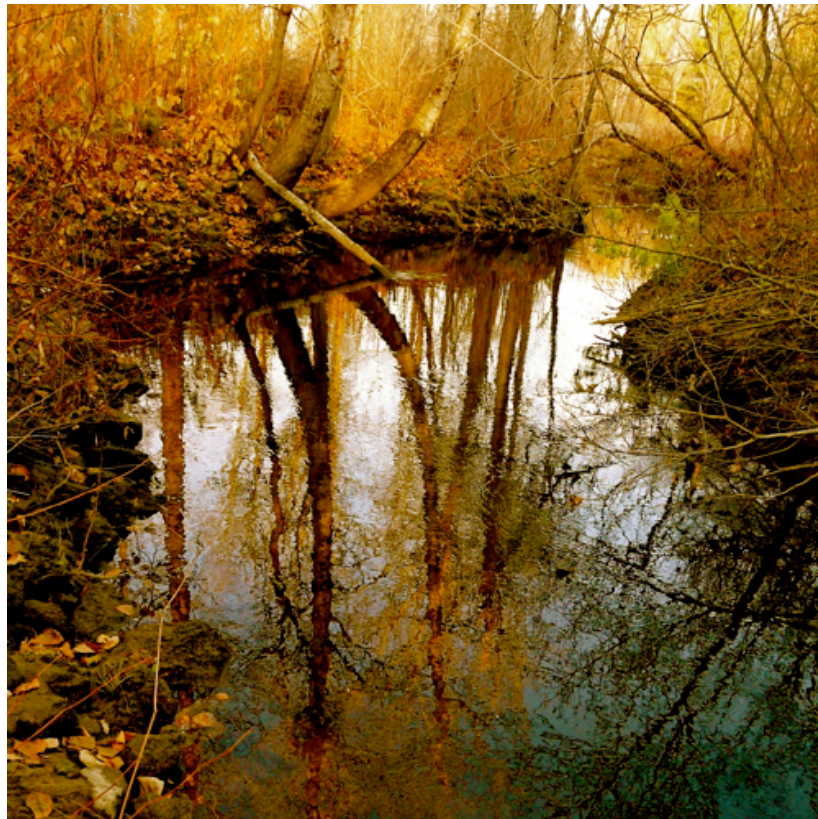

A First Nations Source Protection Toolkit



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INTRODUCTION

A First Nations Source Protection Toolkit

This First Nations Source Protection Toolkit is intended for use by First Nations communities wanting to address issues with source water and to protect source water from future contamination.

Source water is water found in its natural state, in lakes, rivers and groundwater. Protecting these waters from contamination, and addressing existing issues with source water, is known as source water protection, or source protection. In practice, given the vastness of water resources, source water protection efforts tend to be focused on sources of community drinking water.

The purpose of this Toolkit is to facilitate source protection work by First Nations communities to reduce the severity of on-reserve drinking water threats, and to protect First Nations water supplies generally. Source protection efforts supplement the protection provided by existing on-reserve treatment systems and can also help alleviate chronic and/or periodic drinking water issues in First Nations communities. Perhaps most important, the concept of protecting water at its source, as opposed to focusing largely on the treatment of water that will be used for human consumption, is very much in line with the worldviews of many First Nations.

The approach presented in this Toolkit was developed with the full awareness that First Nations communities often face challenges related to project implementation capacity. The approach is therefore largely about getting the most out of existing resources.

Source protection efforts cannot in themselves solve *all* water issues faced by Ontario's many First Nations communities. However, through communal efforts, and by maximizing existing resources, it is possible to carry out meaningful source protection work and bring about positive change. This is the ultimate goal of this Toolkit.

A Legal Companion to the First Nations Source Protection Toolkit

A companion document to this Toolkit, First Nations' On-Reserve Source Water Protection: A Legal Toolkit, was developed by the Canadian Environmental Law Association. The Legal Toolkit was created in order to simplify the tasks of carrying out on-reserve source protection projects. It contains template by-laws and Band Council Resolutions for addressing some of the most common source water threats found on First Nations reserves, such as gas storage tanks, septic systems, landfills, and transportation corridor issues.

The Legal Toolkit can be downloaded at <http://www.cela.ca/publications/first-nations-reserve-source-water-protection-legal-toolkit>

TRADITIONAL KNOWLEDGE

First Nations traditional knowledge is a central element in collaborative projects that involve indigenous peoples. The knowledge sought by project coordinators, and which First Nations participants are encouraged to supply, usually relates to information on project-related landscape features, and people's observations concerning how the environment, or parts of the environment, have changed over time.

Knowledge of landscape details, and the documentation of change, adds value to an environmental study such as a source protection project. In fact, experience demonstrates that in the absence of such shared knowledge, important issues can be overlooked. Moreover, in practice the principal contributions that individuals sharing traditional knowledge can make to a source protection project relate to knowledge that comes from an intimate understanding of the landscape they have lived on for many years, and changes observed there. However, this "practical" knowledge is but a small part of what has come to be known as First Nations traditional knowledge.



First Nations traditional knowledge is more a worldview than a body of accumulated thought. It encompasses a First Nation's place in the world, including its relationships with flora; fauna; "inanimate" matter; spirits; and places of spiritual importance, either to a community or an individual. Although much of this "knowledge" is very personal, and simply not meant to be shared, some of it, fortunately, lends itself to environmental projects, including source protection work.



The sharing of traditional knowledge in support of source protection work is strongly encouraged. It is routinely sought in environmental work due to its relevance, and the fact that it *does* add value to a project. Nevertheless, it is important to remember that the traditional knowledge that can be shared in support of an environmental project represents but a very small part of a contributing individual's or people's spiritual richness.

FIRST NATIONS SOURCE PROTECTION: THE APPROACH

Why Source Protection?

The safeguarding of people's drinking water through protecting water at its source is a relatively new concept. Modern sanitation, which developed over the course of the nineteenth century, was very much focused on protecting drinking water through water *treatment*, which eventually came to include both treating water before it was distributed for human consumption and treating "waste" water before it was returned to the natural environment.

During the 1990s source protection remained largely a topic for academics. However, at the turn of the twenty-first century two important Canadian water-treatment failures changed the nature of the discussion on source water in this country. First, in Walkerton, Ontario in the spring of 2000, half the town's population of 4,200 people were infected with the bacterium *E. Coli* from a contaminated municipal well. Seven people died, and hundreds more would experience long-term health effects. The following spring, contamination of drinking water from an upstream wastewater source occurred at North Battleford, Saskatchewan. The contamination of North Battleford's water supply with the parasite cryptosporidium resulted in more than 50 per cent of the town (population more than 10,000) becoming sick with vomiting and diarrhoea; there were fortunately no deaths, and few people suffered long-term health effects.

One of the conclusions reached after these events was that water treatment is, in itself, not enough to protect people's drinking water. As a consequence of two public inquiries into these two tragedies, and considerable reform efforts largely driven by the concerted effort of health and environmental groups, there was a move towards more comprehensive drinking water protection, including more intensive water monitoring efforts, and the broadening of monitoring so as to include distribution systems and source protection. In Ontario, this focus resulted in water distribution and source water legislation, the *Safe Drinking Water Act, 2002* and the *Clean Water Act, 2006*.

Source Protection in Ontario

Source protection efforts carried out under the *Clean Water Act, 2006* (CWA) were launched in earnest in early 2008. The Ontario Ministry of Environment (MOE), Conservation Authorities, and stakeholders spent the next few years identifying, assessing, and drafting source protection plans for mitigating threats to municipal drinking water sources across the province.

Under the CWA, source protection work was carried out in nineteen source protection areas and regions. This work occurred over tens of thousands of square kilometres of land in Southern, Central and Northern Ontario and directly and indirectly affected more than 80 per cent of the province's population. Decision-making, including the development of CWA rules and regulations, was largely centralized and carried out by the MOE. Regionally, technical work related to source water threat identification and assessment was undertaken by Conservation Authorities. The shaping of the regional source

protection plans was undertaken locally by Source Protection Committees. These committees included stakeholders representing municipal, industrial, commercial, agricultural, environmental, and resource-extraction interests. Final versions of source protection plans were subject to the approval of the MOE.

First Nations and the Ontario Source Protection Planning Process

First Nations communities are explicitly identified in the CWA as groups who ought to be included in the source protection planning process. First Nations members were invited to participate on Source Protection Committees as stakeholders in the source protection planning process.

However, despite these efforts, only a few Committees had First Nations representation. And of the 133 First Nations communities in Ontario, only three, as of the autumn of 2014, have entered into agreements with the MOE to have their drinking water systems brought within the scope of the provincial source protection planning process.

There are several reasons why so few First Nations communities have elected to participate actively in the province's source protection planning process to date. First, a significant proportion of First Nations communities are located in parts of the province, especially in Northern Ontario, beyond the geographic scope of the process. Second, First Nations communities see themselves as political bodies that parallel Canada's senior governments and consider themselves as more than stakeholders in any provincial process. Third, First Nations communities are often reluctant to engage in provincial efforts in the absence of federal participation in any process. Lastly, First Nations communities are hesitant to engage in a process for which funding for mitigation measures has not been guaranteed from the outset.

A First Nations Approach to Source Protection

In general the approach to source protection discussed in this Toolkit follows that which was developed and implemented by the province of Ontario. It consists of three phases. First is the threat identification phase during which source water issues are identified. Second is a threat assessment phase during which threat severity is gauged and a source protection plan for mitigating threats is developed. And third, during the threat mitigation phase, the source protection plan is implemented.

In addition, First Nations source protection, like source protection undertaken by Ontario, is placed in the context of a multi-barrier approach to drinking water protection. A multi-barrier approach means that, in addition to monitoring water during the water and wastewater treatment phases, drinking water is also monitored while being distributed to consumers, and in its natural state (i.e. source water). The multi-barrier approach not only implies effective monitoring during all the stages in the drinking-water cycle, but effective *communication* among water workers. As a key recommendation flowing from the Walkerton Inquiry, the multi-barrier approach, when practised effectively, is a multiple-line of defence against drinking water issues.

Where First Nations source protection and Ontario’s planning process differ is scale and governance. Ontario source protection was carried out regionally, over areas thousands of square kilometres in size, with populations ranging from 100,000 to over a million people. First Nations source protection is necessarily smaller in scope, with the focus on the reserve. In terms of governance, First Nations source protection is more “bottom-up.” The identification of threats is based largely on community contributions to the project, assessment of threats is undertaken by community volunteers and Band Office members, and mitigation measures are carried out communally by volunteers and available Band Office funding.

The key person in the First Nations approach is the Community Animator. It could be an individual hired into this position, a Band Office member allocated to this role, or a community member acting on a voluntary basis. The Community Animator coordinates the gathering of information related to threats to source water. They chair the Community Planning Group. They organize the creation of the source protection plan, and oversee drafting and editing. The Community Animator also coordinates mitigation measures, and the management of resources for reducing the severity of threats to community source water.

Lake Abom Beach, Pays Plat



FIRST NATIONS SOURCE PROTECTION: THE EXPERIENCE OF THE PAYS PLAT FIRST NATION

The Pays Plat First Nation: A Narrative Account of the Community's Experience

The following is a narrative account of the source protection experience of the Pays Plat First Nation. It is hoped that in the telling of this story, other communities can share and learn from the process.

The Pays Plat First Nation engaged in source protection work from the spring of 2013 to the autumn of 2014. During this period, the community identified threats to its source water, assessed these threats, and developed a source protection plan that set out the mitigation measures for reducing threat severity. In addition, the project helped raise drinking water awareness among community members, and gave community members the chance to voice their concerns about the area's water (and environment more generally).

Pays Plat's source protection experiences are shared below, telling the story of the community's threat identification and threat assessment phases.

Introduction to the Community

The Pays Plat First Nation is a small Ojibwa community located on the north shore of Lake Superior. Their reserve, located on flat ground with deep clay soils in a region dominated by large ridges, is approximately 2.5 square kilometres in size, although the Band will officially be acquiring some sixteen square kilometres in the near future. The community's traditional territory is significantly larger, and covers much of the neighbouring land, as well as some of the nearby islands to the south. Two water courses, the Pays Plat River and the Pays Plat Creek, flow southwards through the reserve. In addition, the TransCanada Highway (17) and a Canadian Pacific Railway line cross the reserve on an east/west orientation, while an important electricity transmission corridor is located just to the north of the reserve. About eighty people live on the reserve, while the Band numbers some two hundred total persons. Employment opportunities for on-reserve community members are mostly found off-reserve, in the nearby towns, or in forestry, mining, tourism, or with the Canadian Pacific Railway. On-reserve employment consists of Band Office managerial and administrative staff, a community-run timber business, a gas station and general store, and several seasonal business endeavours related to tourism. There are about thirty houses on the reserve, as well as a number of public buildings. The community operates a water treatment plant, with wastewater treated with septic systems. The community also has exclusive use of a nearby landfill. Responsibility for the landfill, which is at present geographically off-

reserve and operated by the Ontario Ministry of Natural Resources, will be transferred to the Band on the community's acquisition of the aforementioned sixteen square kilometres of land. Jurisdictional clarification concerning the electricity transmission corridor is also anticipated for the post-acquisition period, as a section of the corridor will come to be located on the Pays Plat reserve.

Pays Plat takes its water from a bay on the north shore of Lake Superior. Although some area residents consider the water quality on this bay to be excellent – some households in nearby Rosspoint, a village on the same bay as Pays Plat, take their drinking water directly from the lake without treatment – a number of threats to Pays Plat's source water exist. These threats, how they were perceived by the community, and how the Community Planning Group ultimately decided to approach them and reduce their potential to cause harm to community drinking water, were central to this project.

Identifying the Threats to Pays Plat's Source Water, May 2013 to January 2014

In mid-May the Pays Plat First Nation hired Debbie King as Community Animator. Ms King had recently been trained as an environmental technician at Confederation College in Thunder Bay. Between May and September, Ms King was engaged mostly in field work and the development of a survey in support of efforts to gather community knowledge and perceptions of source water threats. In an effort to increase community awareness of Ms King's efforts and the project in general, an open house was held on 4 September 2013. A number of community members completed the first threat surveys at the open house.

In the autumn Ms King continued her field work, including ongoing water and soil testing. Using equipment she has been able to borrow at no cost from contacts at Confederation College and Lakehead University, Ms King's testing focused on the locations of probable threats to community source water on the Pays Plat reserve, and points on Pays Plat Lake, at the head of the community's watershed. The results of the water testing conducted in the summer and autumn of 2013 showed a couple of samples at the edge of normal ranges, and several samples beyond the accepted norm. The pH on Pays Plat Lake was reported as 6.1, which was deemed to be slightly low. The phosphorus reported on Pays Plat Lake was at the upper end of the normal range. Readings of around 170 micrograms/litre of aluminum were reported from river samples; the accepted upper limit for aluminum is 100 micrograms/litre.

With the threat information obtained from the surveys and the initial water and soil testing results (Pays Plat have decided to continue this testing beyond the life of this project), the threat identification stage of the project was largely completed. The information and the testing results were then shared with the larger community at an open house on 29 January 2014. Threats ranged from people's observed changes in flora and fauna over the years; to concern about potential future changes, often linked to the possible effects of climate change; to suggestions on how the waters of the community could be improved, from the installation of a wastewater facility to the planting of more trees to improved maintenance of the beach.

Assessing the Identified Threats to Pays Plat's Source Water: February to June 2014

In late February the Community Planning Group (CPG) was created. Members include Ida Wanakamik, Leona Sutton, Gary Bouchard, Rene Wanakamik, and Kim Gallerno. The CPG is a body of community members interested in taking direct roles in the assessment of threats to Pays Plat's drinking water, as well as the development of the source protection plan.

Community Animator Debbie King, who planned the CPG's meetings and coordinated related communications, distributed project material to Group members in mid-March. This material explained the project in detail, and provided information on project activity to February 2014. Two weeks after the distribution of material, the CPG met for the first time to discuss the project to date, and receive clarification on any issues from Ms King.

At the second meeting, held in mid-April, the CPG went over all the identified threats in turn. For each threat, a number of mitigation measures were suggested. In addition, the CPG divided threats into "upper-order" and "lower-order" ones: upper-order threats being the more pressing issues to tackle, and lower-order threats being issues, while of concern – and frequently the annoyance – of community members, do not represent quite the threat to source water as upper-order ones. (The two main lower-order threats concern the state of the Lake Abom Beach and the snow plough turn-arounds along the TransCanada Highway. Both the beach and the turn-arounds are frequently garbage-strewn. However, the sort of garbage observed at the beach and the turn-arounds, although sometimes unpleasant – e.g. truck drivers' pee jars and dirty diapers – did not constitute, for the CPG, significant threats to the community's source water.)

The CPG met for the third time in mid-June. In advance of this meeting, Ms King prepared and distributed briefing notes to CPG members. These notes include the suggested possible mitigation measures for each threat, the estimated costs in capital and human labour associated with implementing them, and references to consultants and academics Ms King spoke to during her research (as discussed further below).

The more severe threats included transportation corridor issues, which mostly concern truck traffic on the TransCanada Highway and train traffic on the Canadian Pacific Railway line; issues related to the community's septic systems; erosion concerns along the banks of the Pays Plat River; and issues related to the landfill, specifically, what goes into it, the monitoring of what goes into it, and the possibility of landfill leachate reaching the bay where the water treatment plant is located. Of these, the focus was on the first three.

The landfill, although considered among the more severe threats, was not considered as significant as the other three, due to its relatively small size (for a landfill); the unusually deep (10 metres in some places) semi-permeable silt soils that are found on the flat stretch of land from which the community takes its name, soils that allow infiltration but through which contaminants in solution pass very slowly; and the distance between the landfill and the community's water intake pipe, which largely precludes the possibility

that leachate could pass through the area's soil and contaminate the reserve's water supply. This view of the threat posed by the landfill is the consensus of the experts Ms King spoke to on the matter: consultants with Down to Earth Engineering Ltd stated that given the area's geography and the composition of the refuse sent to the landfill, contamination is highly unlikely. However, the landfill's relatively minor accepted threat notwithstanding, the CPG did decide to include landfill-related mitigation measures in the source protection plan, including establishing a monitoring well and a move towards segregating various types of refuse.

It has been estimated that about 10 per cent of the community's septic systems are leaking. The principal concern with septic systems is their proximity to the Pays Plat River, which, should leachate from leaking fields reach it, would greatly reduce its time of travel to the bay on which the water intake is situated. (Contamination of drinking water from an upstream wastewater source was the incident that occurred at North Battleford, Saskatchewan in 2001.)

The erosion issue along the banks of the Pays Plat River is a concern at two locations: adjacent to the inhabited part of the reserve and upstream of this area. The issue has been traced in part to deliberate changes of the watercourse related to the construction of the electricity transmission corridor several decades ago. Increased erosion, and in particular the sudden collapse of a sizeable section of the riverbank, could result in a significant increase in the presence of suspended solids in the community's source water, as well as shortening the distance between the septic systems and the river. On a note related to source protection, increased sedimentation of the river and the bay into which it flows could negatively affect fish habitat.

By far the most important source water concerns, the ones considered the greatest threat to the community's source water, are the transportation corridors which pass through the reserve: the TransCanada Highway and the Canadian Pacific Railway line. More specifically, the threat concerns the contents of truck trailers on the highway and that of rolling stock on the railway. A considerable proportion of Canadian east/west trade passes along these corridors, both of which run straight through the small reserve of Pays Plat. Of the two corridors, the rail corridor represents the greater threat, given its closer proximity to the lake, and the significantly larger volumes of cargo, including petroleum and related products, that trains carry compared with trucks.

Other issues, considered of minor significance by the CPG but identified by many community members, include refuse at Lake Abom Beach, which consists of both garbage from tourists as well as some marine debris; garbage and empty oil drums along the rail line; and garbage at the snow plough turn-arounds.

The Source Protection Plan: Finalization and Implementation

The following is a summary of the mitigation measures selected for each threat to drinking water discussed above.

Transportation Corridor Issues

- The purchase of containment booms for use on Pays Plat River or Creek, for containing spills
- The purchase of 205 litre spill kits
- Training on the proper use of containment booms and spill kits
- The creation of a Pays Plat emergency response team (ERT) to deal specifically with source water and related threats
- Erecting signs along the TransCanada Highway, indicating the presence of an intake zone
- Posting emergency telephone numbers throughout the community

Septic Fields

- Have the fields, and preferably all the houses on the reserve, professionally inspected
- Adding 6 to 10 centimetres of topsoil to fields
- Laying sod on fields
- Continued testing of the Pays Plat River and nearby ditches for phosphates, nitrates and bacteria (associated with septic system problems)
- Perform dye tests on fields to determine/confirm leaching
- Hiring a summer student to help spread soil, and plant and maintain till it is fully rooted; and help create educational pamphlets on septic field care and maintenance for community members

The Landfill

- Regular testing of Willie White's Creek, which flows into the bay the water treatment plant is situated on
- Creating segregation sites for specific refuse, e.g. batteries, electronics, tires
- Installing monitoring wells to test groundwater for leachate
- The introduction of pallets to keep refuse off the ground
- Introducing a recycling program
- Hiring a summer student to help create educational pamphlets for community members, install signs, and install the pallets

Erosion along the Pays Plat River

- Hiring a summer student or students to paddle or walk sections of the river to identify erosion issues
- Prevent future erosion along the banks by planting more trees, the use of riprap, and improving grading

Lake Abom Beach

- Hiring a summer student to perform general, regular cleanup
- The installation and regular emptying of refuse bins (ideally bear-proof ones)
- Signs alerting people to issues of leaving food waste, including cooking grease, behind (i.e. attracting bears), and to encourage people to clean up after themselves
- A ban on the use of glass bottles and containers at the beach

Lake Abom Beach, Pays Plat



MAPPING AND THE IMPORTANCE OF VISUALIZATION

Mapping is an excellent means of showing source protection threats as a great deal of information can be conveyed to the reader very quickly. Maps can show the locations of threats, but also spatial relationships among threats, infrastructure and landscape features. For example, a water treatment plant located downstream of a community's sewage lagoon could have an impact on how this potential threat to source water is assessed by the Community Planning Group. The representation of spatial relationships in maps can also be used to justify further analysis of known issues, for example, the frequent and/or seasonal issuing of boil water advisories on a First Nation reserve – analysis which can ultimately lead to action and mitigation of such an issue.



CONCLUSION

People often state, quite simply, that water is life. The life-water that usually comes to mind is frequently a lakeshore, a river or creek, in pristine condition. Source water is life-water. Addressing source water issues, and protecting source water for future generations, is important for ensuring that the source water a people live on remains as pure as the life-water of their imaginings.

