual hours of training consist of both continuing education (courses and workshops) and on-the-job training meeting specific criteria. Courses typically cover the basics of water treatment, chemistry and microbiology, hydraulics, electricity and safety. An overriding consideration stressed by the Walkerton Inquiry is the need to ensure that operators fully understand the public health implications of performing their work responsibly.

Finding people in small and remote communities who meet the requirements to enter the training regime can be challenging. Equally challenging is the risk that, once trained, that person will move on to opportunities elsewhere. Keeping staff is particularly difficult where funding for operations and maintenance is inadequate, and where the Chief and Council do not or cannot compensate operators adequately for the responsibility they are being asked to discharge.

The cost of training is an issue that becomes amplified when staff turn over frequently. Sending an operator from a remote community to attend a course at a provincial training centre can cost several thousand dollars. With limited training funds, careful thought must be given to the type and location of the training taken. Private firms can provide both on-the-job and more formal training, but the costs amount to between \$30,000 and \$40,000 a

year. INAC funds the circuit rider training programs for First Nations, but in most cases the level of support is not adequate to provide as much help as operators would like.

Operations, management and governance

The critical role of operators also calls for an operating, management and governance framework that supports them. As Justice O'Connor noted: "Ultimately, the safety of drinking water is protected by effective management systems and operating practices run by skilled and well-trained staff."¹⁰ To return to the driving analogy, sound quality management and operating systems are like defensive driver training. They help operators identify threats and act on them to prevent accidents, rather than merely reacting when dangerous circumstances arise.

Operators must be compensated for the level of responsibility they carry; the health of the community is in their hands. System operators and managers also need the support of those who govern their systems. In the First Nations context, this is generally the Chief and Council. These officials must be aware of their obligations and of the consequences of failing to provide safe drinking water.

One important role of governance is to ensure adequate funds are spent on repairs and maintenance. This is a challenge in almost every community, although the Walkerton tragedy has helped to improve the focus of elected officials in this area. In First Nations, however, those decisions are complicated by both institutional arrangements and lack of economic capacity, as we discuss in more detail later.

Finally, informed and concerned consumers are another important element in ensuring that safe drinking water remains a priority of local government.

Making cautious decisions

Disease-causing microbes (bacteria, viruses and protozoa) are the most common threat to any drinking water supply and the most likely source is human or animal waste. Because it would be impossible to monitor for every microbe, one focus of monitoring is for the presence of a bacterium called *E. coli*. It is found in huge numbers in the waste of all warm-blooded animals, including humans, so its presence in water serves as an effective marker for contact with these contaminants.

E. coli itself is not normally a cause of disease, and in fact humans rely on it to digest food. A specific mutant strain, however, *E. coli* O157:H7,¹¹ was responsible for the deaths in

¹⁰ O'Connor, D.R. 2002. Part 2 Report of the Walkerton Inquiry: A Strategy for Safe Drinking Water. Ontario Ministry of the Attorney General. p. 335. Website accessed September 17, 2006. www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part2/

¹¹ CDC. 2006. Frequently asked questions. *Escherichia coli* O157:H7. Website accessed September 17, 2006. www.cdc.gov/NCIDOD/DBMD/diseaseinfo/escherichiacoli_g.htm#What%20is%20Escherichia%20coli%20O157:H7

Walkerton. The real importance of monitoring for commonplace *E. coli* in treated water is that where it is found, disinfection is not working adequately and disease-causing microbes from wastes may also have survived the treatment process. Because of this role as a marker of treatment effectiveness, there is a zero tolerance for *E. coli* in treated water.

Limits for other substances in drinking water are also set on a precautionary basis, even though the evidence that they cause disease may be much less clear than the known dangers of pathogens in human or animal waste. For chemical substances, the guidelines are based on the substance's effect on laboratory animals and the possibility that it might be present in a community's source water. As noted, deciding which contaminants to monitor and how often is part of a strategic monitoring program.

Dangerous amounts of chemicals can get into drinking water accidentally, through cross-contamination or errors in the treatment process. Such incidents have happened, although they are rare. Routine monitoring of treated water will not generally pick these up: the best defence is effective management of the water plant and distribution system.

Concerns about the by-products of conventional water treatment provide an interesting example of how precaution and judgment are applied in the setting of drinking water quality standards. Chemical disinfectants such as chlorine, chloramines, chlorine dioxide and ozone are powerful chemicals. When they come into contact with natural organic matter often found in water, the chemical reactivity that allows them to kill disease-causing microbes creates what are called disinfection by-products.

Trihalomethanes (THMs) were the first disinfection by-products to be recognized, in 1974. Since then, there has been evidence in laboratory animals that some disinfection by-products could be harmful in high concentrations, as well as some indication that people exposed to high levels of THMs over some time may be more likely to develop certain diseases (although it may be other by-products, not THMs, that are the cause).

At the same time, drinking water regulators in Canada universally agree that adequate disinfection must not be compromised by an effort to avoid the possible, but unproven, health risk from by-products. In the absence of conclusive evidence about the risks of THMs, and given the very clear and proven risks of not disinfecting water, regulators have responded with appropriate caution. Assuming there is any risk from THMs and other by-products at all, the guidelines are set to keep the THM-related risk very low, while research into their possible human health significance continues.

Another area that calls for caution in decision-making is the look, smell and taste of drinking water. Treated drinking water might be coloured, or have an unpleasant smell or taste, for reasons that don't present health risks. If this water "does not represent any significant risk to health over a lifetime of consumption..." it would therefore qualify as safe using the definition of the World Health Organization.

If, however, we consider our own working concept – that a reasonable and informed person would feel safe drinking the water – then look, taste and smell are clearly important. A reasonable person might well decide not to drink water on those grounds. In fact, a very large industry sells bottled water and in-house treatment systems to millions of people in North America who are uncertain about the safety of the water from their taps, or who just find bottled water more palatable. Presumably these people are reasonable, although whether they are well informed is another question.

In remote communities, however, the consequences of tap water that tastes, smells or looks bad can be more serious. Few residents are able to buy in-house filtration and treatment systems. Many are already disinclined to drink treated water, especially if it tastes strongly of chlorine. The result may well be that people simply by-pass the “safe” water in the tap and instead use the water from nearby lakes or streams. Although it may look and taste better, this source carries the known microbial risks of untreated water. This means that investing in treatment that improves the look, taste and smell of finished water – and thus increases its acceptance – is also an important measure to safeguard public health.

Research and technology

There have been substantial improvements in technology in recent years that are valuable for small systems, including important advances in membrane filtration and ultraviolet disinfection that were pioneered by Canadian firms. The Canadian Water Network, a federally funded Network of Centres of Excellence, has adopted small systems and protecting public health as top priority research themes. These themes are well positioned to enhance the emerging capacity in First Nations organizations.

The policy and regulatory framework

In Canada, the regulation of most water and wastewater operations and systems is the responsibility of provincial and territorial governments. In particular, provincial regulation applies to municipalities, which own almost all public water and wastewater systems, as well as to most small private and communal systems. They also provide for enforcement when standards are not met.

Volume II of this report provides a detailed comparison of the water regimes of Canadian jurisdictions, which Appendix C to this volume summarizes. These materials illustrate that there is considerable variation in the details of what is regulated and to what standard. Generally, regulation has become more stringent in the wake of the Walkerton tragedy.

An important element of the multiple-barrier approach – source water protection, tends not to be as rigorously legislated as operational elements such as plant design, operator certification or monitoring. Many provinces and territories are only in the early stages of

developing a regulatory approach. Ontario is possibly the furthest along: its *Clean Water Act*, tabled in 2005, received royal assent on October 18, 2006.

Unregulated systems

A number of water and wastewater systems do not fall under provincial or territorial jurisdiction. While the driller of a well on private land must be licensed in most jurisdictions, the well is generally not regulated after commissioning. Similarly, small septic systems are generally regulated locally and only at the building stage. The rationale for not regulating these systems to the same standard as larger public systems is that they are located on private land and are the landowner's responsibility. We return to this point in the context of First Nations reserves, where ownership and responsibilities are not as clear-cut.

The most important area not falling under provincial jurisdiction is, in the context of this report, installations for which the federal government has direct legal authority. These include national parks; military bases; prisons; federally-regulated entities such as airlines, banks and trains; facilities falling under Part IV of the Labour Code; and, of course, water and wastewater systems on First Nations reserves.

At present, no federal regulatory framework applies to any of these facilities. However, only on reserves does the federal government have an imperative dictated by the Supreme Court of Canada and by Section 35 of the *Constitution Act, 1982*.

This regulatory gap was noted by the Walkerton Report, although the main objects of its criticism were inadequate infrastructure and unmet training needs of operators.

The 2005 annual report of the Commissioner of the Environment and Sustainable Development in the Office of the Auditor General (to which the chair of this panel acted as an advisor) raised concerns as to how effectively funds allocated to improving water quality had been spent:

“Despite the hundreds of millions in federal funds invested, a significant proportion of drinking water systems in First Nations communities continue to deliver drinking water whose quality or safety is at risk. Although access to drinking water has improved, the design, construction, operation, and maintenance of many water systems is still deficient. Moreover, to a significant extent, the success of the First Nations Water Management Strategy depends on INAC and Health Canada addressing ... management weaknesses....”

The weaknesses related to regional variations in practices, failure to ensure systems were built to appropriate standards, and inadequate support and capacity-building.¹² As well as

¹² Office of the Auditor General. 2005. Report of the Commissioner of the Environment and Sustainable Development. Ottawa. Website accessed September 17, 2006. <http://www.oag-bvg.gc.ca/domino/reports.nsf/html/c20050905ce.html>

making several recommendations to address these issues, the report called for a regulatory framework for First Nations water systems.

Closing thoughts on assuring safe water

It is no coincidence that the report of the Walkerton Inquiry (to which two members of this panel acted as advisors) put regulation at the end of the list of elements needed for a comprehensive framework. Regulation alone will not be effective in ensuring safe drinking water unless the other requirements – a multiple-barrier approach, cautious decision-making and effective management systems – are met.

These other requirements depend on adequate investment in both human resources and physical assets. Regulation without the investment needed to build capacity may even put drinking water safety at risk by diverting badly needed resources into regulatory frameworks and compliance costs.

The critical relationships among regulation, resources and the goal of safe drinking water underpin the remainder of this report.

II. CHALLENGES AND COMPLEXITIES

Our mandate stressed the need to take into consideration the size and location of First Nations water and wastewater systems as we assessed regulatory options. This is a very important point because these factors create major challenges in running water systems safely and efficiently.

Not all of the challenges for First Nations water and wastewater systems arise from community size and location, however. The operating and governance context surrounding all First Nations activities is highly complex, as is the legal environment.

Taken together, the challenges and complexities have unquestionably contributed to the current situation, in which too many reserve communities are considered at risk because of water problems, and many have had boil-water advisories for months or even years.

Most systems are small and many are remote

Jeff Craddock, Technical Services
Advisory Group

...look after the water plant, move down, look after the wastewater plant, jump on the water truck delivery, check cisterns, go out to the lagoon, catch a dog and fix two furnaces by the end of the day. ... that's what a lot of the First Nation [operators] are expected to do.

Most First Nations water systems are in small communities, and small size alone is a known risk for water systems.

In addition, a large number of communities are in remote locations. Roughly one in seven can be reached only by water or by a combination of air in summer and snow roads in winter. The total population of these “special access communities” is more than 65,000 people.

For these reasons, most First Nations water systems share the problems facing all small, remote systems:

- capital and operating costs for each connection are high;
- it is hard to find, train and keep qualified operators;
- exploiting the economies of scale that can save money and reduce risks by consolidating systems is usually impossible where capital is concerned, and very difficult where human and other resources are concerned, because of travel distances;
- getting emergency help and supplies during crises is difficult, slow and costly;
- many community members resist the idea of treatment, because they do not like the taste of chlorinated water and have drunk untreated water in the past without apparent harm; and
- capacity to manage and govern the system is often a concern.

In addition, many small communities have source water that is scarce, hard to treat, or both.

It should be stressed that the problems listed above are common to virtually all small and remote systems, not just those on reserves. In addition to these problems, however, systems on reserves face additional, significant challenges.

Many players are involved

At present, within the federal government sphere, four departments are directly involved in First Nations water and wastewater matters:

- INAC funds the capital costs of plants and piped systems, and a portion of their operating and maintenance (O&M) costs, enforces certain standards through funding agreements and will soon resume its earlier role of providing engineering advice and approvals;
- Public Works and Government Services Canada assists with procurement and, for now, provides engineering advice and approvals;
- Health Canada ensures the delivery of drinking water monitoring programs on reserves located south of the 60th parallel, either directly or in an oversight role; and
- Environment Canada is involved in source water protection through its powers to regulate wastewater discharge into federal waters or into water generally where water quality has become a matter of national concern, and to enforce effluent discharge standards into water throughout Canada.

Within the First Nations sphere, several authorities are also involved in providing water and wastewater services:

- Chief and Council generally govern the management and running of systems, and have the power to enact resolutions to protect water;
- technical service advisory groups may be responsible for training operators and preparing them for certification exams, as well as providing one-on-one help and advice on site; and
- regional councils (such as tribal councils), or separate environmental health organizations may be involved in water monitoring programs and in public health matters generally.

With the exception of the first item – the role of Chief and Council – these roles vary from region to region. Examples include the joint operation by a group of tribal councils of a health authority that deals with water monitoring; or giving the responsibility for training to a tribal council.

Simon Osmond, Atlantic Policy Congress

Various federal agencies are not clear on their own responsibilities now. Uncertainty means that enforcement actions tend to be directed at both First Nations and INAC. The finger-pointing that accompanies these situations is not helpful in resolving urgent issues. As a matter of public safety, this ambiguity of roles and responsibilities is unacceptable and it needs to be addressed as part of a regulatory change.

One critical element of managing drinking water risk – the legal authority to issue boil-water advisories or orders, and to close plants in emergencies – does not appear as a responsibility of any of the First Nations or federal bodies listed above. In practice, various parties are involved, but there is neither a clear chain of responsibility nor specific legal authority for these decisions.

Other governments are also involved in First Nations water and wastewater issues, but again without consistency across the country.

The most notable difference, in northern Canada, is that territorial governments have jurisdiction over almost every aspect of First Nations water and wastewater systems within their boundaries, except where this has been superseded by a land claims agreement. Provincial governments, in contrast, generally have no regulatory role on reserves, but this is subject to a number of exceptions and caveats:

- In some provinces, the authority of a provincial medical officer of health to declare boil-water advisories or orders may be accepted *de facto* on reserves.
- Several provincial authorities consider that they have the power to enforce water-related and environmental regulations against private businesses on reserves, but do so only at the invitation of the community, or with the agreement of the business owner, or when the activity has impacts off-reserve – or not at all.
- Alberta has recently asserted jurisdiction over water takings on reserve, but this is strongly disputed.
- In the extreme case of the First Nation community of Kashechewan, in northern Ontario, the provincial government undertook an evacuation for water-related reasons, in part because of confusion over the roles of various other parties in an emergency. The federal government subsequently paid the costs, under a long-standing agreement with the province regarding emergency evacuations.

There may also be involvement at the municipal level. Representatives of First Nations may sit on a regional body including local municipalities that deals with watershed protection. In many places, First Nations communities supply water to local municipalities from their plants, or get their water from a local municipality.

The involvement of so many different players and the lack of clear authority in many areas inevitably lead to a complex policy and governance environment for First Nations. It is quite possible to imagine that differing authorities are likely to have different, even diverging, interests.

Comparability is not supported by funding

We have made the case that adequate resources – for plants and piping, training and monitoring, and operations and maintenance – are more critical to ensuring safe drinking water than is regulation alone.

For this reason, it is important to look at both the intention and the record of funding policy for water and wastewater systems.

Federal policy for the general standard of living on reserves was laid down in 1977, in a memorandum to Cabinet that proposed an expanded infrastructure program for reserves. At the core of its strategy was the intent “to provide Indian homes and communities with the physical infrastructure that meets commonly accepted health and safety standards, is similar to that available in neighbouring, non-Indian communities or comparable locations, and is operated and maintained according to sound management practices.” Subsequent Cabinet decisions, and the actions of ministers and public servants, have been shaped by acceptance of this strategy.

In the area of water and wastewater, we see three problems relating to the stated objective of the comparability strategy.

First, the federal government has never provided enough funding to First Nations to ensure that the quantity and quality of their water systems was comparable to that of off-reserve communities.

For example, in the five-year capital plan covering 2002-07, INAC officials acknowledge that the federal government’s initial estimates of the capital needed to invest in First Nations water and wastewater systems turned out to be one-third to one-half of what was actually needed. The estimates were not based on detailed engineering analysis. As well, they did not take into account increases in construction costs that were higher than expected and the impact of increasing water-quality standards over the five-year period.

The result, going into the next planning cycle, is a known gap between what was spent and what was needed. The gap may widen over the next five-year plan, unless the federal government significantly strengthens its funding commitment. While the estimates are only being developed now, several risks and cost pressures are already known:

- INAC’s \$150-200 million estimate of the cost of bringing sewage treatment for reserves up to the level of federal guidelines set in 1976 seems unrealistically low;
- the estimate does not reflect the added costs of higher effluent standards that will likely follow from the work of a current federal-provincial-territorial committee on wastewater treatment;

- while there is an estimate of \$16 million, suggested by Health Canada, to meet more stringent standards on arsenic in drinking water, this amount may be unrealistically low; and
- no estimates were provided for the upgrade costs that will be triggered by several other new standards in the works.

Second, it is difficult to find nearby non-First Nations communities that are comparable to some of the smallest and most remote reserves. The costs of providing service in these communities that is comparable to that available in off-reserve communities will almost certainly be very high. The federal government must accept that “comparable,” in this case, should be understood as comparable in quality, not in cost.

Third, there is evidence that the resources provided in the past were not put to the most effective use. We discuss this further in the next chapter.

In summary, the federal government has not yet met the intent of the comparability policy.

Devolution demands resources

A general policy direction of the past several years that also has an impact on water and wastewater systems is the recognition of the ability of First Nations to govern themselves. As a result, many responsibilities have been devolved to First Nations and their organizations. An example in the water sector is water quality monitoring. This was previously the sole responsibility of Health Canada; it is now shared in most regions, with First Nations having the main responsibility in some.

The final step in this policy direction is, of course, self-government. Seventeen self-government agreements are already in place and more are being negotiated. We observe that self-government legislation generally does not enable self-governing First Nations to operate a modern water and wastewater management regime. The several acts are inconsistent with one another and with the regimes of the provinces in which the First Nations are located.

While the First Nations participants we heard from uniformly favoured the concept of greater autonomy, they were also concerned about the resources available to carry out devolved programs.

The gaps and uncertainties that characterize the current situation underline the importance of understanding the bigger picture – the historic legal and legislative context – before undertaking any effort to improve the safety of drinking water on reserves.

Law and history

The collision of cultures and legal traditions over the years since European settlement began has left a vast and sombre story that cannot be adequately summarized here. Its conclusion, for the purposes of this report, is the need for policy and legislation to take account of the constitutionally protected rights of First Nations.

The Royal Proclamation of 1763 commanded the administrators of Britain's North American colonies to "treat with" the Indians before opening the land to European settlement. From this beginning, in Canada, came the nineteenth-century treaties, the recognition of aboriginal rights, the modern treaties in Quebec and the territories, and the current treaty process in British Columbia. Both the Proclamation and the subsequent treaties are constitutionally protected documents. Only in New France, do legal scholars assert, were aboriginal rights extinguished utterly – by the King of France, before 1759.

Section 91(24) of the *Constitution Act, 1867* granted the Canadian federal government exclusive power to legislate in relation to "Indians and lands reserved for the Indians." The key statute under this power for most of post-Confederation history has been the *Indian Act*, a sweeping and infrequently amended law that leaves the federal government inextricably involved in many aspects of First Nations life – not as a distant policy-maker and law-enforcer, but as an intimate partner and fiduciary.

All of this history means that the experiences of other countries are of limited value, since their legal and constitutional basis for action is completely different. In the United States, as an example, the Royal Proclamation was in force only for a few years before the Revolution. The Supreme Court of the infant republic, in a judgment in 1832, defined U.S. tribes as "dependent, domestic nations," with a degree of surviving autonomy that was wholly subject to the will of the Congress. In practical terms today, this means that the U.S. Environmental Protection Agency has by far the largest role in water management on reservations. Only in the exceptional case of the Navajos, with 200,000 people on a reservation of 27,000 square miles – larger than ten of the states – has the U.S. EPA authorized a tribe to implement water management, within federally set standards.

In law, at least, Canada grants far more jurisdiction to its First Nations. This provides a useful basis on which to start to consider a regulatory regime. Before proceeding any further in that direction, however, it is helpful to have a better sense of the First Nations perspective on "jurisdiction."

Among the Cree, for example, being given or giving up "jurisdiction" or "ownership" through treaties may well have been inconceivable, because both of these were alien concepts imported through European law. Many believed that the treaties were a way of sharing the lands and the waters. Even today, when Cree elders speak of how traditional territories were regarded, it was never in the sense of exclusive ownership or power to act. Where there were overlaps, rights and responsibilities were shared. This led naturally to a

strong, continuing belief that all parties must work together and in consultation with one another where stewardship of lands and waters is concerned.

Canadian law and policy have been moving more toward embracing these concepts in the name of respect, reconciliation and fairness all around. Legislation affecting First Nations' rights, federal responsibilities and "the honour of the Crown" must now be undertaken carefully and in respectful consultation with the affected parties. The specific measures depend on the degree to which the contemplated laws may impinge on often ill-defined treaty and aboriginal rights.

In the present context, a policy framework for water management on reserve touches on a number of collective rights of basic importance, notably the right to self-government and the relation to on-reserve lands and waters.

III. WHAT WE HEARD

Although the period of time available to engage First Nations and others on regulatory options was short, we found the responses and input invaluable. Appendix D provides the dates and locations of the nine public hearings held across Canada.

Some of the issues that were raised touch on matters that might be regarded as outside our mandate, if it is narrowly defined as assessing options for regulating water quality on reserves. We feel, nonetheless, that they need to be mentioned because of the consistency with which they were raised across the country.

Finally, we discovered a great diversity of opinion on the subject of regulation – sometimes even within the same First Nation organization – through the hearings. We caution that the points that follow should be regarded as broad generalizations, even if they do fairly represent what we heard.

The obstacle is seen as inadequate resources, not lack of regulation

Michael Cox, Director of Lands, Environment and Natural Resources, Confederacy of Mainland Mi'kmaq

I think that [having to meet standards] in principle is great. ... But if I don't have the infrastructure or the capacity to be able to deliver that, and the result is I'm going to get charged or the operator is going to get charged or the community is going to get charged, then that's a problem.

Chief Judith Sayers, Nuu-chah-nulth tribal council

... the cost of maintaining the water system is not consistent with the money we get from Indian and Northern Affairs Canada...we pull money from other programs to be able to treat [the] water every year. ...

Jay Benedict, Akwesasne

...what we've been doing is ...robbing Peter to pay Paul. And you know, Peter's pissed off.

The most insistent theme we heard from First Nations was that the core problem was inadequacy of resources: mainly in terms of funding to run water and sewage systems, and in many places in terms of long waiting lists for capital funding. To a lesser degree, a shortage of trained people to run systems was a concern, as was the need for better understanding of water system governance at the Chief and Council level.

At the heart of this problem, of course, is the economic capacity of First Nations communities in general. While low or uncertain incomes are a characteristic of many small and remote communities in Canada, the situation is much worse, on average, among First Nations. In the longer term, greater economic capacity was seen as the best way of giving local communities the power to determine, themselves, how to organize and run their water and wastewater systems. In the places where this has already happened, the results, in terms of local capacity,

sense of ownership and empowerment, are impressive. In the near term, however, the economic reality for most First Nations is that the current reliance on INAC must continue.

Sun Rivers is a unique golf community located in the interior of British Columbia. For one thing, it is Canada's first completely geo-thermally heated community. For another, it also has a dual water supply with completely separate feeds for drinking water and water used for firefighting and irrigation. And a third factor is its location, on leased reserve land.

The Kamloops Indian Band supplies both water feeds to Sun Rivers, with the drinking water provided by a Class 4 water treatment system opened in 1999 that also supplies the band community on the reserve.

The source water, taken from the South Thompson River, can present huge challenges in terms of sudden spikes in turbidity. But these have not presented serious problems with the new plant, says the band's public works director David Kneeshaw, in large part because of the vigilance of the operators.

"I couldn't ask for a better group of operators," Kneeshaw told the panel at its hearing in Vancouver. All three operators are band members and have achieved certification. "They take great pride in their work, and keep the plant tip-top and clean all the time."

The system's current peak loads run about eight million litres a day in the summer. It is capable of producing about twice that, and was built to double that capacity to 32 million litres a day when required.

The plant and additional piping done at the same time cost more than \$9 million. Of the total, INAC contributed \$5.2 million, the Sun Rivers community \$1 million, and the band financed the rest as a commercial venture. The operating budget in 2005 was \$372,000. Revenues included \$135,000 from commercial water billings, and \$65,000 from the band's general revenue. The remainder was funded by INAC and other federal organizations.

Because of the commercial aspect of the operations, Kneeshaw would like to see the band's water and wastewater services bundled together in a utility corporation that was self-funded. This is a step towards ensuring strong corporate governance that most major Canadian cities have not yet taken.

In the meantime, the band is moving toward accepting provincial standards and enforcement for its wastewater system. Early adopters of the First Nations Land Management Act, the band is now working on drafting council resolutions that would allow this step, while the province looks into what would be involved from its end.

Under current policies, INAC funds 100% of the capital costs of water and wastewater projects, with the allocation process varying from region to region. In the case of water projects, public health risk is a key factor in making allocation decisions.

Once a system is running, INAC funds 80% of an amount that it determines to be the operating and maintenance (O&M) costs, with the community responsible for the remaining 20%. This is in line with INAC policy that it pays a percentage of the O&M costs of some assets, up to 100% in the case of schools.

While the O&M funding is generally based on a formula as opposed to actual costs, there is considerable variation across the country in how the base O&M amount for water and wastewater systems is calculated and even what percentage INAC provides.

The previous chapter set out an overview of the capital shortfall. For communities, the impact is felt through rationing of capital funds and long development times for new projects or needed enhancements.

First Nations presenters also emphasized that for many communities, finding the funds to cover the portion of O&M not provided by INAC is a serious hardship. INAC, for its part, acknowledges that the funding formula may need updating. It has been topping up the O&M program through enhanced funding for operators (in large part to help communities meet a recent new INAC requirement that operators be certified).

In the face of these funding shortfalls, a regulatory system was seen as secondary by many officials, both elected and technical staff, in the First Nations. There was a concern that the added bureaucracy and compliance costs would come at the expense of urgently needed operations and maintenance, capital and training dollars. Regional officials from both INAC and Health Canada tended to share this concern.

Funding arrangements do not always support the lowest life-cycle costs

The water treatment plant that is the least expensive to build may be the most expensive to run, and vice versa, especially where the quality of the source water is poor. This puts a further strain on capital funding. An additional complication is that INAC pays all of the capital costs of systems, but only a portion of ongoing O&M costs. These factors open the door to the possibility of trading off lower initial costs for higher ongoing ones, which increases the cost of a system over its life cycle.

Whether a bias toward higher life-cycle costs has actually had an impact on funding decisions was hard to ascertain. We did hear these concerns from both First Nations and respected consultants in the water sector. On the other hand, we were impressed with the efforts of officials in some regions to maximize the value of scarce resources and get communities the plants they needed, even if this meant higher up-front costs. At the other extreme, part of the criticism coming from the Office of the Auditor General was that, on

occasion, plants were built to a higher standard than needed.

The extent to which all of these outcomes, good or bad, seemed to depend on individual efforts and regional variation, as opposed to a clear departmental policy of minimizing life-cycle costs, was troubling.

Processes do not always support efficient and effective solutions

Many First Nations and other presenters raised concerns about federal government policies and processes, as well as other factors, that appear to reduce the effectiveness of, and timely access to, already-scarce resources. These include procurement and other policies; varying approaches, attitudes and capacity across the country; and the “economic leakage” and bureaucracy that stand between departmental resources and the allocation that ultimately makes its way to a local community.

Lee Ahenakew, 4sight Consulting,
Toronto

First Nations in Canada need a funding mechanism which will enable them to access debt financing through a First Nations-owned utility company. This ownership structure is used elsewhere because governments simply cannot afford to pay 20 years of water and wastewater infrastructure all at one time, and we've seen that the Department of Indian Affairs can't pay for this either.

On the planning, budgeting and procurement front, there appear to be inconsistencies among regions and between the regions and headquarters that stand in the way of the most effective allocation of funds. As well, the need to ration capital and the perverse incentives built into the system tend to discourage parties from fully sharing information that might result in better solutions. There does not seem to be the capacity, in many instances, to get the greatest benefits possible from the procurement process, and work needs to be done to update tendering procedures. Institutional and economic

barriers too often stand in the way of solutions such as regional consolidation or shared management services.

The rate of population growth in many First Nations is much higher than in the rest of Canadian society. This, combined with INAC policies for sizing systems, has resulted in some systems being undersized as soon as they are commissioned. Such stressed systems are difficult to operate safely. From an economic perspective, an unexpected increase in population can render a plant obsolete, and in need of costly upgrading, before the end of its planned service life.

All of this speaks to the need to improve business processes and planning, and to develop a more objective and efficient process for allocating funds. The goal should be to ensure that the lowest life-cycle costs, not lowest initial cost, and value for money are the criteria for decisions.

Capacity is growing

There has been much progress toward achieving consistently safe drinking water in First Nations communities, in most places by building local and regional First Nations capacity. Any new regulatory system – indeed, any new water initiative – must recognize, support and promote this progress. The key is to capture the best and seek to make it universal: sharing information, experiences and success stories would go a long way toward overcoming the regional variations in capacity that we perceived. This has already started, for example, among the circuit-rider training groups, which recently held their first annual conference. Such gatherings and other ways of sharing knowledge should be encouraged and funded by the federal departments involved in the First Nations water sector.

Views on standards and regulatory frameworks differ

Every regulatory framework has two distinct aspects: setting standards and enforcing them. In Canada, the water supply and sewage treatment of almost every community is regulated by a provincial or territorial government. Each province and territory has been involved in setting the Guidelines for Canadian Drinking Water Quality, and most use these to determine what is acceptable drinking water quality. They also cover other aspects of water safety in their legislation, and carry out enforcement of the entire water-quality regime.

We heard a wide variety of views in our hearings about both the standards to be adopted for First Nations and the regulatory authority that would provide enforcement:

- In some parts of the country – notably British Columbia – some technical and even elected officials stated that participating in the provincial regime and accepting provincial enforcement would be both achievable and appropriate.
- Other participants in the engagement process accepted the concept of the provincial requirements but not provincial enforcement.
- Some thought, at least in principle, that the federal government should cede jurisdiction and ownership and leave matters up to individual First Nations.
- The remainder believed that only a national regime and national enforcement would be acceptable.

Among those who favoured a nationwide enforcement framework, some made it clear that only a First Nations regime would be acceptable to them.

Those who focused on the shortage of resources expressed concern that any regulatory regime would simply create an additional strain on an underfunded sector at this point.

Enforcement would need to apply to all participants in the sector

The First Nations water sector comprises not just the First Nations that govern, manage and operate water systems, but also INAC, which makes funding (and by extension, design) decisions, Health Canada and other federal authorities.

We heard many examples, backed by third-party validation, of facilities that could not meet regulatory standards because the design did not meet current needs. In these instances, asking the local community to bear the costs of regulatory failure would be unfair and would not achieve safe drinking water.

It was the view of many presenters that all parties, including the federal government – whose honour and fiduciary obligations were at stake – needed to be regulated with the same hand.

Solutions will need community-level acceptance

Any regulatory scheme that fails to win community acceptance will not be successful or sustainable, regardless of funding. Major routes to acceptance will be through clear respect for customary law; by involving those who will be affected by decisions in the decision-making process; and by crafting solutions that can bridge to self-government.

At a more local and operational level, it is critical to establish and maintain pride in safe drinking water throughout communities. Training for Chief and Council on water issues, and their roles and responsibilities, is just starting to be explored in some regions and needs to be broadened and made consistent. Other measures that build respect for operators as key links in the public health network, including adequate compensation, will also be useful.

Traditional attitudes toward water are holistic and spiritual

As we noted in the introduction, it is risky to treat First Nations as a homogeneous group. If there was one area, however, in which attitudes were widely shared, it was traditional beliefs and attitudes toward water. In addition to sustaining life itself, water was traditionally a means of transportation, or a source of food, or both, for every First Nation and remains central to the lives of many communities today.

The pervasiveness of this traditional view of the value of water and the related stewardship role for First Nations gave us a strong sense of how the goal of achieving safe drinking water on reserves should be pursued.

Wendy Whitecloud, University of Manitoba

...for us as Dakota ... water plays a critical role in that it is one of the primary components in any ceremony that takes place at home today. ... those ceremonies have been here since we've been here as a people in North America, which for us is time immemorial.

Chief Sydney Garrioch, MKO, Manitoba

...our strength and peace and well being have come from our faith in the creator, from the application of our customary law, from our sense of community and from our stewardship of the waters, lands and resources. ...guided by the collective knowledge of our ancestors. ...

The availability of clean, safe, adequate supplies of water has always been central to our survival as nations. Water was perhaps the key determining factor for each of the community sites as our ancestors who carefully choose and sought to protect through our customary law, through our traditional laws as well as through the sharing of our whole history and through the terms of treaty.

Andy Nicholas, Tobique First Nation, New Brunswick

...water is life, water is our liquid history....our relation to water is very sacred and very spiritual. ... My people, the Maliseet, call themselves Wolastoqiyik, the people of the beautiful river. Our sense of who we are is clearly tied to the ribbon of water which the Europeans called the Saint John River.

If we lose our rivers, we lose an important part of ourselves. Heal the rivers and we'll heal ourselves for many generations.

Chief Judith Sayers, Nuu-chah-nulth tribal council, Vancouver Island

... the water, the air, the land, everything is so interconnected that whatever we do to the water will affect the land, will affect the air. And in our traditional governance system our chiefs had the immense responsibility for taking care of everything, including the water, the land and the air.

... as First Nations we believe we have the inherent right of government and the ability to have jurisdiction over the waters in our territory. And of course we deal with the Indian Act on our reserves. And through [the province of] British Columbia, the water licensing system, public health and safety. We are hoping that through the treaty process we will be able to reconcile these three jurisdictions and that First Nations will have complete jurisdiction over our water systems. ...

We're also worried about the narrowness of looking specifically just at drinking water because ... we believe in the holistic approach of looking at the regulations of lands, of everything that happens that's going to affect the water.

IV. WHAT WOULD BE REGULATED, AND HOW

If there is to be regulation of water quality on reserves, then the comprehensive framework set out in the Walkerton Inquiry Reports provide a useful benchmark. A successful regime for reserves would require certain additional elements. On the other hand, some of the features in the Walkerton Inquiry Part 2 Report, notably the financial ones, cannot be implemented in the unique circumstances of First Nations reserves.

The first section below sets out the elements of a comprehensive water regulation framework of the type that should apply to First Nations. Not all of these elements need to be put in place simultaneously.

The discussion of the elements of a framework includes suggestions as to which jurisdictions might be looked to for examples of good practice. Volume II and Appendix C to this volume provide more detail about the water regimes of Canadian jurisdictions.

This chapter then examines special considerations relating to First Nations around four elements of a regulatory framework: individual systems (including wells and septic fields); water withdrawals and use; drinking water source protection; and occupational health and safety. It concludes by discussing how an effective regulatory regime for First Nations might be designed.

Elements of a regulatory regime

Roles and Responsibilities

Any well-designed regulatory regime sets out clearly and precisely the roles and responsibilities of all parties involved. For First Nations, coverage of roles and responsibilities would certainly extend to the relevant federal departments and First Nations governments. The role of medical officers of health, particularly in emergencies, would need to be clothed in legal raiment. (This might equally be achieved through a First Nations public health act of the type that the AFN has called for.) Any other parties involved, such as provincial governments or a new federal body with a regulatory role, would also need to be covered.

Coverage

A regulatory framework should apply to all four elements of water and wastewater systems: drinking water treatment and distribution, and sewage collection and treatment.

Non-piped water delivery systems

In non-urban, low-density areas, water is often distributed by tanker truck and stored in individual tanks or cisterns. Regulations governing some aspects of such systems have been developed in New Brunswick, Northwest Territories, Yukon, Quebec and Saskatchewan.

Wells for individual service

Most jurisdictions have some regulations governing wells for private water supply, but the emphasis of these requirements is on drilling and construction, and occasionally decommissioning, of a well. Regulation is provided in some detail in such jurisdictions as British Columbia, Manitoba, New Brunswick, Ontario, Prince Edward Island and Quebec. Regulations governing original well site selection on the basis of a risk assessment and safe operation of wells for individual water service are not evident. The siting, design and servicing of cisterns, septic tanks and percolation fields is inadequately covered; what guidance is provided is often in building codes.

Water withdrawal and use

Explicit regulation governing the rights for withdrawal and use of water from surface and groundwater sources is provided in a number of Canadian jurisdictions including Alberta, British Columbia, Manitoba, Newfoundland, New Brunswick and Ontario.

Operator certification

Operator requirements include certification of water and wastewater operators. Provincial certification requirements such as those of Alberta and Ontario are well established and can be supported by successful training initiatives such as the circuit-rider training programs. The certification processes adopted by Quebec for remote communities address some unique challenges for these situations.

Monitoring

Monitoring covers water quality and treatment performance, including source water, process performance, treated water and distribution system quality. It also covers quality standards: chemical, microbiological, physical and esthetic parameters.

Compliance monitoring (monitoring treated water against standards) is well established in most provincial regulatory regimes. Process performance monitoring is also required to varying degrees in provincial regulatory operating approvals. Requirements for more comprehensive and strategic monitoring are not currently well defined in regulatory programs, but international initiatives (for example, Australia's Cooperative Research Centre for Water Quality and Treatment¹⁵) are currently preparing guidance on this need.

On quality parameters, the Guidelines for Canadian Drinking Water Quality are endorsed by a federal-territorial-provincial committee representing all Canadian jurisdictions except First Nations. Individual jurisdictions differ in terms of how they make use of the numbers. There is not any evident need for differing numbers to be developed as long as the numbers are used as guidelines. If all these water quality numbers were adopted as enforceable

¹⁵ Further information available at <http://www.waterquality.crc.org.au/>. Website accessed September 27, 2006.

standards, there may be a need to consider variation to meet local needs for some values, such as total dissolved solids, that are more esthetic than health-based.

Enforcement

The most detailed inspection, investigation and prosecution program related to water facilities is now found in Ontario. Other provinces have specified varying degrees of detail regarding their powers of inspection. Careful consideration of the most effective ways of enforcing regulations on First Nations communities to emphasize prevention rather than penalty will need to be developed.

Appeals mechanism for regulatory decisions

Alberta, British Columbia and Ontario provide administrative tribunals that hear appeals of approvals, orders or administrative penalties. Appeals may be brought by the regulated community or others affected by the decisions of the environmental regulator. These tribunals, which are quasi-judicial bodies, provide a mechanism to assure some checks and balances with appropriate public involvement surrounding regulatory decision-making.

Reporting

Reporting of adverse results and operating performance is covered to varying degrees in provincial regulatory systems. Reporting water quality for consumers is a relatively new feature that is not well defined in current regulatory systems in Canada but is a key part of U.S. regulations and is supported by the principal professional organization in the water sector, the American Water Works Association.

Design approvals

Approval of the design of facilities is required under the regulatory systems for most jurisdictions in Canada, with many of the basic concepts derived from detailed approaches to regulating water treatment developed by the U.S. Environmental Protection Agency. Alberta has published detailed design standards as guidance for its approval process. New Zealand has pioneered an approach to defining facility needs, particularly for small systems, based on public health risk management plans. New drinking water legislation introduced in 2006 in New Zealand will require the use of these plans for all community facilities.¹⁴

Operating approvals for water and wastewater facilities

All provincial jurisdictions in Canada require some form of permit or operating approval to run community water and wastewater systems. The details of operating requirements vary from one jurisdiction to another and may also vary with facility size.

¹⁴ Drinking Water – New Zealand Ministry of Health website. Website accessed September 24, 2006. <http://www.moh.govt.nz/water>

Procurement, construction and commissioning

Explicit provisions governing procurement, construction and commissioning of water and wastewater facilities are not currently evident in the regulatory programs of Canadian jurisdictions but the importance of these issues, particularly for remote communities, may warrant developing some administrative guidance to accompany regulations.

Emergency planning and response

Most provincial jurisdictions make reference to contingency planning and requirements for back-up of critical systems (including power). Explicit requirements for developing an emergency response plan for water and wastewater facilities are specified in Alberta, British Columbia and Manitoba. It is in these most stressful of circumstances that clearly specifying the roles and responsibilities of various actors is most crucial, and a good regulatory scheme will spell these out in some detail.

Drinking water source protection

All jurisdictions have some regulatory tools for controlling water pollution, with some (for example, British Columbia) requiring water providers to assess risks to source water supply. Explicit regulatory measures for assuring source water protection on a watershed basis are not well established, however. British Columbia and Manitoba have regulatory authority to establish water protection areas, but the new *Clean Water Act* in Ontario is the only current Canadian model for a comprehensive watershed management system for source protection.

Third-party audits

An added level of assurance that both the water provider and the regulator are performing their responsibilities effectively can be achieved by requiring third-party audits. To be effective, performance standards defining best practices are needed to provide a benchmark for the audits. Ontario is the only province currently developing a formal third-party audit program, but other provinces have required water providers to retain independent consultants to perform technical assessments of facilities. Less formally, the American Water Works Association has an excellent program called QualServe that encourages peer reviews among its member utilities, including Canadian members.

Occupational health and safety

Water and wastewater treatment and delivery systems involve a number of occupational hazards ranging from hazardous chemical use, to confined space and various maintenance hazards. All provinces and territories have some form of occupational health and safety regulations that should apply to these facilities.

Special considerations

Four of the elements outlined above require special attention because of the unique circumstances of First Nations and reserves.

Wells, cisterns and septic systems

Lee Ahenakew, 4sight Consulting,
Toronto

It is important to note that the high-risk systems only include communities with central treatment plants and distribution systems. The current INAC strategy does not address communities on individual wells or lake intakes which face an even higher risk from waterborne disease. These homes make up approximately 35% of the [on-reserve] population...

As noted above, the provinces regulate (more or less) the construction of private wells, cisterns or septic systems serving an individual house or even a small number of connections, but generally not their operation. The rationale is that these are on private land and, after commissioning, are therefore the landowner's responsibility.

At present, such facilities when located on reserve do not uniformly appear to have even the minimal protection afforded by these provincial requirements. The hearings provided ample evidence

of wells that were badly constructed, located where surface run-off could infiltrate them, and open to contamination by animals. We likewise heard evidence of poorly designed and badly maintained septic systems and cisterns.

Our terms of reference allowed us to consider "Indian and Northern Affairs policy not to fund private, individual systems (wells and septic systems)" without attempting to address or resolve it, except to note any problems it caused and further work that might be needed.

A policy not to fund wells and septic systems does not preclude trying to ensure that these are built to a safe standard. Provinces and municipalities do not fund private wells or septic systems, but they do require a landowner to construct them properly, and in the case of wells, to do so by using a licensed contractor. This does not appear to be the case with the federal government. Health Canada tests well water at the time of commissioning, but has no regulatory authority over the construction of the well nor, indeed, power to act if the test results show the water to be unsafe. Band councils have authority, under the *Indian Act*, to pass resolutions governing these installations, but few if any have done so. It is understandable that they might be disinclined to require band members to meet potentially expensive standards.

A further point is that both INAC and the Canada Housing and Mortgage Corporation are involved in the funding of individual, household-level systems as part of the construction of federally supported housing stock. The involvement, however, does not include maintenance, repairs, upgrades or replacement after construction.

There is a case to be made that the owner of the land on which private wells, cisterns and septic systems are located has obligations around their operation. Under the *Indian Act*, the

Crown has underlying title to reserve lands. It should therefore follow that the Crown would also have title to fixtures to the land such as private wells, septics and cisterns. (It also follows, of course, that this title would extend to all fixtures on reserve lands, including community water and wastewater systems.) This could support an argument that the Crown at least shares responsibility for major repairs and maintenance related to the health and safety of private wells, cisterns and septics, in addition to its obligations around community systems.

Finally, a problem arises from the current policy. Because INAC does fund the building and operation of community systems, and because resources are so limited, this policy might disincline INAC to support the building of collective systems to replace individual wells and septic systems. This is not necessarily a problem in and of itself, except that:

- the federal government has not taken the kind of precautions imposed off-reserve to ensure individual systems are adequate;
- with limited resources, the upgrading of a high-risk community plant elsewhere in the region might take precedence over building a plant that might lower the (largely undocumented) risks from individual systems; and
- neither band councils nor members themselves have the resources, in many cases, to ensure the adequacy of individual systems.

This is clearly an area in which the federal government must undertake further work. There is, first of all, the need to put in place the basic controls on construction that are in place off reserve. The protection afforded by the controls on construction could even be enhanced. For example, a serious gap in the current provincial and territorial standards for wells is site selection, which is critical to the safety of drinking water. Control over site selection would be a valuable element of all well-construction regulations, including those on reserve.

Beyond that, more work needs to be done to understand and meet the additional responsibilities for individual systems incumbent on the Crown and local Chiefs and Councils. These are not private ownership situations as is understood off reserve. The federal government is the residual landowner, while the band council may be regarded as the landlord. Even where residents occupy the land through a Certificate of Possession, this is not ownership “in fee simple.”

Because of these ambiguities, at a minimum it seems reasonable that whoever funds the building of a house or facility on reserve land should be responsible for ensuring that any well or septic system serving it is included in the cost and built to appropriate standards. Any regulatory framework needs to incorporate this point, and should also reflect the outcome of the further work that needs to be done.

However this is resolved, public education to ensure proper maintenance of these systems and protection of the water they provide (or in the case of septic systems, the water they return to nature) is critical. Given that they have some responsibility as landowner or landlord, the federal government and local councils might well undertake this as a worthwhile investment, not to mention insurance policy. It is noteworthy that even without such a legal responsibility, the province of Alberta helps its thousands of residents on private wells by providing free potability testing.

Water withdrawal and use

For First Nations, the control of water takings may be seen as quite fundamentally related to issues of self-government. There is a strong case that First Nations or the federal government as their fiduciary retains all the rights to ground and surface water on reserves, notwithstanding the *Natural Resources Transfer Act* of 1930. While there appears to be no case law on this point, it seems that at least one out-of-court settlement has compensated a First Nation for loss of the use of traditional waters.¹⁵

Floyd Provost, Piikani First Nation
 “[It’s] very, very crucial that the wild areas remain [in our watershed]...We want to protect that area because we’re going to use it.... we want our people to have good water.

Once we finish using that water and we send it to the people downstream from us and the rest of Canada that use it, we also want to protect it We’re neighbours to everybody....”

In any case, First Nations water management in general and local source protection in particular will require First Nations to have the capacity to regulate water takings on reserve lands.

Drinking water source protection

Source protection on a watershed basis is of special importance to First Nations communities for both historic and legal reasons. The stewardship basis for customary law that many presenters outlined reflects the traditional importance in First Nations culture of preserving waters and the lands surrounding

them. In the modern context, this translates to a strong interest on the part of First Nations in the source water protection activities of their neighbours, and a reciprocal interest in their own source water protection activities that have an impact on others. Water, after all, knows no jurisdictional boundaries.

The legal consideration that follows, however, is that water regimes must follow jurisdictional boundaries. In most cases, First Nations share watershed areas with communities and landowners who are bound by provincial source protection measures. Unless First Nations are willing to be subject to provincial source protection regulations (which in any event may be minimal, depending on the province), this calls for some institutional basis that would allow and encourage cooperation in this area. This is already happening, although on a piecemeal basis, in some parts of the country.

¹⁵ Presentation to the panel on August 22, 2006, by Merrell-Ann Phare, Executive Director and legal counsel for the Center for Indigenous Environmental Resources, Winnipeg. The settlement was between the Province of Alberta and the Piikani First Nation.

Occupational health and safety

While workers in public water systems in the provinces and territories are covered by the occupational health and safety regime of the jurisdiction in which they are employed, including regular inspection and enforcement activities, this would not seem to be the case in First Nations.

The Canada Labour Code applies to federal works, undertakings or businesses. Courts have held that band council operations are federal undertakings. Accordingly, the Canada Labour Code applies to water and wastewater facilities operated by band councils.

The Canada Labour Code is now a relatively comprehensive statute, addressing both collective bargaining and a number of matters such as maximum hours, vacations, minimum wages, health and safety, and so on. The Code covers most matters found in provincial labour standards and occupational health and safety legislation. Nonetheless, where provincial law (including provincial labour standards and health and safety legislation) touches matters not directly addressed by, or by implication not excluded from, federal regulation under the Canada Labour Code, provincial labour laws relating to health and safety (for example, prohibitions on smoking, mandatory drug testing, procedures for reporting workplace injuries) may apply as being “laws of general application,” provided these laws are not related to “Indianness.”

Courts view band council operations to be strongly tied to “Indianness.” Thus, if a band operates a water facility, it is unlikely that provincial labour laws would apply as laws of general application. On the other hand, if a private party operates the water facility, then the provincial labour laws may apply. But where a private party is operating the water facility on behalf of the band council – that is, where the private party is merely the operating agency for the band council and is subject to its supervision and control – it is unlikely that such provincial labour laws would apply.

In any event, while it appears that the Canada Labour Code (at a minimum) may apply to workers on reserves, there does not seem to be a program of regular inspection and enforcement.

Creating a regulatory regime

The earlier sections of this chapter dealt with the content of a regulatory regime. We now turn to the question of how such a regime for First Nations would be constructed.

Respect for customary law

Canadian statutes have begun to incorporate customary aboriginal law into the law that governs all Canadians. Examples include the *Wildlife Act*, the *Canadian Environmental Assessment Act*, the *Oceans Act*, the *Mackenzie Valley Resource Management Act*, the *Species at*

Risk Act, and the *Canada National Parks Act*. Volume II of this report provides details of the ways in which these statutes incorporate customary or traditional aboriginal law.

It also outlines some of the thinking of both legal scholars and First Nations on the incorporation of such law into federal statutes. From these sources, as well as through the engagement process, we are of the view that cultural and traditional attitudes to water could be used effectively in the development of principles incorporated in new statutes or regulation dealing with water quality. This would likely provide a more holistic basis for legislation than is typical of the provincial water regimes. It would encourage a focus on protecting water from source to source – or, as some put it, “source to sink to source” – not just source to tap.

A clear mandate for the regulatory body

The risks to the regulatory process that arise from a muddling of the roles of various parties are well known. In particular, the regulator must be separate from the regulated. This is not as simple as it might seem in this instance. Providing water and sewer services to First Nations is a partnership involving four federal departments, First Nations and First Nations organizations. Avoiding conflicts of interest dictates that the regulator cannot be any of these partners – and that its decisions can bind any of the partners.

The importance of independence is reflected in the growing recognition on the part of provinces, which regulate water safety and have traditionally helped to fund capital projects, that the best funding arrangement might be one in which system owners (municipalities) rely on water rates to fund most of the costs of building, maintaining and running systems. Among other benefits, this largely removes the conflict created when the same level of government both funds and regulates water systems.

As already noted, however, First Nations have very limited capacity to fund their own systems at present. Until and unless their economic capacity grows to the point where they can fund their own systems entirely, they will continue to rely on INAC for a significant portion of this funding.

A further point is that all jurisdictions separate the formal powers of inspection and enforcement from the coaching and technical assistance roles aimed at building community capacity, because of the inherent conflicts in mixing these roles. We agree with the observation of government officials in the organizations that partner with First Nations governments on water and wastewater that a new entity would be needed for inspection and enforcement. Stirring up cooperative waters with the stick of enforcement is a poor way to build trust and confidence.

For all of these reasons, any regulatory framework would have to create a new body responsible for regulation, enforcement and accountability, which is called the First Nations Water Commission for the purposes of this report. Its board would be named by the Minister of Indian Affairs and Northern Development in consultation with the AFN and its budget

would be in the Estimates, but it would otherwise be at arm's length from government and the First Nations community. There is ample precedent for this style of operation. A majority of the board members should be drawn from the First Nations water sector.

This body would have the power to require any of the partners involved in providing water and wastewater services to First Nations to meet their responsibilities. In the case of the federal government's funding commitment, the orders of this body would help to provide an independent view of the adequacy of federal funding.

The framework would also require a separate appeals tribunal similar to those in Alberta, British Columbia and Ontario, as part of the checks and balances on the decisions of the commission. There are several precedents in federal practice for the separation of enforcement and appeals, as for example with the Competition Bureau and the Competition Tribunal.

Uniformity and the 1977 policy

Governments, including those of the First Nations, often speak blithely of enacting the "most stringent" of available guidelines. This is usually a reference to the maximum allowable contaminant levels, rather than the more important matters of design and operation of facilities. The latter must accommodate local realities as much as follow an external handbook.

Minor differences between the Guidelines for Canadian Drinking Water Quality and the regulations of particular provinces appear from time to time. There is a danger that blind adoption of the toughest numbers found anywhere may give rise to conflicts with provincial regimes and cost a lot more money without any corresponding improvement in public health.

Two reasonable approaches are available. In one, the federal statute could adopt by reference the standards and regulatory approaches of the province in which a First Nation was situated. By contrast a single national regulation, based on a synthesis of the best provincial practices, could be drafted. Either would work. Both would be consistent with the 1977 policy and, more importantly, with the equality provision (s. 15) of the Charter. What would be important would be to avoid a patchwork of dozens or hundreds of different regulatory frameworks of widely varying cost and effectiveness. These matters are discussed in more detail in the following chapter.

Opting-in possibilities

A statute that set up the requisite bodies and provided for the creation of regulations to cover each of the areas mentioned above might allow individual First Nations to opt in when ready. It might allow First Nations to select a subset of regulations, although the interdependence of regulations would require that this be given careful study.

The advantage of a one-way opting-in clause would be to maximize deference to the ideal of self-government, but it would come at a certain cost in administrative confusion and, worse, continued absence of the improvements to public health that a well-designed regulatory system could bring. The trade-offs here are political, not technical or legal. Opting-in is nevertheless a possibility.

V. REGULATORY OPTIONS

With legal research and the results of the engagement process in hand, and having sketched out the elements of an effective regulatory regime, we now consider the options for regulating safe drinking water on reserves. It is imperative that any regulatory framework have a clear and unambiguous legal basis. There are, in principle, only five possible routes to creating a regulatory framework for First Nations:

- existing provincial regimes could be used, as “laws of general application;”
- regulations might be passed by Orders in Council under existing federal statutes;
- Parliament could enact a new statute setting out uniform federal standards and requirements;
- Parliament could enact a new statute referencing existing provincial regulatory regimes; or
- First Nations could develop a basis of customary law that would then be enshrined in a new federal statute.

Our conclusion, after legal analysis, is that the first two options are not workable.

Pursuing “laws of general application” is too uncertain

If it could be established that provincial laws of general application applied to Indian reserves, legal frameworks would be instantly in place and a great deal of consultative and Parliamentary process avoided. However, in the view of legal counsel to the panel, applying provincial drinking water and wastewater law as a law of general application is “fraught with such uncertainty that it is neither a viable nor effective option.”

The reason for the uncertainty lies in the lack of a clear legal basis for determining when a provincial law applies to a First Nations member or organization. Section 91(24) of the *Constitution Act, 1867* gives the federal government exclusive jurisdiction to make laws in relation to “Indians and lands reserved for the Indians.” This gives the federal government the power to make laws that apply to First Nations members, whether on or off reserve, and to reserve lands.

However, provincial law may apply to First Nations in one of two circumstances:

- the law does not relate to “Indianness;” or
- the law applies by virtue of Section 88 of the *Indian Act*, which applies provincial laws of general application to “Indians,” subject to a number of exceptions.

- Over the years, a number of court cases have dealt with which elements of provincial authority apply to First Nations.

In the first circumstance described above, the courts have found that band council activities related to running local government form an integral part of primary federal jurisdiction over “Indians and lands reserved for the Indians” and that provincial laws do not therefore apply. Since water and wastewater provision is a band council responsibility, this suggests that it might be difficult to use provincial regimes as laws of general application to create a comprehensive regulatory framework for water. It is likely that control of lands and waters on reserve also goes to the heart of “Indianness.”

Although some provinces have concluded that the orders of a provincial medical officer of health are enforceable on reserves, a regulatory scheme must address more than imminent public health risks.

The argument for laws of general application is that existing provincial laws and regulations have force on reserves, even though this has generally not been accepted with respect to water. It presumes the universal willingness of provinces to extend their services across the wide scope of water and wastewater regulation, a matter that cannot be taken for granted. Provinces have generally asserted that s. 91(24) frees them from any responsibilities, especially those involving costs or risks, for on-reserve matters.

As to the second, application by virtue of s. 88 of the *Indian Act*, there is also considerable uncertainty. Section 88 refers only to “Indians” and not to “lands reserved for the Indians.” Applying provincial water regimes would certainly have an impact on reserve lands. The lower courts have found that s. 88 does not conclusively extend provincial laws to reserve lands. Legal scholars generally agree. The Supreme Court has never made a determination.

Finally, provincial water laws do not offer the same degree of authority or public health protection across the country, and in general do not cover all the areas mentioned in Chapter IV as essential elements of a modern First Nations regulatory regime.

In summary, the courts might or might not accept that all elements of provincial regulatory water regimes apply to First Nations by either of the permitted routes, provinces might or might not wish to apply them, and provincial laws would require modifications in any case to meet First Nations’ needs. This does not provide a strong enough foundation for the creation of an effective regulatory regime.

Existing federal statutes are not equal to the task

Attaching new regulations to old statutes has the virtue of simplicity: only the Governor-in-Council is necessarily implicated. However, while several existing federal acts relate to water and First Nations – the *Canada Water Act*, *Canadian Environmental Protection Act*, *Department of*

Health Act, Department of Indian Affairs and Northern Development Act, the Fisheries Act, the Indian Act, the First Nations Land Management Act, and the First Nations Commercial and Industrial Development Act – none provides an adequate platform for comprehensive regulation.

Of those listed, the *Indian Act* and the *First Nations Land Management Act* are the most specific in relation to water and public health matters. The *Indian Act* authorizes the federal Cabinet to make regulations to prevent the spread of communicable diseases or provide for sanitary conditions, and also allows First Nations to pass by-laws to regulate public wells, reservoirs, cisterns and other water supplies. One problem is that existing legislation does not provide for some of the elements of water regulation discussed in Chapter IV. Another problem is that enforcement is by way of extremely low fines or short prison terms only. There is no scope, on the one hand, for deterring serious violations or, on the other, for imposing culturally sensitive penalties. Finally, this mechanism provides no effective means for regulating the federal government partners.

For those First Nations that opt into it, the *First Nations Land Management Act* provides tools to manage their land and resources and the authority to provide local services and develop regulations to protect the environment. Here, the main problem is that to opt into the Act, a First Nation must undertake the complicated, time-consuming and costly process of adopting a land code. Another problem is that this Act does not address the capacity gap that some First Nations face. To date, 36 bands have signed the Act's framework agreement and only 17 bands have developed a land code. None has passed a water regulation.

Preconditions: Provide resources, discuss and deal with high risks

Eliminating two of the initial options left us with three possibilities: new federal legislation setting out federal standards; new federal legislation referencing provincial standards; or the use of customary law.

Before analyzing these options, it is important to set out the conditions that would have to be in place for any of them to succeed.

The federal government must close the resource gap

First, and most critically, it is not credible to go forward with any regulatory regime without adequate capacity to satisfy the regulatory requirements. While it is tempting to assume that putting a regulatory regime in place would reduce the dangers associated with water systems, exactly the opposite might happen. This is because creating and enforcing a regulatory regime would take time, attention and money that might be better invested in systems, operators, management and governance.

But the problem is more fundamental than the resources that would be lost to creating a regulatory regime. The underlying issue is that the federal government has never provided adequate funding to meet the 1977 policy commitment of comparable facilities on reserve

and off. If funding were supplemented to cover only the costs of a regulatory regime, the gap would continue.

We therefore see it as a precondition to moving forward on any of the viable options that the federal government must finally close the resource gap. It must provide, over a reasonable period, the funding needed to ensure that the quality of First Nations water and wastewater is at least as good as that in similar communities and that systems are properly run and maintained.

This could be achieved, for example, through a capital plan for the period 2007-12 that would have the resources to bring all systems up to the intent of the 1977 policy. There would also be a need to provide the ongoing means to sustain effective operation and maintenance of systems.

This raises the question of whether this is the best time to go forward with a regulatory regime. Would it make more sense to first address the long-standing resource gap and the capacity-building needs of many communities, and put off for some years the creation of a regulatory framework? The sector would still have water-monitoring programs funded by Health Canada, as well as standards imposed by INAC through its funding agreements.

There are several drawbacks to this approach. Foremost among them is the need for an arm's-length regulatory body that through regular inspection and compliance work can ensure high standards of performance across the country. The objective view of resources and outcomes across the sector that Parliament could expect of a First Nations Water Commission would help to set priorities and gauge overall funding needs. Simply providing objective information across the sector would help avoid grievances based on perceptions of unfairness. Public health would be enhanced through systematically raising the performance of the systems in greatest difficulty.

As well, a properly designed regulatory regime could actually help build capacity. It is impossible to ignore the strong sense among many plant operators and technical staff of their willingness – even eagerness – to prove that their plants are run as well as, or better than, those anywhere else. Some technical staff have said that an inspection report, with the possibility of penalties, would help to better focus the attention of their Chief and Council on water issues. This underlines that while funding conditions provide some control, they fall far short of regular plant inspections.

Discussion with First Nations is essential

The second precondition is the need for the federal government to assess whether it has a legal duty to consult with First Nations affected by any of the three options. This duty, according to the Supreme Court,¹⁶ arises “when the Crown has knowledge, real or constructive, of the potential existence of the aboriginal right or title and contemplates conduct that might adversely affect it.”

Apart from any legal duty, however, we believe that meaningful discussion between the federal government and First Nations is necessary if any action to improve the safety of water on reserves is to be effective and responsive.

Deal with high-risk communities immediately

Third, any of the options would take time – probably several years – to reach the ultimate goal of safer drinking water for all First Nations. In the meantime, however, many reserve residents face serious risks from the drinking water available to them, sometimes from collective systems but very often from individual wells or other water sources.

We heard of several of these through the engagement process, including Pikangikum in northwestern Ontario, Pabineau in New Brunswick and Kitcisakik in Quebec’s La Vérendrye Park, the last of which does not rely even on wells but rather on taking lake water in pails. It is important to deal with these and other anomalous situations as soon as possible, which might entail Ministerial support for rapid action by the existing task teams currently struggling with these systems.

Once these urgent situations are dealt with, adjustments to current processes would be in order, including:

- adding individual systems, which represent a largely unknown but potentially large source of risk, to the federal risk assessment system, and acting to manage those risks;
- investing in technology and support systems that allow remote monitoring of community systems; and
- building stronger technical support networks and better governance capacity.

Such focused steps take into account the water-related risks for all First Nations residents, not just those on community systems, and respond to the root causes of many water-related problems. This will help to fix the most serious problems, lowering the overall risks to First Nations residents, as quickly as possible.

¹⁶ *Haida Nation v. British Columbia (Minister of Forests)*, [2004] 3 S.C.R. 511 (S.C.C.) at para. 35.

The Pikangikum First Nation is located 100 kilometres north of Red Lake in northwestern Ontario. It is a remote-access community, meaning that there is no year-round road. It has 2,300 residents.

The Chief and Council asked Bill Limerick, Director of Environmental Health and the Director of Health Protection and program manager Lyle Wiebe of the Northwestern Health Unit to provide an objective overview of the community's water situation to the panel at its Thunder Bay hearings. The Northwestern Health Unit is a public health agency funded provincially and municipally.

A 2001 assessment by the Ontario Clean Water Agency (OCWA) showed that 340 of Pikangikum's 387 homes do not have water services – that is, neither treated water nor sewage collection.

The water treatment plant, built in 1996, services the school, the medical centre, the hotel, a number of apartment buildings and houses and some outlying buildings, either through a water distribution (piped) system built in the 1950s or by truck haulage. Although the plant produces good water, those who are not on piped water or hauled delivery must get it at a standpipe that is hard to reach except by snowmobile or all-terrain vehicle.

Limerick told the panel that “everyone has basically a five-gallon bucket” to take their water from nearby Pikangikum Lake. In the summer, raw sewage from the community can flow directly into the lake from overburdened septic systems. One sample of this water “was overgrown with coliform bacteria and *E. coli*. It was... deplorable.”

In the winter, Limerick estimated, roughly about half the residents take their water from a hole in the ice of the lake, just off-shore of the community, in an area contaminated by animal wastes and fuel from snowmobiles.

Almost all of the community relies on outhouses that are in poor repair and grossly inadequate. Limerick described an open sewage system at one facility covered with an old table, with children playing nearby as sewage overflowed from the tank.

The community has an arena with a capacity of 600 people. There are no taps for drinking, no bathrooms and no outhouses for the arena. When Limerick asked what happened when there were big events, he was told “Everybody goes out behind the building.”

He noted that his team had recommended a number of short-term measures to the Chief and Council to deal with the most critical threats to public health. “With a little disinfection, and a little education, they'd get by in the short term,” he said. “But it's still not acceptable.”

The community put forward a proposal in 2001 to upgrade both the water plant and the distribution system, but was not successful in gaining funding. The proposal included a plan for the community to extend the Hydro One grid to replace the plant's overburdened diesel generator. This led to lengthy discussions with the utility that appear to be on the road to resolution.

Because the water produced by its limited community system is of adequate quality, Pikangikum is not included in a recent listing of high-risk First Nations groups.

Three potential routes

Having set out the preconditions that would need to be in place, what might each of the possible options look like? All three provide the advantage that action would not be confined to what is allowed under the *Indian Act*. From that starting point, this section first provides an overview of how new federal legislation might work, and the advantages and drawbacks of that general approach. It then looks in more detail at a key element of new legislation: whether this would reference existing provincial water regimes or would instead provide for federal standards and enforcement. It then analyzes the option of working from customary law. Finally, it compares each of these options in terms of timeliness, consistency, acceptability and other criteria.

New federal legislation: an overview

Creating a regulatory regime through new legislation would provide the opportunity to set out clearly the roles and responsibilities of all parties involved in providing water and wastewater services on reserves. The framework would provide for both an independent regulatory body and an appeals process.

Merrell-Ann Phare, Executive Director and legal counsel, The Centre for Indigenous Environmental Resources, Winnipeg

...the best solution [is] within a context of a comprehensive plan that builds towards self-government. ... Clearly, a long-term solution is important ... the five to eight-year plan. But the immediate short-term needs are critical, for protecting human health and the environment.

It should be designed to give First Nations with differing capacities time to prepare for a formal regulatory regime.

The legislation and regulations should also set requirements for the construction, at a minimum, of individual systems, and should reflect the further work recommended in this report on the obligations of band councils and the federal government as, respectively, landlords and landowners where individual systems are concerned.

The preamble to the statute would make clear the intent to apply customary law in statutory interpretation wherever it was not inconsistent with the basic goals of the legislation.

For ease of administration, the act would be implemented uniformly wherever the necessary capacity to meet its requirements existed within an individual First Nation. There might be the possibility, however, for a one-way opting-in process for certain sections, starting with the roles and responsibilities of the players, operator certification, facility design and operating standards, and standards for drinking water quality. Either way, the legislation would have a strong enabling character.

The advantages of enacting new legislation:

- If executed properly, it would result in state-of-the-art regulation that would be fair, objective, effective and respectful of First Nations customary law.

- Through respect for customary law, it would provide a bridge to principles and practices ultimately defined by First Nations themselves.
- Its incorporation of customary law would also create a framework that would likely be attractive to self-governing First Nations.
- It would lead most quickly to the creation of a regulatory body that could, among other duties, provide an independent view of the resource commitments required of the federal government and other parties.
- A statutory basis for expenditures would strengthen the arguments of the Minister and department in government-wide allocation decisions.
- By providing greater certainty about regulatory standards and enforcement around water and wastewater, and helping to ensure adequate resources, it would put in place a precondition for many economic development opportunities.
- It would respond in the most immediate fashion to the criticisms of the Auditor General.

The drawbacks of enacting new legislation:

- It would be subject to all the usual problems of drafting and tabling new legislation and seeing it through to passage, proclamation and the making of regulations.
- Although the quickest response to the criticisms of the Auditor General, it might not be the most direct route to safer drinking water.
- If executed improperly, it could do more harm than good by imposing more bureaucracy and more costs on a system already overburdened with both.
- The time and effort needed to consult, draw up legislation and implement the resulting framework could lead to loss of focus, conflicts of objective, or both. The process might take attention of all players away from critical infrastructure needs.
- Success would require strong continuing leadership, especially within the federal government, given its lead role in this option.
- There is a risk that by proceeding with legislation that incorporates customary law, it might be seen as a template for other issues relating to self-government.

A further concern is that financial authorities might mistakenly see this as a precedent for direct federal funding of other water responsibilities, such as in national parks or on military bases. These facilities, however, do not engage solemn fiduciary obligations.

Reference to provincial regimes or a new federal regime

New federal legislation would could either invoke provincial water-quality requirements by reference or set out a national framework of requirements.

There are other acts of the federal Parliament that impose provincial statutes by making reference to them. An example is the *Indian Oil and Gas Act*. Regulations under this statute, dealing with the exploitation of oil and gas resources on reserves, provide for the application of “all provincial laws applicable to non-Indian lands that relate to the environment or to the exploration for, or development, treatment, conservation or equitable production of, oil and gas and that are not in conflict with the Act or these Regulations.”

Referencing provincial regimes could unequivocally impose provincial standards and requirements on First Nations water and wastewater systems on reserves. A related but different question is who would then enforce those requirements. This would no doubt be decided on a province-by-province basis: there may be some provinces that would want to take on this enforcement role, presumably on a cost-recovery basis, and others that would not; and there may also be some provinces in which First Nations would not wish to be subject to provincial enforcement. In these latter cases, the First Nations Water Commission would have a direct enforcement, as opposed to simply an oversight, role.

Looking at both of these issues, referencing provincial regimes provides a number of advantages:

- It would use existing legislative infrastructure at the provincial level, in the form of detailed standards and requirements for most elements of a regulatory framework, rather than having to create such an infrastructure at the federal level.
- By virtue of relying on standards developed for different parts of the country, it would provide regional flexibility.
- Where provincial enforcement was accepted and provided, it might save on costs and capacity-building needs by extending existing arrangements and, more broadly, by widening the scope of cooperation and trust between provinces and First Nations.
- It would ensure uniformity between reserve and non-reserve communities, which is particularly useful in such matters as source protection and municipal service agreements.
- It would invite but not require provincial involvement.

Against this are a number of drawbacks:

- No provincial regime includes all the elements of good practice, outlined in Chapter IV, that First Nations will aim for.
- Provincial standards are not uniform across the country, and the existing regimes are at seriously different stages of completeness, quality and modernity, as they are mostly the products of historic accretion rather than systematic design.
- Elements of some provincial regimes may conflict with First Nations' self-government objectives or with s. 35 rights.

- It may be difficult to set up provincial enforcement in many cases, for the reasons outlined above.
- While the preamble to the federal statute would set out the importance of customary law, it is not clear how this would work, in practice, where provincial requirements must be met – and even less clear how enforcement would mesh with customary law.
- Where provincial enforcement is used, it is unlikely to provide for culturally sensitive penalties.

The First Nations Water Commission would provide the means to mitigate some of these drawbacks. For example, it could have an important role where the second drawback is concerned, through ensuring that enforcement services were provided by a contracted organization or, if necessary, through its own offices. It might also be involved in helping provincial authorities and First Nations communities to adapt provincial regimes, to the extent possible, to customary law and traditional practices. This potentially larger and more complex role for the commission, however, speaks to the difficulties and uncertainties inherent in referencing provincial laws.

If, instead, the federal government opted for a new federal statute with uniform standards and national enforcement, the drawbacks of attempting to rely on provincial regimes would disappear. Instead of referencing provincial regimes, the legislation would, through its regulations, prescribe the elements of the regime described in the previous chapter, drawing wherever possible on the best practices outlined there. There are clear advantages to this route:

- It would provide the opportunity to draft a model statute that would raise the bar not just for First Nations but also for the nation as a whole. The federal government could provide a regulatory framework that was better than any now in existence, a matter of pride for First Nations and for the federal government in its presentation of Canada internationally.
- An integrated approach might well be less expensive than the piece-by-piece adoption of provincial standards.
- It might be more acceptable to First Nations. While support for either a provincial or federal regime was evident through the engagement process, those preferring the federal route were in general strongly opposed to being bound by a provincial regime. On the other hand, those favouring the use of provincial standards generally did so for reasons of convenience, not because they rejected the idea of a federal regime.

While there may be a concern that setting federal standards would reduce regional flexibility, there is no reason why these standards could not have built into them methods for dealing with the widely varying circumstances of First Nations across the country.

The downside, of course, is that the federal government could also be raising the bar for itself with respect to its other water management obligations in national parks, on military bases, and so on. But this would be true to a degree with any option, and is probably overdue anyway.

Start with customary law

The engagement process underscored the pervasiveness of a strong traditional stewardship role for First Nations where water is concerned. This option would respect and build on that role from the outset.

While it is impossible as well as inappropriate to set out in detail how this might proceed, it could begin with First Nations working together to develop a base of customary law upon which to construct a regulatory regime. The starting point might be to draw up common general principles through a Canada-wide process. The traditional views and practices of specific First Nations might then be woven in. The Elders' Councils of the AFN and other political organizations would likely have a central role in advising in these areas.

An analysis of the resulting base of customary law against relevant provincial, territorial and federal standards and legislation could then follow. The analysis could look for potential synergies, as well as conflicts, between customary law and that of other jurisdictions.

The next step – not a simple one – could be to determine how best to proceed from the body of customary law to detailed water-quality standards, operating procedures, operator certification needs and all the other elements of a modern regulatory regime.

The final step, to provide a clear legal basis, would be for the federal government to enact new legislation enshrining the regulatory framework developed by First Nations.

The advantages of starting with customary law are:

- It should have the greatest likelihood of gaining widespread acceptance among First Nations.
- It is the approach that most immediately reflects greater autonomy, the value of customary law and the realities of increasing self-government.
- Actions would not be confined to what is allowed under the *Indian Act*.
- It responds to the criticism of the Auditor General by beginning a process that would ultimately result in a regulatory framework, even if more slowly than the previous option.
- It might ultimately result in the creation of a regulatory body that could provide an independent view of federal government funding.

The drawbacks of starting with customary law are:

- Creating the regulatory regime would depend on what might become a time-consuming process of developing a base of customary law.
- As with the first option, there would be a risk of loss of focus or the need to address other urgent priorities, although in this case the risk would apply to First Nations, which would be leading the process.
- It is uncertain whether First Nations have both the capacity and the resources needed to handle this, along with their many other responsibilities.
- A greater dependence on customary law might make consistency with the regulatory regimes of neighbouring communities less likely.
- There is a risk of the federal partners in water quality stepping back from their responsibilities while First Nations worked out a regulatory approach.
- Getting from general principles and specific practices to the detailed, often highly technical needs, of an effective regulatory framework might be difficult and possibly contentious.

A variation on this option would be to recognize First Nations' jurisdiction over water from the outset. This was an approach advocated by the Assembly of First Nations of Quebec and Labrador. A possible first step would be for the federal government to cede jurisdiction and ownership of on-reserve streambeds, lands, and other water resources to First Nations by statute. It would then be up to First Nations to develop a regulatory framework that could have customary law as its basis.

The perceived advantage of this approach – that it would recognize First Nations' jurisdiction – is also the source of its major drawbacks. Each of Canada's hundreds of First Nations would gain jurisdiction over its own water resources before a regulatory framework was in place. While there might be a strong incentive for communities to work together on a regional basis to create regulation, as they do now on many other matters, there would be no assurance that this would happen. Timing and consistency would become far less certain, and locally developed frameworks could potentially run up against competing provincial rights.

There are further problems with ceding jurisdiction as an initial step. It would create a class of assets (water and wastewater systems) used in activities over which the federal government had no jurisdiction. This would further complicate the important issues of federal liability and fiduciary responsibility. It would significantly complicate funding arrangements. It would make the role of public health professionals more complex and might make it difficult to provide water system workers with occupational health and safety protection.

The intent of this option is valid, but in our view a better route would be to work on creating a framework under current jurisdictional arrangements. Then, as First Nations

achieve self-government, regulatory arrangements would be in place for water that recognized and reflected unique First Nations’ conditions and that they could choose to adopt. (And likely would: It is worth noting that all self-governing First Nations in the Yukon have chosen to be regulated by the territory’s water regime instead of developing their own.)

Comparing the options

The table below compares each of the three viable options against five criteria: whether it would be equal to the demands of regulating a modern water system; how quickly it might be put in place; whether it would support national consistency; how acceptable it might be to First Nations; and how complex it would be to develop, administer and enforce.

The analysis shows that both a new federal statute creating a single water regime, and using

	New statute, single regime	New statute, provincial regimes	Customary law, then statute
Provides all elements of a modern water regime	ΣΣΣ	ΣΣ	Uncertain
Achieves solution in a timely fashion	ΣΣ	Uncertain	Uncertain
Assures consistency across Canada	ΣΣΣ	Σ	ΣΣ
Is acceptable to First Nations	ΣΣ	Σ	ΣΣΣ
Minimizes complexity to develop and administer	ΣΣΣ	Σ	Σ

customary law, are reasonably strong options across the board. The major proviso regarding customary law is uncertainty, both in terms of how to get to a comprehensive modern water regime and how long the process might take. Enacting federal legislation that would reference existing provincial regimes appears to be a weaker option owing to gaps and variations in those regimes, the complexity of involving another level of government, and lower acceptability to many First Nations.

Whatever route is taken, improve processes now

Both a regulatory regime and the funding needed to close the existing resource gap – which is a precondition to any of the three options – must be seen as only two elements in a broader strategy to improve water management and public health.

Other elements would include greater efforts to build and use capacity and to make better use of existing resources. All players – First Nations, their political organizations, federal departments and provinces, potential private providers of capital and services, and First Nations’ technical and health organizations – need to work together in a formal, ongoing framework to find solutions to the resource problems.

The federal government and First Nations partners should take steps to pare away bureaucracy, collaborate with provinces on tri-partite harmonization, and both simplify and update procurement procedures. Over time, First Nations should take on an increasing share of the activities directly related to planning, procuring and gaining approval for plants.

As well, the federal government and First Nations need to act to provide proper assurance that systems serving individual houses (or a small number of connections) are, at a minimum, built to acceptable standards, while working to better understand and deal with federal and band responsibilities for these after they are built.

Conclusion

Ensuring safe drinking water involves much more than setting standards and requirements. In some ways, this is the least important aspect of water system safety. The really critical element is the capacity of facilities and operations to meet the standards. Safe systems are built on the dedication of operators, the support they get from system managers and owners, the professionalism and integrity of consultants and contractors, and understanding by everyone – from builders and designers through to the final consumers – of what is needed to make and keep water safe. Each of these elements depends on human and economic resources.

Through even a brief engagement process, the dedication, even passion, of many of those working in the First Nations water sector was very clear. This included both technical and elected officials in First Nations and umbrella organizations, as well as many of the federal officials who work with them. It also extended to many of the private-sector companies that help to design systems and get them built. Clearly, the human capacity has been established in many places and it is growing.

Of course, on-the-ground challenges remain, in the form of councils that do not give water issues as high a priority as system operators feel they need, or systems with high staff turnover, or water monitors who may not be as diligent as protocols require. But these problems are well known among First Nations participants: indeed, it was precisely these people who would raise them at the hearings – and then hasten to explain what they were doing to solve them.

The problem that none but a few exceptional communities has been able to solve, however, is that of economic resources. The ultimate solution will come when First Nations across Canada develop the capacity to control their own economic destiny. In the meantime, however, they must continue to look to the federal government to meet basic needs. In the area of water and wastewater systems, resources have not been adequate, and the resources made available have not always been used as effectively as they could be.

Since 1996, spending on water and wastewater systems on reserves has ramped up considerably. The time has come for one last big push. After this, capital spending can ease back to the levels necessary to meet new standards, accommodate population growth and maintain the existing stock. The spending should be seen as an investment – not just in healthier First Nations communities, but in trained workers and the kinds of business activity that depend on safe, high-quality infrastructure.

This investment will also yield dividends by supporting the development of a comprehensive and modern regulatory framework, to support the goal that people living in a First Nations community benefit from the same level of protection as those living in any other community. To be effective, the framework must:

- help to achieve the most efficient funding arrangements;
- be binding on all of the parties involved in the First Nations water sector, including the federal government;
- be based on best practices from within Canada and other jurisdictions for setting standards and requirements;
- provide for appeals against orders and decisions, and investigation of complaints;
- encourage the sharing of information and success stories within the sector to build capacity, and with the broader community, both on and off reserve, to build trust; and
- use information, inspection and enforcement sensibly, as tools to improve performance rather than to penalize those lacking the capacity to perform.

This report offers three possible routes to achieving these ends. It will now be up to the Minister of Indian Affairs and Northern Development, working with First Nations and other partners in the water sector, to determine how to move forward. In closing this report, we reach back to its opening: may these discussions and the action arising from them help to achieve the gains for human life and the natural environment that follow from uniting wisdom and technology.

APPENDIX A. BIOGRAPHIES

Harry Swain, Chair

Harry Swain is a Director of the Canadian Institute for Climate Studies and research associate at the University of Victoria's Centre for Global Studies. An acknowledged expert in public environmental policy, Mr. Swain chaired the research advisory panel of the Walkerton Inquiry, and an expert panel on a water and wastewater strategy for Ontario.

Mr. Swain holds a doctorate in economic geography from the University of Minnesota and an LLD from the University of Victoria. He worked in nine federal departments from 1971 to 1995, eventually rising to the position of Deputy Minister of Indian and Northern Affairs Canada. Upon leaving government, Mr. Swain became CEO of Hambros Canada and later founded the Toronto office of Sussex Circle, a policy consulting firm.

Mr. Swain has also worked for the International Institute for Applied Systems Analysis in Austria and the province of British Columbia. In addition, he has served as a director of Canadian Bank Note Limited and Canadian Geographic Enterprises, along with several philanthropic organizations.

Grand Chief Stan Louttit

Stan Louttit is Grand Chief of the Mushkegowuk Council. A Cree from the Albany Band, he was raised in Attawapiskat, Ontario and now lives in Moose Factory. Grand Chief Louttit has long been a respected community leader, and is credited with helping to raise public awareness of the water crisis in Kashechewan First Nation.

During the 1980s, Grand Chief Louttit coordinated on-reserve programs for Indian and Northern Affairs Canada, rising to the position of district manager and earning the department's Outstanding Achievement Award in 1986. In 1988, he received a Governor General's Medal for Bravery for his relief work during the Winisk flood. He was presented with the Emile Nakogee Award for Leadership at the Nishnawbe Aski Nation Keewaywin Conference in 2005.

Grand Chief Louttit served as Chairperson of Mushkegowuk Council from 1992 to 1993, and was later elected Deputy Grand Chief of Nishnawbe Aski Nation. After two terms in office, he served as CEO for Moose Cree First Nation. In 2004, he was elected Grand Chief.

Professor Steve Hrudehy

Steve E. Hrudehy is a Professor of Environmental Health Sciences and Associate Dean of Canada's first School of Public Health, at the University of Alberta. He is Chair of the Alberta Environmental Appeals Board, a quasi-judicial tribunal appointed by provincial cabinet. He has also served on the Research Advisory Panel to the Walkerton Inquiry, was an architect of the catchment-to-consumer framework of the 2004 Australian Drinking Water Guidelines, and was the founding leader of the Protecting Public Health theme for the Canadian Water Network.

Professor Hrudehy was recently elected a Fellow of the Royal Society of Canada. The 2006 Distinguished Speaker for the National Water Research Institute, he is an active researcher who has authored or co-authored many scientific publications relating to environmental risk assessment and management, and drinking water safety and quality. His most recent book, *Safe Drinking Water – Lessons from Recent Outbreaks in Affluent Nations*, documents more than 70 case studies of waterborne disease outbreaks, including Walkerton and North Battleford. Professor Hrudehy holds a PhD in Public Health Engineering and a DSc(Eng) in Environmental Health Sciences and Technology from the University of London.

APPENDIX B. DETAILS OF THE TERMS OF REFERENCE

(Note: Some details relating to logistical and process matters have been removed.)

The Government of Canada, with the support of the Assembly of First Nations, has established a panel of experts on First Nations water that will examine and provide options on the establishment of a regulatory framework for ensuring safe drinking water in First Nations communities.

Objective of the Expert Panel

The expert panel is to provide an options paper that will examine regulatory framework options to ensure clean safe drinking water in First Nations communities.

For each option, the expert panel must provide an analysis of the benefits and drawbacks of the option in question, and indicate issues that may have to be addressed outside of the mandate of the expert panel to be able to implement the option. Finally, the expert panel should also provide a comparative analysis of all the options.

To accomplish this goal, the expert panel will review examples of regulatory frameworks and regimes from other jurisdictions and countries, while taking into account their applicability to communities of similar size and location to First Nations communities. The conclusions and experience gained from reviews of these other examples of regulatory frameworks should be useful in the analysis of the options that will be provided by the expert panel.

In addition, the expert panel will engage First Nations Chiefs and Councils, as well as other stakeholders including, but not necessarily limited to, First Nations technical organizations; First Nations water and wastewater system employees; regional and national federal employees such as environmental health officers and Indian and Northern Affairs regional field staff; and provincial and territorial governments. The purpose of this engagement process will be to collect suggestions as to options for establishing a regulatory framework for ensuring safe drinking water in First Nations communities. The expert panel hearings will be the first step in engaging First Nations in the development of regulatory regime options. The Minister of Indian and Northern Affairs Canada will determine if and to what extent additional consultation with First Nations and other key stakeholders will be required.

All suggestions provided by First Nations and other stakeholders should be duly considered by the expert panel when creating the options paper. In addition, all presentations and submissions should be kept on record and be made publicly available.

Mandate of the Expert Panel

The mandate of the expert panel is to provide options for a regulatory framework for ensuring safe drinking water in First Nations communities. The expert panel will wish to consider options and recommendations that at a minimum address the following aspects of a regulatory framework:

- Roles, Authority and Accountability
 - First Nations governments
 - Indian and Northern Affairs
 - Health Canada
 - Environment Canada
 - Others (provincial governments, etc.)
- Standards
 - Source water protection
 - Drinking water quality
 - Monitoring and inspection
 - Operation and maintenance
 - Operator training and certification
 - Design, construction and building
 - Emergency response
- Approval Process
 - Facility permits and licences
 - Environmental assessment process
 - Operator certification process
- Enforcement
 - Enforcement agencies and authority
 - Information sharing between responsible parties
 - Fines and penalties for non-compliance
 - Oversight and follow-up
- Public Involvement
 - Public reporting

The above regulatory framework areas should be examined for all aspects of drinking water treatment and the provision of drinking water in First Nations communities. The expert panel must decide the applicability of also covering these aspects for wastewater treatment, and indicate in the options paper the reasoning for their decision. The analysis of the expert panel must be appropriate to the size and geographical location of drinking water systems in First Nations communities.

As a special consideration, municipal wastewater effluent quality standards are currently being developed nationally in a Canada-wide Strategy initiated by the Canadian Council of Ministers of the Environment, and will be implemented equally nationally as a regulation under the Fisheries Act. A separate consultation process with First Nations regarding these regulations will be undertaken by Environment Canada. It should be noted that only the wastewater effluent quality will be regulated under this initiative; all other aspects of wastewater treatment, such as operator certification, wastewater treatment plant licensing, and so on, will not be covered by the new regulations and the expert panel may provide recommendations regarding those aspects.

Source water protection is featured as a central pillar of the planning and management of all drinking water supplies on federal lands/facilities including First Nations communities. Careful consideration must be given regarding source water protection as it is a multidimensional issue, often crossing jurisdictional boundaries and including both voluntary and regulatory controls.

Another consideration for the panel should be how the proposed regulatory framework options apply to individual systems; that is, privately owned wells and septic systems. They may wish to consider issues such as regulating the construction and decommissioning of privately owned individual wells and septic systems, as well as other aspects that are normally covered by regulations in other jurisdictions.

The following aspects will be outside the mandate of the expert panel:

- **Aboriginal or Treaty Rights on Water:** The expert panel is not to initiate discussions or otherwise abrogate or derogate from aboriginal or treaty rights to water. The Joint Steering Committee will review the implications of the Experts Panel work in the context of aboriginal and treaty rights as recognized in s. 35 of the Constitution Act, 1982.
- **Self-Government Agreements:** Consideration should be given with respect to how a safe drinking water regulatory framework, including any regulatory regime, might apply to self-governing First Nations. However, it is not within the mandate of the expert panel to attempt to change any self-government agreements, nor to attempt to define water-related elements that should be included in future self-government agreements.

- **Drafting of Legislation:** The purpose of the expert panel is to provide options to the Minister for a regulatory framework for safe drinking water. The actual drafting and wording of any legislation that may be required is beyond the mandate of the expert panel. The Minister will develop a consultation strategy if necessary and will determine, as required, the adequate process and timeline.
- **Federal Water Policy:** The purpose of the expert panel is to establish options for a regulatory framework to help ensure safe drinking water in First Nations communities. The federal government will address its own internal policy issues with respect to any new regulatory framework that results from the options paper of the expert panel.

There are also several issues related to the implementation of the various options considered in the regulatory framework that should be considered by the panel in its analysis. Although the expert panel may present the problems caused by these issues through their analysis of the options and recommend that further work be done to address them, it is not the role of the expert panel to resolve or address these issues. Such issues include, but are not necessarily limited to:

- human, financial and infrastructure resources required by First Nations to implement the regulatory framework;
- Indian and Northern Affairs policy not to fund private individual systems (wells and septic systems); and
- implications of the ongoing devolution of responsibilities and authority to First Nations.

The final decision as to the selection of the preferred option will rest with the Minister of Indian and Northern Affairs Canada.

APPENDIX C. COMPARATIVE SUMMARY

This appendix provides a summary comparison of provincial, territorial and federal requirements for water and wastewater systems and related matters. See Volume II for additional details.

Notes:

- **Manitoba legislation.** Manitoba legislation is in the midst of reform. The following sections of the Drinking Water Safety Act, S.M. 2002, c. 36 [C.C.S.M., c. D101] have not yet been proclaimed into force: 3, 7-10, 20-25 and 30. Regulations for this Act have not been developed yet.
- **Territorial and federal legislation.** The effect of federal legislation on water regulation in the territories was not assessed.
- **Nunavut.** Section 29 of the Nunavut Act provides that the ordinances of the Northwest Territories and “the laws made under them effective March 31, 1999 will be duplicated for Nunavut.” The chart below only notes where Nunavut has since passed its own laws on the relevant topic; otherwise, the laws of the Northwest Territories are assumed to be applicable

The Nunavut Land Claims Agreement (NLCA) is the foundation of both the Nunavut Territory and the Government and Nunavut. It represents an important reference point for all legislation, policies and regulations dealing with land, water and resource issues in Nunavut. The preamble of the NLCA sets out the following objective for these resources:

To provide for certainty and clarity of rights to ownership and use of lands and resources, and of rights for Inuit to participate in decision-making concerning the use, management and conservation of land, water and resources, including the offshore.

The NLCA includes a number of measures to accomplish this objective. It mandated the establishment of Institutions of Public Government, including The Nunavut Water Board.

For Water Provisions in the Nunavut Land Claims Agreement, see <http://nwb.nunavut.ca/article.htm>

Summary

Operators

Training and certification are distinct means to assure operator competence. Training deals with the educational component, and there are a number of delivery models and processes even within a single jurisdiction. Certification is the process of verifying measures of qualification; there is much greater uniformity on this aspect.

All provinces except Quebec base their operator certification regime on Association of Boards of Certification (ABC) standards. This is the generally recognized standard in North America for testing. The Canadian ABC certification examinations refer to the Guidelines for Canadian Drinking Water Quality rather than U.S. legislation, and use metric units, but in all other aspects the examination is the same as U.S. ABC examinations (although some provinces, such as Alberta, have further customized their examination).

ABC certification standards are implemented through the following provincial organizations:

- Atlantic Canada Water and Wastewater Voluntary Certification Program (Newfoundland and Labrador and Labrador, Nova Scotia, Prince Edward Island, New Brunswick; although each province administers and implements its own programs)
- Ontario Environmental Training Consortium
- Manitoba Water and Wastewater Association
- Saskatchewan Operator Certification Program
- Alberta Environment
- British Columbia Environmental Operators Certification Program
- Northern Territories Water and Wastewater Association

Quebec's qualification program is built on the Red Seal interprovincial standards program.

Certification is mandatory for at least the operator in charge in Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Prince Edward Island, Quebec and Saskatchewan. In some of these provinces, the person/entity responsible for ensuring certification requirements are met is the facility owner/operator; in other provinces, it is the province's regulator itself. Many provinces are moving toward mandatory certification of the operator in charge (and some newer certification systems also specify either training or certification for other operators).

Presently, some form of a training regime is in place in Alberta, Newfoundland and Labrador (optional), New Brunswick (although site-specific), Nova Scotia, Ontario, Prince Edward Island, Quebec and Saskatchewan. Training is either not required or not set out in legislation in Manitoba (although legislation is being reformed), and Northwest Territories. Yukon utilizes British Columbia's training system, but does not make training mandatory.

Extensive (although somewhat dated) information can be found on this topic in the paper by Heather Edwards, "Certification Regimes for Water and Wastewater Facility Operators: A Review of Provincial and First Nations Approaches" (October 24, 2001).

Applicability, Standards and Testing

Applicability Threshold

The following are the minimum number of connections in a water distribution system required for water regulations to apply in some form:

- Alberta – 15
- British Columbia – 2 (1 for anything other than single-family dwellings)
- Manitoba – 15
- Newfoundland and Labrador – 1 (where municipally owned)
- New Brunswick – 2 (and uses more than 50m³ of water per day)
- Northwest Territories – >5
- Nova Scotia – 15
- Ontario – >5 (but certain systems regulated regardless of number of connections)
- Prince Edward Island – 5
- Quebec – 2
- Saskatchewan – 15
- Yukon – 15 (piped system); and 5 (trucked distribution system)

Water Quality Standards

The standard to which drinking water treated varies across the provinces and territories, including the parameters that must be tested for.

All provinces and territories participate in setting the Guidelines for Canadian Drinking Water Quality standards under a federal–provincial–territorial committee convened by

Health Canada. Most provinces refer to or otherwise adopt the Guidelines (either whole or in part): Alberta, New Brunswick, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, Saskatchewan and Yukon.

The only “hard” standard that British Columbia uses is microbiological — it otherwise requires that water be “safe to drink” (although the province can impose numerical standards in operating permits). Manitoba legislation only refers to chlorine residuals (but note that Manitoba is presently reforming its legislative regime).

Ontario and Quebec have comprehensive treatment standards that go above and beyond the Guidelines.

Yukon informally sets the standard at the Guidelines.

Testing

Nearly all provinces have testing requirements, generally varying based on the size of the system, and whether there have been any recent adverse test results.

Testing requirements may also be set out in each facility’s individual approval/licence.

Inspection and Enforcement

All provinces reserve a power either for provincial officers, the director or health inspectors to enter facilities for inspection purposes.

Most provinces (including Alberta, British Columbia, Newfoundland and Labrador, New Brunswick, Nova Scotia and Ontario) provide powers to some or all of the above persons to issue orders against the facility owner or operator in certain circumstances. These orders typically require some form of corrective action to ensure adequate drinking water quality.

All provinces make it a (regulatory) offence to contravene most of the requirements of the legislation (or a term/condition of the licence/approval under which the facility operates). Fine ranges vary based on whether the offence is a repeat offence, the severity of the harm, and whether the offender is an individual or a corporation. The Saskatchewan regime includes administrative penalties (which are absolute liability).

Emergency Plans

There are legislative requirements for an emergency plan in most provinces: Alberta, British Columbia, Manitoba, Newfoundland and Labrador (although not mandatory), Nova Scotia, Ontario, Prince Edward Island (in the form of “wellfield protection plans”) and Saskatchewan (in the form of a quality assurance/ quality control plan).

No such legislative requirement was found for Northwest Territories, Quebec or Yukon. However, emergency plan requirements may also be set out in each facility's individual licence/approval, such as is the case with New Brunswick. In Quebec, municipalities are required to prepare emergency plans, which would address aspects of water treatment and distribution.

Information Reporting

Information (generally in the form of data logs and test results) is typically required to be submitted periodically to the regulator, with special reporting requirements where there is a measured exceedance (or other adverse event triggering the interest of the regulator).

Adverse test results must be reported in all the provinces (but not the territories). Some provinces also require the laboratory analyzing test results to report exceedances directly to the regulator (Newfoundland and Labrador, New Brunswick, Ontario, Prince Edward Island, Quebec and Saskatchewan).

Annual reports are required by legislation to be submitted to the regulator for Alberta, New Brunswick, Ontario, Prince Edward Island and Saskatchewan (which also requires they be sent directly to consumers).

Design Approvals

All jurisdictions reviewed require an approval of some sort to design or construct a water treatment plant.

Operating Approvals

Similarly, all jurisdictions reviewed require an approval of some sort for the operation of a water treatment plant.

Source Protection

Source water protection regulations vary across the provinces. All provinces, of course, have environmental laws of general application that typically prohibit the deposit of potentially harmful contaminants except by permit/approval/authorization.

Other provinces have regulations that designate certain watersheds/areas in which more stringent rules apply, in order to protect water quality for downstream users (whether surface or groundwater): British Columbia, Manitoba, Newfoundland and Labrador, New Brunswick, Nova Scotia and Quebec. Yukon has a discretionary regime.

In Ontario, the Clean Water Act was passed in October 2006 but has not yet been proclaimed into force. In Northwest Territories, a source protection strategy is being developed.

Wells

All jurisdictions reviewed, except Northwest Territories, regulate wells in some form. Typically, well-drillers and well-drilling are regulated, as well as protection of groundwater from infiltration into the well. In some provinces wells must be licensed, and well reports are sometime required upon the installation of a well. Many well regulations include source protection measures such as minimum setbacks from agricultural operations.

Wastewater Treatment

Wastewater (sewage) treatment is generally regulated in a parallel fashion as water treatment (often in the same regulation). The certification/training regime is also generally linked to that of water treatment plants. Some aspects of wastewater transport are addressed by provincial building codes.

Cisterns, Water Trucking

Alternative methods of potable water delivery such as cisterns, trucking or other bulk water transport systems are only directly addressed in a handful of provinces.

British Columbia includes trucked water in its definition of “domestic water system.”

Manitoba has a general standard of “sanitary condition and in good repair to the satisfaction of the medical officer of health” for tank trucks.

New Brunswick defines “waterworks” to include cisterns and reservoirs and tanks. There are also regulations surrounding water trucking.

Northwest Territories has standards for water transport by water haulage tanks.

Ontario includes inspection powers for containment systems used to transport potable water, and exempts from testing requirements certain small drinking water systems if their drinking water comes from water treatment plants and is stored in a particular way.

Prince Edward Island sets forth regulatory requirements for water loading stations.

Quebec regulates “water supplied by tank truck.”

Saskatchewan regulates the delivery of potable water by bulk tank.

Note that these areas may be indirectly regulated through laws of general application, such as highway traffic legislation and public health legislation.

Bulk Water Use

Some provinces have highly developed legislation for water diversions, takings and riparian rights in general; others do not.

Robust regimes can be found in Alberta, British Columbia, Manitoba, and Newfoundland and Labrador.

New Brunswick requires a permit for water diversions.

Ontario requires a permit to take more than a total of 50,000 litres of water in a day from a watercourse.

APPENDIX D. HEARING LOCATIONS AND DATES

Whitehorse	June 20–21
Edmonton	July 6–7
Vancouver	July 12–14
Saskatoon	July 26–27
Winnipeg	July 31–August 1
Toronto	August 8–9
Quebec City	August 10–11
Halifax	August 14–15
Thunder Bay	August 22–23