

Presence/Absence Program

EVALUATION REPORT

November 1996
Water Group
IDRC
Programs Branch

This evaluation report is dedicated to the memory of Peter Seidl whose energy and enthusiasm made possible the creation of this program.

Executive Summary

Since 1991 Health Canada has funded several initiatives to improve the quality of drinking water in First Nations (FN) of Canada as part of its *Drinking Water Safety Program for Native People* (DWSP). The Presence/Absence program (P/A P) is an important part of this effort. This program seeks to develop the mechanisms necessary for FN communities to monitor the bacteriological quality of drinking water by providing training on the P/A test and the means to install and operate community laboratories. The Split Lake Cree First Nation in collaboration with Health Canada developed the *WQ Technician Training Program* in order to prepare FN members to conduct these activities in their own communities.

This report presents the results of a formative evaluation study of the P/A program. Evaluation activities were conducted between October 1995 and May 1996. These included: a review of training materials; interviews with trainers, trainees, and technicians; participant observation during the training session of November 1995 at Split Lake; field visits to seven Tribal Council offices and eight community laboratories; and interviews with Band Council members, Environmental Health Officers (EHO's), Community Health Representatives (CHRs), and FN specialists involved in environmental monitoring. Appendix E discusses in more detail the methodology used in this evaluation study.

In December of 1995 thirty eight FN communities from Manitoba, Saskatchewan and Ontario were participating in the P/A program. Twenty one of these communities had fully operational laboratories and monitoring programs while nine other were in the process of setting them up. In eight cases there were serious difficulties in setting up the community laboratory and/or in retaining the trained technicians.

Field observations and interviews suggest that two conditions have to be met in order for community monitoring programs to be established. These conditions are: (1) strong dedication and commitment by the technician to the program; (2) adequate technical, moral and political support given to the technician by EHOs, Band Councils and CHR managers. Both conditions were present in all the communities with successful monitoring programs.

The report concludes that the training program developed by the Split Lake First Nation has been successful in providing water quality technicians with the basic knowledge and skills necessary to establish a functional laboratory and correctly perform the water quality tests. Six of the eight community laboratories visited in the three provinces were in operation. All six were properly set up and run. One more was in the process of being built and another had not been properly installed and ceased operation within six months due to the lack of support of the Band Council and the poor location of the laboratory. Twelve of the fourteen trainees interviewed said that the training had contributed in building their self-esteem and confidence, and instilled in them the desire to pursue further training in water and environmental related topics.

The report identifies two aspects of the training program which require further attention. These are: (1) the need to strengthen the links between the program, health promotion and environmental education; (2) the need to offer additional training on standard testing procedures used by provincial laboratories in order to allow FN technicians to cross-check the results obtained in local laboratories with those obtained in provincial laboratories.

The study demonstrates that the P/A P has had a positive impact on FN communities. Most technicians, EHOs, CHRs and Band Council members identified two immediate benefits of the program: (1) the increased availability and use of water quality data for ensuring the safety of drinking waters in the communities; (2) the creation of socially rewarding and meaningful jobs in the community.

The study also illustrates the ways in which the program has served to sustain the benefits of investment in water infrastructure and training of plant operators. The program ensures that the treated water coming out of the treatment plants is free from bacterial contamination and that the safety of the water is maintained through the delivery process (pipes and/or water trucks) and storage (cisterns or barrels). More importantly, the program helps convince people about the need to treat and protect water from contamination.

Finally, the report offers several recommendations for enhancing the delivery of the program. These recommendations (summarized in chapter 6) reflect the answers received from the people who were interviewed during the study. The recommendations address the following issues:

- Training (organization of the course, additional training/support resources);
- Pool of technicians;
- Management of the program;
- Operation of community laboratories;
- Strategies to implement the program at the national level.

In summary, the report shows that the P/A P has improved the bacteriological testing of drinking waters in participating FN communities. The program has four elements of value in the eyes of FN peoples:

- community ownership of a program for the delivery of a community service;
- capacity-building of FN individuals;
- generation of socially meaningful and rewarding employment in remote FN communities;
- creation of a physical resource (the laboratory) and development of local expertise (water quality technicians) to carry out broader services in health and environmental monitoring and protection.

These elements go beyond the collection of water quality data. They deal with issues of self-determination of FN and the mechanisms involved in the devolution of basic services to FN communities. The challenge at this point is to take the water quality monitoring program to other FN communities while also continuing to improve it.

Abbreviations

AFN	-	Assembly of First Nations
APHE	-	Action Plan on Health and the Environment
AMC	-	Assembly of Manitoba Chiefs
DIAND	-	Department of Indian and Northern Affairs
DWSP	-	Drinking Water Safety Program for Native People
CHR	-	Community Health Representative
EHO	-	Environmental Health Officer
FN	-	First Nations
IDRC	-	International Development Research Centre
NWRI	-	National Water Research Institute of Environment Canada
MSB	-	Medical Services Branch of Health Canada
P/A P	-	Presence/Absence Program
WQ	-	Water Quality

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Evaluation of the P/A Program

1. Background

1.1 The Drinking Water Safety Program for Native Peoples

Health Canada's *Drinking Water Safety Program for Native People* (DWSP), is a \$25 million initiative that falls within Canada's Action Plan on Health and the Environment. The program was initiated in 1991-1992, with a funding period of six years. Its main objective is to improve the health of FN peoples by addressing the problem of inadequate and unsafe drinking water in FN communities. DWSP funding targets three priority areas:

- i. improving water sample collection and the methods used to test the bacteriological and chemical quality of drinking water;
- ii. improving, in coordination with DIAND, the design, operation and maintenance of water systems in FN communities;
- iii. providing health training to treatment plant operators and FN community members who carry out water quality (WQ) testing.

The program works in close consultation with Health Canada, the Department of Indian and Northern Affairs (DIAND) and the Assembly of First Nations (AFN) to ensure that the needs of FN communities are being met. The program also promotes the involvement of communities in the planning, design and implementation of program activities. Figure 1 presents the various components of the DWSP.

1.2 A Program Focus for P/A Testing

To date, a major objective of the DWSP has been to facilitate on-site testing of the bacteriological quality of drinking water. Two tests have been promoted for this purpose: water testing with the *Colilert test*, a commercial test that comes in "ready-to-use" form; and, water testing with the *P/A test*. This latter test is prepared from common reagents in a community laboratory that is specifically developed for this purpose. During the initial 6-year funding period, each of these two tests will receive approximately 30% of the total amount of DWSP funds.

This evaluation report is concerned with the second approach, WQ testing with the P/A test. The approach consists of three different activities: training local FN people to prepare and use the P/A test; installing community laboratories; and implementing locally managed WQ monitoring programs which involve local actions to remedy and/or protect the quality of drinking waters.

The Split Lake Cree First Nation in coordination with Health Canada have developed the *WQ Technician Training Program* in order to give FN members the necessary training to conduct these activities in their own communities. This training program is presently being administered by a P/A steering committee comprised of members of the Split Lake Cree First Nation, the Assembly of Manitoba Chiefs, the National Water Research Institute (NWRI) of Environment Canada, the Medical Services Branch of Health Canada, and most recently, the International Development Research Center (IDRC). Both the approach and the training program have evolved from previous applied research on suitable water quality testing in remote FN communities. This research was conducted by the Split Lake Cree First Nation in collaboration with NWRI, and with funding from IDRC.

For the purpose of this study, all activities related to the training and implementation of local water quality monitoring systems based on the P/A test will be jointly referred to as **The P/A Program**, or **P/A P**, even though Health Canada does not necessarily recognize the implementation of these activities as forming a specific program.

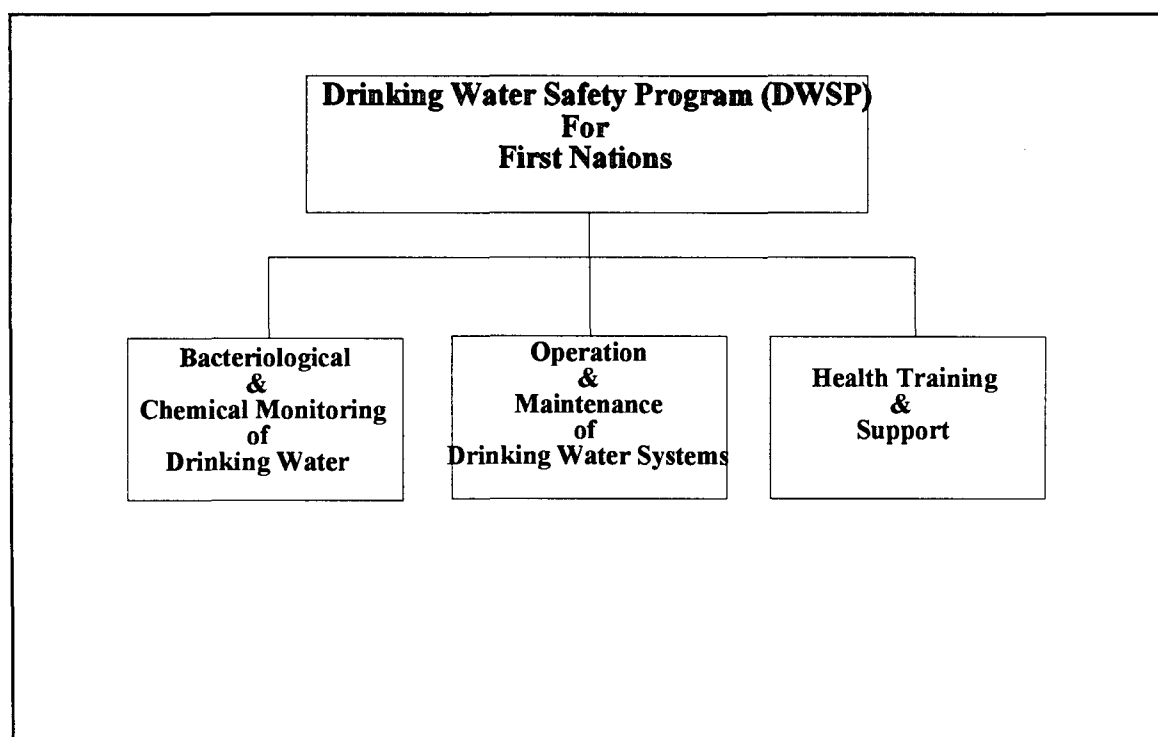


Figure 1.1 Components of the DWSP

The P/A P can therefore be considered as having three specific goals:

- i. to develop the capacity in FN communities for collecting and using information on the bacteriological quality of drinking water;
- ii. to develop adequate, long-term water monitoring systems;
- iii. to train technicians in hygiene education and promote the links between health, hygiene and water quality protection.

1.3 Evaluation Objectives

The IDRC was asked by the P/A Steering Committee to carry out a formative evaluation of the various activities which form the P/A P. The objectives of the evaluation study were developed in consultation with the Steering Committee. These are:

- i. to evaluate the effectiveness of the Split Lake training component of the P/A P;
- ii. to evaluate the implementation of the program at the community level;
- iii. to identify and document the impact of the program on the safety of drinking waters;
- iv. to make recommendations towards enhancing the delivery of the program.

A description of the evaluation methodology is presented in Appendix 1.

2. The P/A Program

2.1 Structure and Process

Figure 2 presents the overall organizational structure for the delivery of the various activities that form the P/A P. Although all funding decisions are made by Health Canada, these decisions respond to requests made by FN peoples. Allocations are made in a decentralized manner, through Health Canada regional offices. First Nations apply for funding directly to the corresponding regional office and sign contribution agreements with the Medical Services Branch (MSB) of Health Canada. Before a project can be funded, the proposal must have the support of the regional office. Program funds are used for several purposes, including: sending two local community members to a training course; hiring one of these two trainees as a WQ technician for the remaining current fiscal year (usually on a part-time basis); buying the necessary equipment to conduct laboratory operations; and paying for reagents and supplies necessary to carry out water quality tests for a one year period.

Reapplication and renegotiation of the contribution agreement for salaries, reagents and supplies is necessary at the beginning of each following fiscal year.

The First Nation of Split Lake has a separate contribution agreement with Health Canada to provide training and technical support to First Nations. The training consists of a "hands-on" training course given by local trainers at Split Lake over a one week period. FN trainers explain and demonstrate the operation of the various laboratory instruments and pieces of equipment, and the procedures to prepare test reagents and process water samples. The trainees are then given the opportunity to practice the various procedures while being coached by the trainers and other participants. The course also covers methods for collecting samples from various types of drinking water sources, how to interpret test results, and possible corrective measures that can be followed if testing indicates that the drinking water from a home, public facility or water source is contaminated. Technical support by the Split Lake trainers is provided, on a request basis, to the trainees as they return to their communities.

The Split Lake FN and other organizations like the Assembly of Manitoba Chiefs (AMC) and the AFN are responsible for the recruitment of new First Nations to P/A P related activities and provide assistance in generating awareness and interest for the program in FN communities, Tribal Councils and Provincial Territorial Organizations. Environmental Health Officers (EHOs) also play an important role in the promotion of the P/A P by assisting interested communities to prepare proposals for funding. At the community level, different players participate not only in the generation and reporting of water quality data, but also in the implementation of remedial actions. These players may include: the WQ technician, the Community Health Representative (CHR), the EHO, water treatment plant operators, water truck drivers, cistern cleaners, Band Chief, Band superintendent, and Councillors responsible for the Health and Water portfolios. Coordination of monitoring activities fall by default on the WQ technician and the EHO.

Most P/A P activities to date have been concentrated in Saskatchewan and Manitoba. This is in part due to the fact that in these provinces there are many remote communities for which the P/A P is particularly suited. Another possible reason may be that the program originated in Manitoba and has the support of FN organizations in that province. In the case of Saskatchewan, the EHOs have been particularly supportive of the community-based approach inherent in the P/A program.

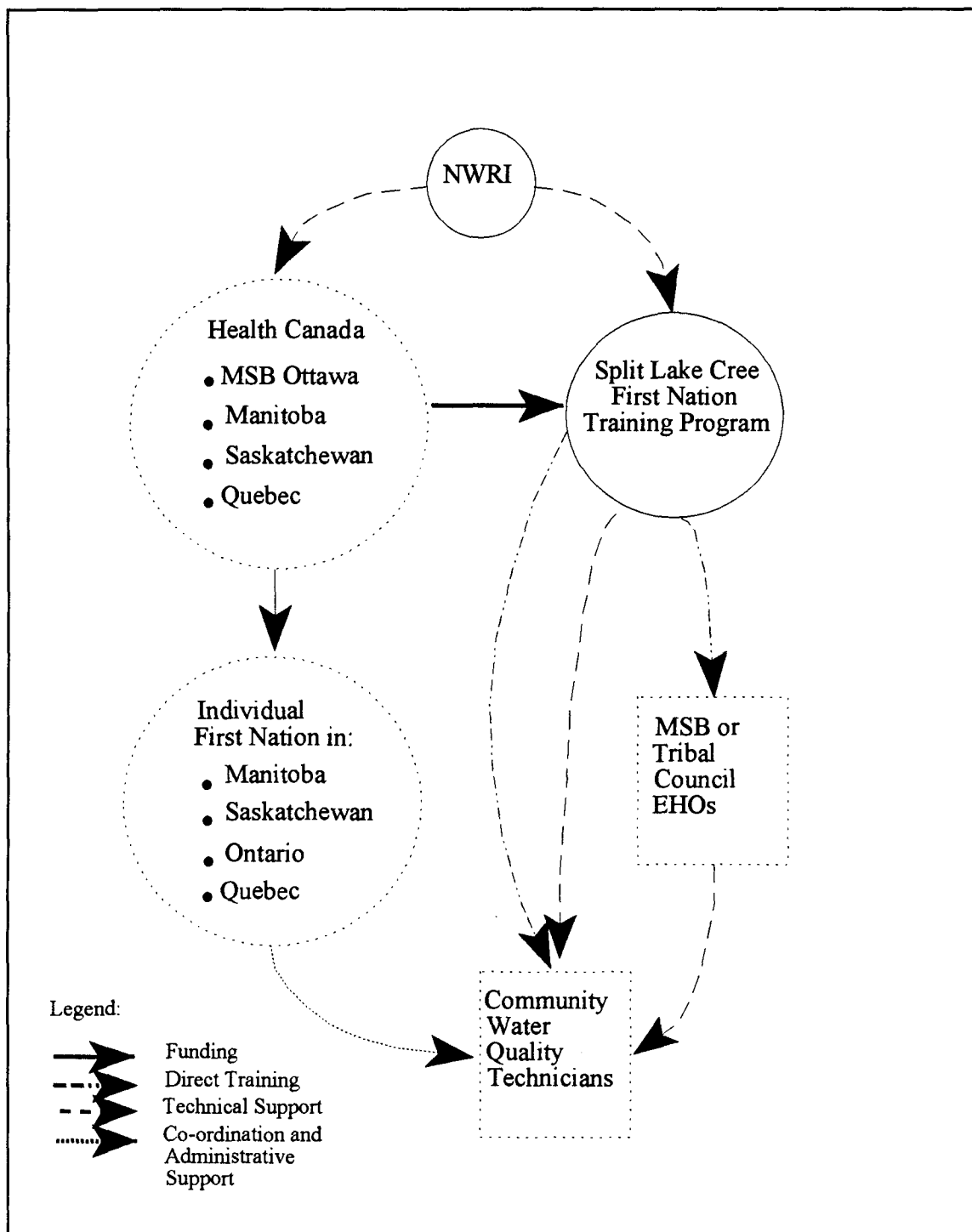


Figure 2 Organizational structure of the P/A P

2.2 Program Status

2.2.1 Training of Water Quality Technicians

Several research activities were carried out to evaluate the training component of the P/A P. These include a review of course materials; a series of interviews with trainers, trainees, and WQ technicians; participant observation during the training session of November 1995 at Split Lake; and field visits to a total of eight community laboratories. This section summarizes the findings and observations resulting from these activities..

Training Activities. As noted earlier, the First Nation of Split Lake has a specific contribution agreement with Health Canada to train WQ technicians from FN communities. The training program was originally developed at Split Lake with funding from IDRC and technical support from the NWRI of Environment Canada. Subsequently, Health Canada provided funds to the First Nation of Split Lake to offer training to other FN communities from Manitoba, Saskatchewan and Ontario. Health Canada personnel has also been trained at Split Lake and has in turn trained other FN members in locations closer to their own communities. The same basic training program, course and materials have been used in most cases. Figure 3 describes the exchange of knowledge and "know-how" between First Nations and government organizations. Although originally developed and delivered at Split Lake, the training program has been adapted and disseminated to other parts of the world, including two Mapuche communities in Chile and a training workshop held in Costa Rica with participants from Guatemala, Nicaragua and the host country.

Training of FN technicians with Health Canada funding began in early 1995. Thus far, 19 women and 48 men (32 from Manitoba, 31 from Saskatchewan, three from Ontario and one from Quebec) have successfully completed the program. The findings presented in this report concern the work of technicians trained by either Split Lake or Health Canada, and their ability to implement local water quality monitoring programs in their own communities.

Training Output. After a one-week training course, WQ technicians are given the responsibility for installing and running their own community laboratory with limited external supervision and guidance. For this reason, perhaps the best indicator of the adequacy of the training can be found in the operating conditions of the laboratories themselves. Table 1 presents a summary of the installation and operating conditions of the eight laboratories that were visited. A more detailed description of Table 1 can be found in Appendix B.

As shown in the table, all laboratories in operation were properly installed and run. Based on this indicator, it can be concluded that the training program has been successful in providing WQ technicians with the basic knowledge and skills necessary to establish a functional laboratory and correctly perform the water quality tests.

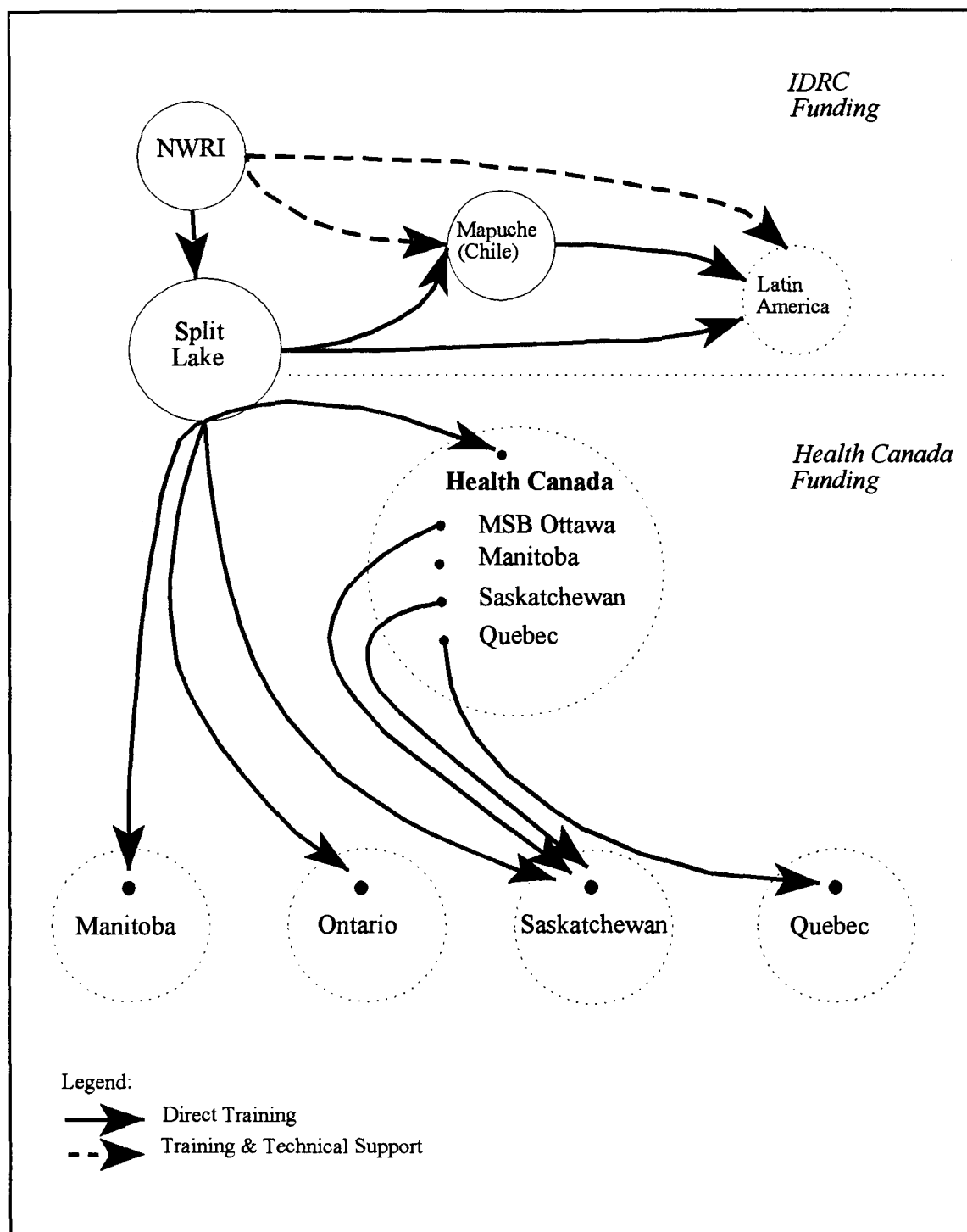


Figure 3 Dissemination of Training Program

Table 1 Set-up and Operating Conditions of Laboratories Visited

Lab No.	Status	Cleanliness	Lab Hygiene	Quality Control
1 (Manitoba)	<i>operational</i>	<i>very clean</i>	<i>good</i>	<i>adequate</i>
2 (Sask.)	<i>operational</i>	<i>very clean</i>	<i>good</i>	<i>adequate</i>
3 (Sask.)	<i>operational</i>	<i>very clean</i>	<i>good</i>	<i>very good</i>
4 (Manitoba)	<i>non-operational</i>	<i>dirty</i>	<i>N/A</i>	<i>N/A</i>
5 (Sask.)	<i>operational</i>	<i>very clean</i>	<i>good</i>	<i>adequate</i>
6 (Sask.)	<i>operational</i>	<i>very clean</i>	<i>good</i>	<i>adequate</i>
7 (Manitoba)	<i>operational</i>	<i>clean</i>	<i>good</i>	<i>very good</i>
8 (Ontario)	<i>non-operational (under construction)</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

Note: for description of sub-indicators (i.e., Cleanliness, Lab Hygiene, and Quality Control) see Appendix B

The training program has been successful in other ways as well. Twelve out of fourteen trainees interviewed believe that the program has strengthened their self-esteem and confidence and has given them the desire to pursue further training in other topics related to water quality and the environment. Over half of the trainees interviewed specifically requested information on further training possibilities and additional educational materials.

More detailed analysis and recommendations for the training program and training materials are presented in chapter 4. These reflect the feedback received from the people who were interviewed during the study and refer to specific ways in which the program can be improved.

2.2 Community-Based WQ Monitoring

In addition to visiting the community laboratories, field visits were made to seven Tribal Council offices with WQ monitoring programs using the P/A test. Although not all technicians and EHOs involved in these community programs have been trained at Split Lake, they all use the training course materials developed at Split Lake and follow the same basic principles and testing procedures. Table 2 summarizes the progress made in implementing the community-based WQ monitoring programs.

Table 2 Community-based WQ programs in Manitoba, Saskatchewan and Ontario in December 1995.

Location	Programs Fully Operational	Programs in Process of Becoming Operational	FN Unable to Implement Program	Total No. of FNs Applying (as of Dec. 95)
Keewatin Tribal Council, Manitoba	2	-	6	8
Swampy Cree Tribal Council, Manitoba	2	3	2	7
West Region Tribal Council, Manitoba	3	-	-	3
Meadow Lake Tribal Council, Saskatchewan	7	2	-	9
Prince Albert Grand Council, Saskatchewan	8	2	-	10
Sachigo Lake FN, NW Ontario	-	1	-	1
Totals	21	9	8	38

Note: The above information was obtained from interviews with EHOs from the corresponding Tribal Councils, and not from actual field verification visits to all First Nations. There may be other Tribal Councils with a P/A-based WQ programme that were not visited; information on these has not been included.

The information in Table 2 was collected from field observations and discussions with EHOs. In December 1995, 21 out of the 38 laboratories and monitoring programs were fully operational, nine were in the process of coming on-line, and in eight cases (21%), the Band and/or the WQ technician had serious difficulties in installing the laboratory, or the Band had

been unable to retain the WQ technicians. These tallies do not include the implementation of community-based programs in the six communities that participated in the training session of November 1995. In addition, at least one more community referenced in the table (Sachigo Lake) has begun regular water quality monitoring activities since the time of data collection. For further details on the table see Appendix C.

The next chapter discusses the impact of the program on the communities themselves. Some of the examples used demonstrate the potential benefits of the successful implementation of the P/A P. As indicated in Table 2 however, about 20 per cent of FN communities with contribution agreements have been unable to install the laboratories and begin a local monitoring program. Table 3 summarizes the factors which have facilitated or hindered the successful implementation of the program at the community level. Often, a combination of facilitating factors, or conversely, a combination of preventing factors were found in any one community. A more in-depth discussion of these factors and how they influence the success of local programs is presented in chapter 4.

Table 3 Factors Affecting the Implementation of Local WQ Monitoring Programs

Facilitating Success	Preventing Success
Managerial & technical support by EHO and/or WQ Manager	Little or no interaction between WQ technician and EHO, resulting in feeling of isolation
Moral & administrative support by Band Council	Little support from Band Council, resulting in feeling of isolation and/or alienation
Band support in providing suitable laboratory space	No suitable site for the laboratory
Commitment & dedication of WQ technician	WQ technician dislikes the job
Role and responsibilities of WQ technician is clear to Band Council and other water-related personnel	Band unaware of necessary commitments to implement program
Adequate workload & operating funds	Inadequate workload (too little or too much)
Adequate training	Logistic problems in obtaining necessary equipment & supplies
Use of WQ data in community to ensure safety of drinking waters (i.e., meeting a need)	Little or no support by local health personnel

3. Program Impacts

3.1 Cultural and Political Context

In the world view of FN peoples, all elements on earth, including water, were placed here by the Creator and therefore are alive and have a spiritual nature. Human beings are neither separate nor superior to other elements on earth; they are integral and interrelated to the whole. People have a responsibility to care for the earth. They must strive to maintain a balance between all elements and ensure that the earth does not suffer from their actions.

Box 1. The Nature of Water

Our Creator made the rivers, not just as H₂O, but he made the rivers a living entity. And our Creator spoke to the rivers, and said the Mississippi will be the great grandpa and the St. Lawrence will be the uncle, and the other streams will be the cousins. And altogether, these rivers and lakes of mother earth will be the blood veins of our mother, our beautiful mother. We must make sure that those are always clean so that there will not be a heart attack some day to our mother.

Sakokweniokwas, Mohawk elder
in "Water and First Nations in Ontario - Conference Proceedings" Oct 1995

Today, FN people in Canada are embarked upon a process of reestablishing their right to self-determination and self-governance. An important element of this process is the devolution of basic social programs from the Canadian government to FN communities. Part of charting this path is establishing a balance between contemporary needs and expectations of FN societies and traditional values that underlie their holistic world-view and deep respect for the environment. The assessment of community-based WQ monitoring programs must place considerable attention to the specificity of FN peoples' political situation and relationship with the environment.

Therefore, the discussion that follows is based both on the concerns identified by FN peoples (e.g. empowerment, self-esteem, community well-being, responsibility to the community and the environment) and on the more technical issues involved in program planning and delivery. Accordingly, the recommendations presented in chapter 4 attempt to create some discussion among the stakeholders involved in the process of designing and implementing the P/A P. In this sense, the purpose of this report is to contribute to the dialogue between government officials and FN on the issue of the safety of drinking waters in FN communities.

3.2 Impact Themes

The discussion of program impacts has been divided into the following four themes:

- the availability of water quality data;
- community empowerment and development (through the creation of socially meaningful and rewarding jobs and the devolution of social services to the community);
- health and well-being of the community (including the reduction of illnesses and the resulting social awareness to prevent contamination and protect the environment);
- the complementarity of efforts.

The first and last themes relate to the delivery of the program, while the other two were identified by FN people as major goals of the program.

Highlighted in *dialogue boxes* are excerpts from field notes which represent typical or characteristic observations and/or quotes made by the people interviewed. Specific references to persons, their sex and locations were removed or modified to ensure their anonymity.

3.2.1 Availability of Water Quality Data

About two thirds of on-reserve FN people live in rural or remote areas where communities are far from one another. This makes it impossible for many FN communities to share water services (including WQ monitoring) and costs with nearby communities. It also makes the logistics of monitoring difficult. All the interviewed people agreed that water quality monitoring was inadequate and inefficient before the beginning of the program.

Box 2. "In the past ..." - Excerpt from an interview with an EHO:

Q: Before the P/A program, was there any sampling done?

A: Yes, the CHRs did some sampling and sent them to the provincial lab

Q: How good was this sampling?

A: It was going poorly

Q: What were the most important reasons for this?

A: One problem was transportation. It was next to impossible to get a sample to the provincial lab within 24 hrs. The time around was also a problem, but with the transportation you needed a courier, and at least one plane change to get it there. It was very complex.

Often samples took several days to reach provincial laboratories which would then refuse to process them. Even when samples reached the laboratories on time, the results were delivered to the communities after many days or even weeks. This resulted in a feeling of alienation among the CHRs responsible for doing the sampling. In addition, since CHRs were only responsible for sampling public facilities (e.g. water treatment plants, schools, clinics), the water quality in households using barrels or cisterns was unknown and the links to health and hygiene promotion were often absent.

Box 3. Flow of information

Excerpt from an interview with an EHO:

Q: How do the water quality techs get along with the CHRs?

A: They have good working relationships. The main problem before was the supervisor of the CHRs, who told them not to do the sampling because he [the supervisor] thought they were wasting their time.

Entry in fieldbook:

The EHO before never sent the reports back to the CHRs. The supervisor got very frustrated and told the CHRs not to do any sampling. Now, they are happy to work with the WQ technicians.

Box 4. WQ in households

Excerpt from an interview with a WQ Technician:

I started in the first week in July, and I never expected that it would be that bad. I get lots of positive samples, even in public facilities. I have found positives in almost every house, only one sample since July has been OK ...They [people] were not used to clean the cisterns before. They didn't know the water could be bad. If it looks clear and it smells OK, people think that it's good to drink.

Prior to the P/A P, Health Canada would normally monitor the water quality of public community systems about four times a year. Testing of individual household wells and/or of water stored in homes was seldom done and only at the householder's request. The P/A P has been, therefore, very successful in increasing the availability of water quality data to FN communities on both private and public facilities.

Box 5. Hygiene Practices

Excerpt from an interview with a WQ Technician:

Q: Did they clean the trucks before?

A: No, not before the P/A program.

Q: Why?

A: There was no-one around to tell them to do it. There has been a big change here with water since the program began.

Entry in fieldbook:

The interviewee also makes a point about the need to teach people with barrels how to disinfect them and says that she occasionally helps them to do so.

3.2.2 Empowerment and Community Development

According to the people interviewed, the program has contributed to community development in various ways. First, the program led to the improvement of the quality of drinking water in the community by offering ways to generate and use water quality data in a timely manner. In this sense, the program has also helped to improve the delivery of community services. Examples include proper hygiene practices in water delivery and storage and the promotion of intra-community coordination in service delivery (see box below).

Box 6. Improving communication and delivery of services

Entry in field book during an interview with an EHO:

The EHO described how she held an "in-service workshop" with all the people in the community whose work is related to water (e.g., water truck drivers, cistern cleaners, CHRs, nurses, maintenance people and chief and council). This worked really well. The purpose was to let all these people know about the program, and the work and responsibilities of the WQ technician. She wanted to boost the morale of the technicians, show the importance of their work and promote the "idea that things must be done properly, otherwise there will be problems, and every body has their own responsibility". The workshop lasted a couple of hours, so it did not involve a big cost in time to anyone. She found it to be a success and plans to do the same in every community.

Various stakeholders pointed out that another positive outcome of the program has been the creation of local employment. In this respect, the WQ technician is seen as someone who contributes to the development of the community. The technicians themselves also consider their work to be important and are proud to encourage the well-being of the local population. In many instances, technicians felt greater self-esteem and self-confidence, because circumstances often required them to make sure that water truck drivers, cistern cleaners, the Chief and Council work in a coordinated manner.

Box 7. Local employment

Excerpt from an interview with a WQ Technician:

I was looking for a job and was running out of options. There is nothing out there. If you want a job, you have to leave the community.

The creation of local meaningful employment also helps retain in the community men and women with dedication and the conviction to help others.

All these examples are an indication of a process of empowerment. Dependence on outsiders for timely information on water quality has been being replaced by the development of local expertise and the strengthening of the local capacity to provide a community service on a regular basis. The

jobs created through the program are seen as socially rewarding by community members and the technicians themselves.

Box 8. Community Ownership

Excerpt from an interview with an EHO:

Before we didn't complete the circle; now, the work as well as the results are from the community and in the community. There is a sense of ownership in the communities.

Entry in field book:

The interviewee further commented that people are not used to having local scientists in the community. They only know "white nurses and white teachers". In this sense, having local people monitoring and controlling their water quality is seen as a good thing for community development.

3.2.3 Health and Well-being of the Community

A unique feature of the P/A P is the ability to allow water testing at the household level as well as at the community level. Many remote communities have a significant number of households with cisterns and/or water barrels which are often poorly maintained. As indicated in earlier dialogue boxes, local monitoring programs have successfully implemented measures that address the safety of these individual household drinking waters.

In terms of the incidence of gastro-intestinal illness, no estimate of the program impact is available due to the lack of baseline data for any of the communities where WQ monitoring has been implemented. Such an assessment would require careful design since in some communities there are various transmission paths for this type of diseases (e.g. inadequate sanitation or improper food handling and storage). In these situations, improved water quality may be a necessary but not a sufficient condition to produce a significant reduction in the incidence of gastro-intestinal diseases.

Box 9. Water Quality at the household level

Entry in field book during an interview with an EHO:

The EHO remarked how "the bureaucrats down in Ottawa" had previously requested her to get some information on water quality in the communities. She refused to do so and instead she sent some photographs of living and housing conditions. She showed us these photographs, which highlighted the kind and quality of household water containers in the communities - usually plastic garbage containers, buckets, and oil metal containers on dirty counter tops. Her point was that WQ in wells or treatment plants had no meaning. Drinking water is being contaminated by the way it is handled in the home, irrespective of the WQ existing at the source.

Both the technicians and EHOs interviewed agree that the P/A P needs to emphasize more health and hygiene education and believe that these elements have been the weakest in the program thus

far. However, all WQ technicians stated that people are now more aware of the need to treat and protect drinking water. All technicians interviewed had received specific requests from households to have their water tested. In four of the six communities where monitoring has been on-going for more than six months, both nurses and CHRs believe that the program has resulted in the decrease of diarrheas.

Box 10. Raising Awareness

Entry in field book during an interview with an EHO:

The EHO explained that he would have liked to do a baseline survey on the incidence of GI illnesses before the labs began to operate. She wanted to do a comparison after one year, but the problem was that the statistics needed were not available or were unreliable. She stated that "in any case, more than statistics, it is the people's awareness about WQ that is the most important [thing]. Now there is lots of testing which wasn't there before, and people are not putting up with bad water".

3.2.4 Complementarity of Efforts

The last impact theme to be discussed is the complementarity of efforts of the P/A P with other activities of the DWSP and those of other organizations working in improving the living conditions in FN communities. This complementarity is considered a positive impact to the extent that the P/A P helps reinforce and sustain the potential benefits of these other programs.

Approximately CAD\$500 million have been invested on FN water and sewage infrastructure over the last four fiscal years (1991/1992 - 1994/1995)¹. This effort has substantially improved the quality of life in many communities. The percentage of FN homes receiving water through a community or individual system reached 92% over this four-year period (an increase of 30%). The number of homes serviced by community or individual sanitation facilities increased by 32% over the same period, for a total service coverage of 86%. In order to bring about and sustain the benefits provided by these very significant investments, it is necessary to monitor the performance of the systems and ensure their proper operation and maintenance.

In this regard, the DWSP's second major initiative has been the development and facilitation of a national implementation plan for the *Circuit Rider Training Program*². This program is aimed at reducing the failure rate of water and waste water treatment systems and improving the servicing

¹ Medical Services Branch, Health Canada, and Corporate Services, Dept. of Indian Affairs and Northern Development. *Community Drinking Water and Sewage Treatment in First Nation Communities*. Internal Report, July 1995.

² Ransom, James W. *First Nations Circuit Rider Training Program - National Implementation Plan*. Assembly of First Nations, April 1996.

and maintenance skills of equipment operators. The program has been very successful in Saskatchewan and Ontario and is in the process of being introduced in other provinces.

The P/A P complements these two very important activities (investments in infrastructure and improved training for operators) in a number of ways. First, it ensures that the treated water coming out of the water plants is free from bacterial contamination and that the safety of the water is maintained through the delivery process (pipes and/or water trucks) and storage (cisterns or barrels). The program also raises, as noted earlier, people's awareness about the need to treat and protect water from contamination.

The two boxes in this section illustrate how local WQ monitoring programs have been used to detect and remedy the operation problems of treatment plants and distribution systems.

Box 11. Anecdote by WQ Technician

Entry in field book describing anecdote told by a WQ technician from Manitoba:

In one case, the teacher of the community school tested the water of the school and found no chlorine residual. He did not inform the treatment plant operator nor the Band Chief, but he talked to the WQ technician. The WQ technician believes that this is a case where the educational authority of the band does not communicate with the political authority. So she went to the Chief, who asked her to see the water treatment plant operator. The operator explained that the reason for not having a chlorine residual in the distribution lines was that the Band had bought chlorine of very poor quality (it was about two years old and had lost most of its strength). The WQ technician then talked to the Band Council and learned that the Band bought the cheap chlorine because it was a "good deal". She pointed out to us that "it is frustrating, but someone has to go around doing this work, otherwise it does not get done."

Box 12. Entry in the monthly report of August 1995 made by a WQ Technician:

Wed. 9th - repeated samples in group home and elders' house because samples in July tested positive. The samples again tested positive and comments about the water from the people were not too pleasant.

Entry in field book:

The Reserve is served by the town's water distribution system. The technician, as part of his routine monitoring, found positive samples in the tap water of the school and group home in the reserve. He informed the EHO, the Chief and Council, and the CHR. The EHO in turn advised the provincial authority because it was the town's treatment plant. Both the EHO and an inspector from the Provincial Health went down to check things out. They did further tests, and found that although there was a chlorine residual at the plant, there was none in the distribution lines down at the reserve. The superintendent of the band was also informed and he ordered the maintenance people from the reserve to flush the lines and disinfect them. While all this was going on, the technician requested the CHR of that community to issue a boiling water order. He also did a re-sampling after the lines were flushed and found the water to be OK. This incident made the provincial authority become aware of the P/A program, and they began to send information to the technician about the Province's water quality guidelines and their own monitoring program for their municipalities.

4. Roadblocks and Possible Solutions

As noted earlier, one of the main objectives of this evaluation is to make recommendations for enhancing the delivery of the program by identifying *roadblocks* and practical ways to overcome them. The concept of a roadblock is used here to describe specific elements (managerial, technical and logistic) which hinder the successful implementation of the program or the benefits it can produce.

Roadblocks have been grouped along the following four broad topical areas:

- Training of WQ Technicians;
- Tasks and Responsibilities of the WQ Technicians;
- Management of the WQ Monitoring Program;
- Establishing and Operating the Community Laboratory.

The following sections examine specific roadblocks and offer recommendations to overcome them.

4.1 Training Component

4.1.1 Training Gaps

Table 4 below summarizes the tasks of the WQ technician. These tasks were developed in consultation with the technicians themselves about their work-related activities and responsibilities. Of these, two tasks were identified as requiring greater emphasis in the training program:

- **Health and hygiene promotion.** There is a consensus among the people interviewed, EHOs and WQ technicians alike, on the need to strengthen the links of the program to health promotion and environmental education. Evidently, more training and education materials are needed to fulfill the task.
- **Cross-checking testing results.** Technicians interviewed emphasized the need to be able to cross-check testing results with provincial laboratories and become familiar with their testing procedures. This need was prompted by the inability of technicians to understand the testing reports from these laboratories, including the type of tests employed and the test units in which results are reported.

Meeting these training needs would significantly enhance the ability of technicians to fulfill the tasks expected of them. The Steering Committee should examine whether to include such training as part of the one week training program or through a mechanism of continuing education.

Table 4 Expected/ Observed Tasks of Technicians

<p>Tasks:</p> <ul style="list-style-type: none"> • Set up community-based lab; • Implement local water quality monitoring program: <ul style="list-style-type: none"> • Perform routine testing and lab operation and maintenance (O&M); • Help establish community water quality management; • Develop linkages with other community services and schools (with emphasis on health education and promotion); • Collect and send samples to provincial labs; cross-check testing results.

4.1.2 *Delivery of Training Course*

The recommendations that follow are based on the observations made during the training course held in November 1995 and the interviews conducted with trainees and technicians.

- ***Additional hands-on training.*** Each trainee should have the opportunity to individually perform the complete cycle of laboratory procedures (e.g. from media preparation to processing of samples) in addition to the step-by-step group approach currently used where each trainee performs only a set of assigned steps of the cycle.
- ***Visit to a working lab.*** The training session attended by the evaluation team was held in the meeting room of a hotel instead of a laboratory. Although all the basic laboratory equipment was available in the hotel room and the delivery of the course was adequate, it is important that participants make a field visit to a functioning laboratory. This visit will give trainees the opportunity to see how to install the various pieces of equipment and how to operate them in the laboratory of their own communities. Many of the trainees who attended the November 1995 training session showed great interest in visiting a working laboratory. Past trainees also pointed out how helpful it had been for them to observe a working lab in setting up their own laboratories.
- ***Visual testing aid.*** Several WQ technicians interviewed indicated that they had difficulty judging whether positive samples fluoresced or not. Thus, course planners and trainers should consider the possibility of supplying technicians with *fluorescing comparator test-tubes* or teach technicians how to make their own *comparator test-bottles* during the training course.
- ***Training Manual.*** All technicians interviewed agreed that the Split Lake's Training Manual was complete in content and easy to understand. However, a careful reading of the manual by the evaluation team indicates that the manual can be improved with the use of simpler language in the discussion of microbiology, water contamination and hygiene. Further improvements can be made by using more visual images to get key messages across.

4.1.3 *Additional Training/Support Resources*

The one-week training course and the training manual are successful in providing trainees, who vary considerably in age, years of schooling and work experience, with the basic knowledge needed to begin their work as technicians. Field interviews, however, revealed a keen interest among trainees and WQ technicians in further training and in obtaining additional resource materials. Several WQ technicians and EHOs also expressed the need to establish reliable and continuous communication networks.

- ***Continuing education.*** The technicians interviewed requested some means of continuing education in the form of short courses or self-help training materials (e.g. audiovisuals or booklets). They identified the following key areas:
 - basic concepts of microbiology and disease transmission;
 - concepts of clean water, pollution control and health from a FN perspective;
 - provincial standard WQ testing procedures;
 - report writing.
- ***Training/educational materials.*** Teaching aids can be developed to complement the information provided in the training manual and course and meet the demand for additional knowledge. These teaching aids should be visually stimulating and culturally appropriate.

Posters can be used to provide culturally and environmentally relevant images of key issues related to water quality monitoring. They can be used to illustrate the work of the WQ technician in presentations made in schools and other local institutions. Topics for posters may include the P/A test, the water cycle, the fecal-oral contamination route, types of microorganisms, the food chain and environmental hygiene practices suitable to local conditions.

One-page flyers and/or booklets can complement or elaborate specific topics covered in the course and increase the WQ technicians' basic knowledge. On the more technical side, these materials may offer information on a number of areas:

- how to maintain the various pieces of equipment;
- a description of the P/A test, including basic biological and chemical principles behind the test such as bacterial growth, production of acid, the processes involved in the colour change of the sample during incubation, etc.;
- the types, habitats and transmission routes of micro-organisms, the diseases associated with them, and the barriers to transmission of water-borne pathogens;
- strategies to promote the WQ training program in the communities and create linkages with community health and environmental education efforts.

Other booklets can cover FN concepts for nurturing and safeguarding the environment and hygiene education. The WQ technicians and teachers can use these booklets and flyers in schools and other local institutions to raise social awareness of environmental and water quality protection.

- **Communication networks.** WQ technicians and EHOs expressed the need to exchange information with each other in order to minimize their feeling of isolation and enhance the effective implementation of the program. These networks would help disseminate experiences and innovations in laboratory procedures and sampling protocols and would allow the comparison of test results of various communities. Possible ways of creating these networks include:
 - producing and distributing a national newsletter and/or technical reports two or four times a year;
 - organizing regional or Tribal Council workshops with WQ technicians and EHOs, and/or annual WQ technician meetings.

4.2 Tasks and Responsibilities of the WQ Technicians

The aim of the P/A program is to develop viable community-based WQ monitoring services in FN communities. This entails far more than just providing people with the basic technical knowledge and skills to do standard routine testing. The water quality technicians receive a one week training course. Then they go back to their communities to begin a process usually without precedent which involves establishing a working laboratory and liaising with Band Council members, local water personnel (water treatment plant operators, water truck drivers, Band superintendents, cistern cleaners, etc.) and health staff. They are expected to raise community awareness on safe water handling practices, health and environmental issues, and to mobilize local resources and people by incorporating the information derived from their routine water sampling and testing into the planning and implementation of remedial actions to solve water contamination problems.

Field observations suggest that all these tasks can be successfully accomplished when the technicians receive adequate technical, moral and political support from Band Councils, CHR managers and EHOs. This support was evident in all six of the working labs visited. The EHOs interviewed also acknowledged the presence of this support in all the labs in operation which are providing adequate monitoring services to their communities.

However, this support is just one element for success. A second element is the dedication and commitment of the water quality technicians themselves, which was also evident in all six communities with successful monitoring programs. The job is demanding and requires specific qualities, including:

- self motivation;
- keen interest regarding health and environmental issues;
- good interpersonal and communication skills;
- ability to work with little supervision and limited support;

- social and community conscience;
- commitment to the community.

Two practical issues resulting from the above observations may help optimize the delivery of the P/A program. These are:

4.2.1 Selection & recruitment of trainees.

The only policy or guideline that seems to exist with respect to recruitment is that communities should send two people for training so that one can be a "back-up" person if needed. Many Band Council members interviewed noted that this arrangement had created some problems for them because funding for the program includes only one part-time position. Council members were put in a difficult position because they had to decide who should get the job. Some Councils solved the problem by sending the CHR or treatment plant operator as the back-up person, with the condition that he or she trains a new community member in the event that the first trainee leaves the job.

- ***Selection & recruitment guidelines.*** The Band Council and the potential candidates must have enough information about the position to be filled so that they can make an informed decision when selecting the two trainees. This information can be provided in an information kit sent to the First Nations that express interest in the program. The kit can contain the following information:
 - description of tasks and responsibilities of both the technician and the back-up person;
 - profile of the suitable candidates (personal qualities and abilities);
 - expected workload;
 - background information (with pictures) about the equipment and test procedures;
 - video about the training program in Split Lake.

4.2.2 Retaining WQ technicians & training replacements.

As noted in section 4.2, the tasks performed by the WQ technician are quite demanding and require a particular type of individual. The first trainees are responsible for installing the laboratory and starting the monitoring program, both tasks without precedent in FN communities. Given these difficult circumstances, first trainees may feel overwhelmed and decide to leave the job. By contrast, "second generation" trainees have a better chance of staying at the job because they have a local example of the kind of work involved before applying for the position and are likely to "inherit" a laboratory and program in operation.

- ***Retaining trained personnel:*** Most technicians work on a part-time basis and many of them want and need a full-time job. As already noted, during the interviews they expressed their

willingness to expand their knowledge, skills and responsibilities into other environmental monitoring activities. The steering committee should examine ways of expanding the use of the local expertise and laboratories to address issues of environmental protection and hygiene which could involve joint program support with DIAND and/or other relevant organizations.

Technicians also pointed to the need to prevent the feeling of isolation from each other in order to keep up their motivation. A number of activities could be designed for this purpose. For example, the newsletter published by Split Lake is a good mechanism to promote communication between technicians. A copy of the newsletter should be sent to the Band Council and another directly to the technicians, as they do not always get to see the newsletter if it is not addressed to them. Some EHOs have also been instrumental in promoting the communication among technicians and in helping the new technicians to get established in their communities. An excellent example of this is the "in-service workshop" presented in the Dialogue Box 6.

- ***Training replacements:*** In the event that a given community supports the program and the laboratory is in place but no technician is available to perform the tests, the following alternatives can be considered:
 - The back-up trainee can train a replacement technician on-site. A trainer or an EHO could subsequently pay a technical support visit and verify that correct procedures are being followed. This arrangement requires that one of the criteria for the selection of the back-up trainee be his or her ability and availability to train others.
 - A *training fund for replacements* may be created to send a new trainee to a training session at Split Lake, or allow either a trainer or a WQ technician from a nearby community to do the training on-site. The creation of this fund would require a set of guidelines for its use (e.g. Under what circumstances would training be required? Who will be responsible for the training? Where will it take place?).

4.3 Management of the WQ Monitoring Program

Two guiding principles of both the DWSP and the P/A program are the community ownership of the program and the active participation of FN peoples in program planning and implementation. Instilling ownership and developing authentic partnerships requires an inclusive and transparent process aimed at facilitating community participation and dialogue at all levels - community (local Band workers, EHOs, and Chief and Band Council), regional (Tribal Councils, regional Health Canada personnel, regional FN authorities) and national (steering committee and nationwide FN authorities).

Members of the steering committee, Health Canada personnel and FN authorities and technicians highlighted several points for program optimization. These points are:

4.3.1 *Fostering community ownership of the program*

- ***Proposal guidelines.*** A first step in promoting the community ownership of the program is to give all the necessary information to potential applicants so that they can make informed decisions when submitting their application and negotiating a contribution agreement. One possible way of doing this can be to prepare a *guideline document for potential applicants to the P/A P* which could contain the following information:
 - a detailed description of application procedures;
 - responsibilities of both the FN applicant and Health Canada;
 - a description of the program, including the training component and the role and responsibilities of the WQ technician;
 - a description of the proposal review process;
 - a listing of contacts.
- ***Internal evaluation.*** A second action aimed at promoting the community ownership of the program can be a participatory evaluation process of the WQ monitoring program at the community level. This evaluation process should involve at least key Band personnel with responsibilities in water supply and health and EHOs.

4.3.2 *Adapting program to local conditions*

In general, the overall implementation of the program has been responsive to the different needs of the communities and the Tribal Council, with a couple of exceptions:

- ***Local transportation allowances and community size.*** In two of the six functioning laboratories visited, the technicians reported having insufficient funds for transportation early in the year while in others the number of households was too large for one WQ technician to adequately meet the monitoring needs of the community on a part-time basis. Community population and local transportation facilities must be reassessed in order to accurately estimate the program costs during the negotiation of contribution agreements.
- ***Establishing the need for a community laboratory.*** The program must develop guidelines on the minimum requirements which have to be met to receive funding for a community laboratory, for example, number of households in the community, type of water supply system, environmental sanitation, hygiene conditions, etc. In at least two instances a FN community applied for and obtained funds to install a community laboratory even though the community was connected to an off-reserve municipal water system and almost all households were served by the municipality. In both cases municipal governments were conducting their own WQ monitoring and little additional sampling was needed. In situations where sampling does not justify the establishment of an individual community laboratory, one technician can assume the responsibility for water quality monitoring in more than one

community and special arrangements can be made for inter-community media preparation and water testing.

4.3.3 *Promoting a more holistic program design and implementation process*

Several EHOs and WQ technicians believe that the focus of the program is too technical and that too much emphasis is placed on the water quality tests and proper use of the equipment while little attention is paid to the process of implementing the community monitoring program and maximizing the utility of the laboratory and the training that people receive.

Many of the recommendations made earlier may help address this issue, for example, promoting the continuing education of technicians and establishing support mechanisms for them, producing additional educational materials, exploring alternative ways of using the laboratories and the expertise of the technicians, and facilitating linkages with health promotion and environmental education.

4.4 Establishing and Operating the Community Laboratory

A common roadblock in implementing the WQ monitoring program is finding a suitable and permanent location for the laboratory. In many cases, FN communities have entered contribution agreements, sent two of their members for training and purchased the necessary equipment without having a suitable location for the laboratory. This situation usually results in significant delays in the commencement of the program and places undue hardship on the technician as the lab must be moved from one temporary location to another.

- ***Informing the community about the need for a suitable laboratory space.*** In order to solve this problem, it is necessary to inform FN applicants about the need to find an adequate place for the laboratory. This would require, in turn, providing the applicants with guidelines stipulating the minimum requirements needed to house the lab.
- ***Making a suitable laboratory space a requirement.*** A further step can involve making the provision of a suitable and permanent space a precondition for the approval of the contribution agreement.

Both of these elements can be incorporated into the guideline document for potential applicants discussed in section 4.3.1.

4.5 A guiding and coordinating body at the national level

In order to facilitate the continued dissemination of the P/A P and expand the function of the community laboratories into other environmental monitoring and protection activities, the P/A steering committee needs to provide a forum for dialogue between First Nations and governmental organizations. This would require a more active involvement of the steering committee in planning program activities, as well as a review of the committee's composition to ensure regional representation.

Two issues must be kept in mind when planning the dissemination of the program and the expansion of the community laboratories into new areas. The first has to do with finding ways to coordinate the program in several provinces while maintaining a regional implementation basis. Secondly, organizations and government bodies such as DIAND must be seen as potential partners in co-funding activities of mutual interest. The steering committee should consider its role in providing these functions and develop clear objectives and operating procedures for carrying them out.

5. Expectations Generated and Future Choices

This report would not be complete without looking at the future of the P/A Program. The DWSP was originally meant to sunset in 1997, at the end of a six-year funding period. The P/A P itself is only in its second year of implementation. By the sun-setting date, many FN will only have been involved in the program for a few months and local WQ programs will not have the time to be fully established in the communities. Recent indications by the government for continued funding of the DWSP give a renewed opportunity to the P/A P to evolve into an essential service in FN communities.

In spite of its short duration, significant trust has been placed in the program philosophy and process by WQ Technicians, Band Council staff, and health workers in various FN communities. They have put considerable efforts in getting their programs off the ground. As suggested in Boxes 13 and 14, the P/A P has generated substantial expectations regarding the relationship between government-funded programs and community development in FN communities.

Box 13. Funding priorities

Excerpt from an interview with an EHO:
The WQ Techs would be very upset, since they've put a lot of time and effort into their work.

Entry in field book:

According to this EHO the Health Directors (Band Govt) would like to keep the labs, but it is not clear whether there would be sufficient funding within Bands' capital to keep the P/A program running.

Box 14. Expectations raised

Entry made in field book during an interview with an EHO:

The EHO said that the program "had been sold" to the Chiefs and Councillors as providing two things to First Nations: giving responsibility on water back to the community; and bringing employment to the community. He pointed out that with the P/A program, EHO's are able not only to make recommendations to the Bands but also to bring the above two benefits to the communities. In his opinion this was a very important element in the relationship between EHO's and Band Councils.

Excerpt from the interview:

Q: So what do you think would be the effect of a cutback in the P/A program?

A: I don't see them "rolling over" or sitting back... I made a presentation to the health authorities, Chiefs and Councils on the P/AP and they bought it.

Some EHOs believe that one way to reduce program costs is by replacing the P/A³ test with the Colilert® test which comes in ready-to-use test bottles and, by implication, removing the need for community laboratories when preparing P/A test bottles. An assessment of the cost-effectiveness of this alternative is beyond the scope of this evaluation. However, the following observations offer some information on various possible alternatives.

Both the Colilert® and the P/A tests provide simultaneous detection, identification and confirmation of *E.coli* microorganisms in water. In this sense, both tests are equivalent. It is important to note that the P/A test can also be produced in the same format as the Colilert® test (e.g. in ready-to-use bottles). Preliminary inquiries indicate that this P/A ready-to-use format can be produced in Canada at competitive prices, depending on the amounts requested. There are also new commercial tests (other than Colilert®) coming into the Canadian market which are in "ready-to-use" form and very competitively priced (see Table 5). Rather than having to make a choice between two tests, an examination of alternatives must look into the costs and benefits of (at least) four options:

- i use of the Colilert® test (Present-Absent type, US manufactured, ready-made media test);
- ii procurement of a Canadian-manufactured, "ready-to-use" test, from a commercial laboratory;
- iii production of a "ready-made P/A test" in selected FN laboratories as part of the P/A Program, with subsequent distribution to other participating FN communities;

³In this report, the P/A test is being considered as including the reagent MUG which makes the test sample fluoresce when *E.coli* bacteria are present in it.

- iv local production of the P/A test in community WQ monitoring laboratories (e.g. the present situation).

Economic considerations must include start-up costs and recurrent costs of supplies and labor. Selection of alternatives (such as substituting the test currently used) must also consider the *key elements* that give value to the P/A program in the eyes of FN peoples:

- community ownership of a program for the delivery of a basic community service;
- capacity-building of FN individuals (at the community, Band and Tribal Council levels) for planning and implementing a community-based program for monitoring and protecting drinking waters;
- generation of meaningful employment in remote FN communities characterized by chronic under/unemployment;
- the creation of a physical resource (the laboratory), and the development of local expertise (community WQ technicians), that can form the basis for implementing broader services in health and environmental monitoring and protection.

These four elements go beyond collection of water quality data. They have to do with the issue of self-determination of FN peoples and with the mechanisms involved in the devolution of basic services to FN communities. The real challenge facing the steering committee is to expand the WQ monitoring program into other areas of community development. The water quality tests (Colilert® or P/A) are only tools in this broader context.

Table 5 Cost Comparison of various microbiological tests (labour costs not included)

METHOD OR BRAND NAME	TYPE OF TEST	INDICATOR ORGANISMS	COST PER SAMPLE (\$ CND)
Environment Canada P/A - MUG	Presence/Absence	Coliforms and E.Coli	1 ⁴ -1.32 ⁵
HACH P/A- MUG	Presence/Absence	Coliforms and E.Coli	2.05 ⁵
IDEXX P/A- MUG (Colilert®)	Presence/Absence	Coliforms and E.Coli	3.56 ⁵
EBPI Double Strip Coliplate	Semi-quantitative	Coliforms and E.Coli	1.50 ⁶
EBPI Coliplate	Quantitative	Coliforms and E.Coli	3.50 ⁶

⁴ Cost per sample includes cost of reagents and discounted cost of test bottle assuming test bottle is recycled and replaced every two years.

⁵ Source: Barry Wasik, West Region Tribal Council, unpublished research report, 1995.

⁶ Source: Environmental Bio Detection Products Inc. (EBPI), Brampton, Ontario.

6. Summary of Findings & Recommendations

This chapter summarizes the main findings and recommendations of the evaluation study. They are presented in accordance with the specific objectives of the evaluation.

Objective (i): Evaluate the effectiveness of the Split Lake training component of the P/A P

- (1) The training program developed by the Split Lake First Nation has been successful in providing WQ technicians with the basic knowledge and skills necessary to establish a functional laboratory and correctly perform the water quality tests.
- (2) Field visits were made to eight community-based laboratories. Six of these laboratories were in operation and properly installed and run. The equipment in the laboratories was well maintained and in working order. The technicians followed proper testing techniques as well as adequate laboratory hygiene and quality control procedures.
- (3) Interviews with 14 trainees indicated that the training program contributed in building the trainees' self-esteem and confidence and instilled in them the desire to pursue further training in water and environmental related topics.
- (4) Two areas were identified as requiring further attention in the training program:
 - Strengthening the links of the program to health promotion and environmental education;
 - The technicians want to become familiar with the testing procedures used by provincial laboratories and cross-check their results with them. Presently, FN technicians are unable to understand the reports of these labs, including the type of tests employed and the test units in which results are reported.

Objective (ii): Evaluate the implementation of the program at the community level

- (5) In December 1995, 21 (55%) out of the 38 laboratories and monitoring programs were fully operational, nine (24%) were in the process of coming on-line and in eight cases (21%) the community and/or the WQ technicians had serious difficulties in setting up the lab and/or the FN community had been unable to retain the trained technicians.

(6) The tasks expected of WQ technicians are:

- Install the community-based laboratory;
- Implement the local water quality monitoring program by:
 - Performing routine testing and laboratory operation and maintenance;
 - Developing a long-term strategy for community-based water quality control;
 - Creating linkages with community services and schools to promote health and hygiene education;
- Collect and send samples to provincial laboratories and cross-check testing results.

(7) Field observations suggest that these tasks can be successfully accomplished when:

- The technicians have the dedication and commitment to succeed;
- The technicians receive encouragement and adequate technical support from EHOs as well as moral and political support from Band Councils and CHR managers;

(8) All WQ technicians interviewed would like to put more effort in activities designed to promote health and hygiene education, but they stressed the need for further training and adequate promotion and teaching materials to use in presentations with community members and school children.

Objective (iii): Identify and document the impact of the program on the safety of drinking waters

(9) The people interviewed identified two long-term goals of the P/A program:

- Empowerment and community development (job creation, community management of social programs; increasing environmental awareness);
- Health and well-being of the community.

Evidence of both elements was found in all the communities where the program has been successfully implemented.

(10) According to the interviewees, two immediate program benefits of the program have been:

- The increased availability and use of WQ data to ensure the safety of drinking waters and the well-being of the community;
- The creation of socially meaningful and rewarding jobs within the community.

Both elements were present in the interviews with EHOs, CHRs, Band Council members and the WQ technicians themselves.

- (11) Interviews with WQ Technicians and EHOs reveal how the P/A P helps reinforce and sustain the benefits created by the very significant investments being made in water treatment infrastructure in FN communities. The P/A program achieves this in several ways: (1) it ensures that the treated water coming out of the water plants is free from bacterial contamination; (2) it ensures that the safety of the water is maintained through the delivery process (pipes and/or water trucks) and storage (cisterns or barrels); and (3) it raises community awareness on the need to treat and protect water from contamination.

Objective (iv): Recommendations towards enhancing the delivery of the program

Delivery of the training course:

- (12) The course should give trainees additional hands-on training by allowing them to do the complete cycle of laboratory procedures (e.g. from media preparation to processing of samples) on an individual basis.
- (13) In the event that the course is not delivered at Split Lake, trainees should visit a functioning laboratory so that they can have a visual example of what to do when they return to their communities.
- (14) Technicians should receive *fluorescing comparator test-tubes* to help them detect the presence of *E. coli* in water samples. Alternatively, they should learn how to prepare their own *comparator test-bottles* during the training course.

Additional Training/Support Resources:

- (15) Trainees should have access to continuing education in the form of additional short courses or self-help training materials (e.g. audiovisuals or booklets). These could cover the following topics:
- Basic notions of microbiology and disease transmission;
 - Basic understanding of clean water, pollution control and health from a FN perspective;
 - Provincial standard WQ testing procedures;
 - Report writing.
- (16) Promotion and educational materials should be distributed in conjunction with the training manual, for example, **posters** and **one-page flyers**. These materials should provide culturally and environmentally relevant visual images and could be used in presentations at schools and Band meetings. Possible topics are: the P/A test, the water cycle, the fecal-oral contamination route, types of microorganisms, the food chain and environmental hygiene practices suitable to local conditions.

- (17) Communication networks among WQ technicians and EHOs should be established in order to minimize their feeling of isolation and enhance the implementation of the program. Possible options to consider include national newsletters and/or technical reports, regional workshops with WQ technicians and EHOs and annual meetings of WQ technicians.

Maintaining an Adequate Pool of Technicians:

- (18) The Band Council and potential candidates must have enough information on the positions to be filled when they are asked to send trainees to the course. This could be achieved by sending an information kit to the FN communities who have an interest in the program. The kit could be prepared by the Split Lake Training Program in collaboration with Health Canada and be reviewed by the steering committee. The following information should be included:
- A description of tasks and responsibilities of both the technician and the back-up;
 - A profile of suitable candidates (personal qualities and abilities);
 - Expected workload;
 - Background information (with pictures) on the equipment and test procedures;
 - Video about the training program in Split Lake (already available).
- (19) A policy is needed to prevent a situation where the community supports the program and the laboratory is in place but no technician is available to perform the tests. Two possible alternatives can be considered. First, the back-up trainee may be asked to train the replacement technician on-site. This arrangement requires that one of the criteria for the selection of the back-up trainee be his or her ability to train others. Second, Health Canada or the Band Council may create a *training fund for replacements* to send a new trainee to a training session at Split Lake, or allow either a trainer or a WQ technician from a nearby community to do the training on-site. The creation of this fund requires a definition of guidelines for its use (e.g. Under what circumstances would training be required? Who would be responsible for giving it? Where would it take place?).

Fostering Community Ownership of the Program:

- (20) The steering committee should prepare and distribute a *guideline document for potential applicants to the P/A Program*. The purpose of this document is to provide the Band Council and potential candidates with enough information to apply and negotiate a contribution agreement. This document should contain:
- A detailed description of application procedures;
 - Responsibilities of the FN applicant and Health Canada;
 - A description of the program, including the training component and the role and responsibilities of the WQ technician;
 - A description of the proposal review process;

- A listing of contacts.

- (21) Community ownership of the program can also be encouraged through a participatory evaluation process of the WQ monitoring program at the community level. The evaluation should involve at least key Band personnel with responsibilities in water supply and health and EHOs.

Adapting the Program to Local Conditions:

- (22) Further attention must be paid to the size and transportation requirements of technicians of the community in order to accurately estimate the local transportation costs and expected workload of technicians during the negotiation of the contribution agreement and the preparation of the budget.
- (23) Guidelines on the minimum requirements to establish a community laboratory should be developed. These guidelines should take into account the number of households in the community, the type of water supply system, environmental sanitation and hygiene conditions, etc. In cases where low sampling frequencies do not justify the establishment of an individual community laboratory one technician can assume the responsibility for water quality monitoring in more than one community and special inter-community arrangements can be made for media preparation and water testing.

Establishing & Operating the Community Laboratory:

- (24) A common roadblock in implementing the WQ monitoring program in FN communities is finding a suitable and permanent location for the laboratory. This problem can be addressed by informing FN applicants about their responsibility to find an adequate location for the laboratory and providing applicants with guidelines stipulating the minimum requirements needed to house the lab. A further step could involve making the provision of a suitable and permanent space a precondition for the approval of the contribution agreement.

Implementation at the National Level:

- (25) The steering committee should consider examining possible alternatives and ways to expand the use of technicians' skills and laboratories to meet local needs related to environmental protection and hygiene. Joint program support with DIAND and/or other relevant organizations should be explored. Most technicians are working on a part-time basis and many of them want and need a full-time job. They are also willing to expand their knowledge, skills and responsibilities into other environmental monitoring activities.
- (26) A mechanism is required to facilitate the continued dissemination of the P/A Program. Two important functions are needed: (1) coordinate the dissemination of the program in several Provinces while maintaining a regional basis for implementation; and, (2) lobby other organizations such as DIAND for co-funding specific activities of mutual interest. The

steering committee should consider its role in providing these functions and develop clear goals, objectives and operating procedures for carrying them out. This would require a more active involvement of the steering committee in planning and vetting program activities, as well as a review of the committee's composition to ensure regional representation.

Appendix A- Evaluation Feedback

A.1. Background

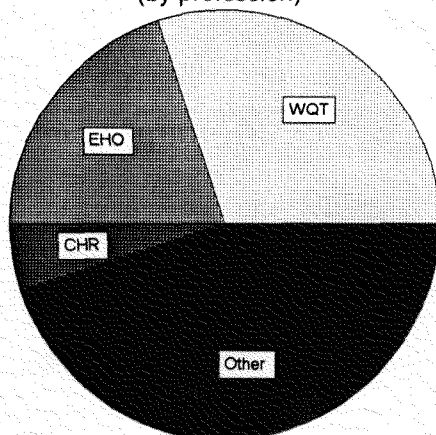
A questionnaire and a copy of the draft P/A Program Evaluation Report were sent out to the 40 people interviewed during the evaluation in order to get their feedback on the validity and relevance of the conclusions and recommendations made in this report. This appendix discusses the findings of the survey. A copy of the questionnaire is presented at the end of this appendix and the list of the people interviewed is given in Appendix H.

A.2. Demographics

Of the 40 participants who received the report, 21 returned the questionnaire or were successfully interviewed over the telephone. Of these respondents, 15 were male (out of 28 total) and six were female (out of 12 total). The provincial breakdown is shown in the graph on the right. The graph on the left shows the breakdown of respondents by profession, where WQT stands for Water Quality Technician, EHO for Environmental Health Officer and CHR for Community Health Representative. Under the term other are included the members of the steering committee, community teachers, members of Tribal Councils and FN people interviewed who are not directly involved in the P/A P but have considerable experience in water supply and environmental monitoring in FN communities.

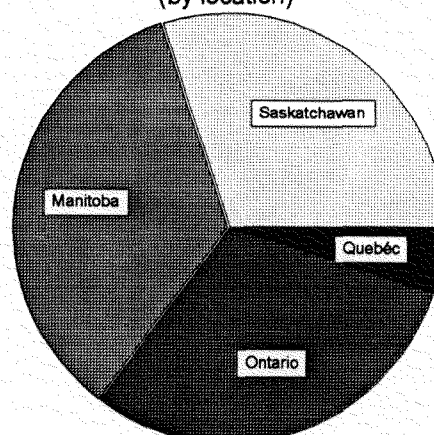
Respondants

(by profession)



Respondants

(by location)



A.3. Responses

The questionnaire consisted of 11 questions. Six of these questions asked for a “yes” or “no” answer while the other five were open-ended. Results are summarized below.

A.3.1. “Yes” or “No” Questions

1) Was the evaluation report clear and easy to read? (Yes/No)

Five of the 21 respondents answered “no”. Specific comments include references to typographical errors, figures being confusing, and the report being too long and repetitive. Two respondents suggested that the recommendations and findings should be separated for clarity.

An attempt was made in this final report to address these problems.

2) Were you offended by any part of the report? (Yes/No)

No one was offended by any part of the report.

3) Was there a section of the report that you feel misrepresented any group? (Yes/No)

Three out of the 21 respondents pointed out minor errors, including the reporting of seven instead of eight trainees in one Tribal Council, and inaccuracies in the description of DWSP objectives and in the frequency of WQ testing by CHRs. These errors have been corrected in the final report.

4) Do you agree or disagree with the findings of the evaluation? (Agree/Disagree)

Eighteen out of the 21 respondents agreed with the findings of the evaluation. Of the three negative responses, one considers that the training provided at Split Lake is of poor quality; the second believes that the part-time position for WQ technicians is insufficient to monitor large size communities; and the third respondent disagrees with the wording of the recommendation regarding minimum requirements for funding a community laboratory. The last two issues have been clarified in the report. With respect to the quality of training, many trainees expressed their satisfaction with both the training and the trainers at Split Lake. Overall, more positive than negative comments were received during field visits and through the questionnaire.

5) Do you feel the report correctly describes the impacts of the P/A program (Yes/No)

Twenty out of the 21 respondent answered “yes”. One respondent stated that it is necessary to assess the impact of the program on the reduction of water-borne enteric diseases. Assessing the impact would indeed be desirable but this activity was not included in the terms of reference of the evaluation study for several reasons: budgetary constraints; no base-line survey conducted in any of the participating communities before the beginning of the program; and the short-time that

individual monitoring programs have been in place. At the time of the field visits, none of the community laboratories had been in operation for more than a year, with the exception of Split Lake.

6) Do you disagree with any of the recommendations? (Yes/No)

Nineteen of the 21 respondents agreed with the recommendations. Of the two negative responses, one stated that the visit to a working lab is not necessary during the training session while the other suggested that recommendations should be arranged in terms of priority. The evaluation team decided not to do this as different stakeholders may have different priorities. We suggest that the P/A P steering committee and regional health officials weigh the recommendations presented in this report and design a common strategy to enhance the delivery of the program.

A.3.2. Open-ended Questions

Please refer to the questionnaire at the end of this appendix for the specific questions. The answers received have been grouped into four different categories:

1) Training needs and support

Many respondents restated the need for further training for WQ technicians; the need to estimate more accurately the workload of the technician and their transportation costs; the need to have the support of Band Councils to facilitate the local implementation of the monitoring program.

2) Community Empowerment and Development

Most respondents agreed that the program has contributed to the empowerment and development of FN communities.

3) WQ Monitoring Tools

Four respondents believed that the report should offer specific recommendations on the selection of WQ monitoring tests, particularly whether the P/A test should be replaced by the Coli-ert test. Even though this issue goes beyond the terms of reference of the evaluation, this report offers basic information (including cost data) and guidelines for comparing different water quality monitoring options.

4. General comments

Several respondents made the following statements about the P/A in this report:

- “The dedication, commitment and interest [that] Doug and Alana bring to the classroom training and to the individual participants enhances the program.”
- “It was like reading my own report.”
- “This program should have been done a long time ago”

- The report shows that “the program was A LOT MORE than one week training of people and then chucking them out into the field to go forth and test...”
- “...I think the program has made an incredible difference in FN communities. I also think the program has decreased the number of sicknesses in FN communities.”
- “The report is a correct description of the impact of this beginning towards self-reliance”.
- “A lot of FN people are now looking after WQ in their own communities”.

P/A Program Evaluation Questionnaire

To help us make sure that the P/A program evaluation is both accurate and useful, please take a few minutes to fill out the questionnaire below. The document provided is a draft; your responses to this questionnaire will help us to prepare the final version. Feel free to use extra paper if you need more space for any question.

A self-addressed stamped envelope has been provided for you to return the questionnaire. Please return the questionnaire before July 7th. Your responses will be completely confidential. The questionnaires will be referred to only by code number. Thank you for taking time to help us make this evaluation a useful one.

Evaluation Report

1) Was the evaluation report clear and easy to read? Yes ☐ No ☐

If not, why?

2) What other topics would you like to see discussed in the evaluation report?

3) Were you offended by any part of the report? Yes ☐ No ☐

If you were, which part, and why?

4) Was there a section of the report that you felt misrepresented any group? Yes ☐ No ☐

If so, which section, and why?

Assessment of Program

5) Do you agree or disagree with the findings of the evaluation? Agree ☐ Disagree ☐

Why?

6) Do you feel the report correctly describes the impacts of the P/A program? Yes ☐ No ☐
If not, why?

7) What other conclusions or opinions about the P/A program would you add?

Recommendations

8) Do you disagree with any of the recommendations? Yes ☐ No ☐
If you do, which one(s)? Why?

9) What other recommendations would you add?

Information Provided

10) What new information in the evaluation report did you find interesting and/or important?

Additional Comments

11) Feel free to add any additional comments or suggestions you have.

APPENDIX B- Operational Status of Laboratories

Table 6 Operational Status of Laboratories Visited

Indicators	Comments
Lab No. 1 (Manitoba) Status: <i>operational</i> Cleanliness: <i>very clean</i> Lab Hygiene: <i>good</i> Quality Control: <i>adequate</i>	<ul style="list-style-type: none"> • the lab was first set up in the examination room of the health clinic, then moved after complaints by nurses, to a small office space occasionally used by Councillors (also in the health clinic). Necessary renovations were made. • all equipment clean and in working order • small room, no separation between office and lab space • adequate ventilation, good lighting, temperature control, no corrosive fumes, no drafts, secured access • WQ technician needs to sterilize used positive test bottles after-hours, because foul smell disturbs co-workers.
Lab No. 2 (Sask.) Status: <i>operational</i> Cleanliness: <i>very clean</i> Lab Hygiene: <i>good</i> Quality Control: <i>adequate</i>	<ul style="list-style-type: none"> • lab was set up in the health clinic's dental assistant's room; this is the 3rd location for the lab, and it is temporary (until a dental assistant is found) • all equipment clean and in working order • adequate room space, no separation between office and lab space • adequate ventilation, good lighting, temperature control, no corrosive fumes, no drafts, secured access
Lab No. 3 (Sask.) Status: <i>operational</i> Cleanliness: <i>very clean</i> Lab Hygiene: <i>good</i> Quality Control: <i>very good</i>	<ul style="list-style-type: none"> • lab was set up in the Band Office building, and extensive renovations were made (including separate & exclusive access from the outside) • all equipment clean and in working order • excellent room space, separate office space, lab space, storage area and washroom • adequate ventilation, good lighting, temperature control, no corrosive fumes, no drafts, secured access
Lab No. 4 (Manitoba) Status: <i>non-operational</i> Cleanliness: <i>dirty</i> Lab Hygiene: <i>N/A</i> Quality Control: <i>N/A</i>	<ul style="list-style-type: none"> • lab was set up in laboratory area of water treatment plant • equipment dusty and exposed to very corrosive environment, balance rusted in parts • very small space; no separate office and lab space • very poor ventilation, poor lighting, cold and humid, very noisy, corrosive fumes (strong chlorine smell in plant), no drafts, secured access • contribution agreement expired, WQ technician laid-off

Note: see end of section for the keys to above table

Table 6 Continued...

Indicators	Comments
Lab No. 5 (Sask.) Status: <i>operational</i> Cleanliness: <i>very clean</i> Lab Hygiene: <i>good</i> Quality Control: <i>adequate</i>	<ul style="list-style-type: none"> • the lab was set up in the basement of the community arena. This is its third location for it, and it is temporary until the new water treatment plant is ready (presently under construction). The lab will be relocated to the new plant • all equipment was clean and in working order • adequate room space, but office and lab space not separated • sink unavailable, WQ technician needs to use public washroom for cleaning glassware • poor ventilation, good lighting, temperature control, no corrosive fumes, no drafts, secured access
Lab No. 6 (Sask.) Status: <i>operational</i> Cleanliness: <i>very clean</i> Lab Hygiene: <i>good</i> Quality Control: <i>adequate</i>	<ul style="list-style-type: none"> • the lab was set up in an abandoned gasoline service station • all equipment was clean and in working order • adequate room space, but office and lab space not separated • sink unavailable, WQ technician uses a plastic cooler to store dirty glassware • poor ventilation, good lighting, temperature control, no corrosive fumes, no drafts, secured access
Lab No. 7 (Manitoba) Status: <i>operational</i> Cleanliness: <i>clean</i> Lab Hygiene: <i>good</i> Quality Control: <i>very good</i>	<ul style="list-style-type: none"> • the lab was set up in its own building • all equipment was clean and in working order • excellent room space, separate office and lab space • good ventilation, good lighting, temperature control, no corrosive fumes, no drafts, secured access
Lab No. 8 (Ontario) Status: <i>non-operational</i> Cleanliness: <i>under construction</i> Lab Hygiene: <i>N/A</i> Quality Control: <i>N/A</i>	<ul style="list-style-type: none"> • the lab was being set up in a renovated garage/storage room of the health clinic • equipment stored in shipping boxes while renovations are made • excellent room space, separate office space, lab space, and storage area • good ventilation, good lighting, no corrosive fumes, no drafts, secured access • lab to be operational in spring 96

Keys to Table

1. Cleanliness Indicators

<i>dirty</i>	dust/dirt in floor and working area, dirty glassware accumulated in sink, working area prone to contamination
<i>clean</i>	some dust/dirt in floors, clean working area, glassware clean and stored
<i>very clean</i>	clean floors, clean working area, glassware clean and stored

2. Lab Hygiene Indicators

<u>Indicators</u>	<u>Value</u>
• washes hands before & after working in lab	1
• sanitizes work areas before & after use	1
• no food and/or drink in lab	1
• uses clean lab clothing	1
• uses clean & sterilized glassware (properly stored)	1
• sterilizes (+ve) samples before disposal	1
• garbage container with plastic bag & lid	1
• no garbage overflowing in container	1

	maximum 8

rating: 0-4 ... *poor*
 5-6 ... *adequate*
 7-8 ... *good*

3. Quality Control Indicators

<i>poor</i>	quality control measures absent
<i>adequate</i>	tests each new batch of P/A bottles (incubation for 15-18 hrs at 35°C)
<i>good</i>	performs duplicate analyses on at least 10% of samples in addition to above
<i>very good</i>	sends duplicate sample to certified Provincial lab for verification, on at least 10% of samples or second samples of sources which tested positive, and compares results.

APPENDIX C- Summary of Program Status

Table 7. Community-based WQ programmes in Manitoba, Saskatchewan, and Ontario

Location	Programme(s)	Status (as of Dec 95)
Keewatin Tribal Council, Manitoba	8 First Nations (FNs), each to be served by their own laboratory	<ul style="list-style-type: none"> • 2 labs and WQ monitoring programmes fully operational • 6 labs either not yet set up, or programmes experiencing difficulties in being implemented
Swampy Cree Tribal Council, Manitoba	7 FNs each to be served by their own laboratory	<ul style="list-style-type: none"> • 2 labs and WQ monitoring programmes fully operational • 5 labs not yet set up: 2 FNs to apply to the programme; 1 FN to send WQ technician for training; 2 community programmes experiencing difficulties in being implemented
West Region Tribal Council, Manitoba	7 FN communities within the Tribal Council served by 3 laboratories	<ul style="list-style-type: none"> • All 3 laboratories and WQ monitoring programmes fully operational
Meadow Lake Tribal Council, Saskatchewan	9 FNs, each to be served by their own laboratory	<ul style="list-style-type: none"> • 7 labs and WQ monitoring programmes fully operational • 1 lab set up & new WQ technician to be trained • 1 lab in process of being set-up
Prince Albert Grand Council, Saskatchewan	10 FNs to be served by their own laboratory	<ul style="list-style-type: none"> • 8 labs and WQ monitoring programmes fully operational (some labs serving several reserves within one FN) • 2 labs and WQ monitoring programmes in the process of being set-up
Sachigo Lake FN, NW Ontario	1 FN to be served by its own lab	<ul style="list-style-type: none"> • lab building undergoing renovations & expected to become operational by spring 96

Note: The above information was obtained from interviews with EHOs from the corresponding Tribal Councils, and not from actual field verification visits. There may be other Tribal Councils with a P/A-based WQ programme that were not visited; information on these has not been included.

APPENDIX D- P/A P Evaluation: Terms of Reference

Under this contract, IDRC shall evaluate the effectiveness of the Presence/Absence Water Quality Monitoring Program (P/A Programme), and make recommendations for enhancing its delivery to First Nations communities.

In order to fulfill this task, IDRC shall:

- (a) evaluate the effectiveness of the training component of the P/A program (training course, training materials, and preparation of trainees);
- (b) evaluate the implementation of the P/A program at the community level, in terms of technical support mechanisms, adequacy of laboratory set-up and operation, and effectiveness of sampling protocols;
- (c) identify and document the impact of the P/A Program on the safety of drinking waters;
- (d) visit six First Nation communities involved in the evaluation project, in order to carry out tasks (a) to (c) above; one of the communities will be Split Lake Cree First Nation community, and the remaining five communities will be selected from the various training sessions, and will include locations in Manitoba, Ontario and Saskatchewan; and
- (e) make recommendations for enhancing the delivery of the P/A Program.

Evaluation Team

IDRC's evaluation team was made up of:

- a project manager
- a technical evaluator
- a research associate/field evaluator
- a health anthropologist advisor
- IDRC's evaluation unit (supporting role)

APPENDIX E- Evaluation Methodology

The first step in the development of the evaluation methodology was the negotiation with the P/A steering committee of the specific evaluation objectives and indicators to be used. A draft evaluation plan was presented and discussed at a P/A P steering committee in September 1995. The final proposal for the evaluation plan was approved in October 1995.

The evaluation involved field visits to eight FN communities which had participated in the P/A P training at Split Lake and had established community water quality laboratories in Manitoba, Saskatchewan and Ontario.

The technical evaluator and the research associate conducted interviews with community water quality technicians and realized visits to the community labs. These interviews were complemented with discussions with other community workers in the health and water sectors (such as water plant operators, CHRs, nurses and Band Council staff) and other individuals involved in the program such as:

- EHOs working for Health Canada at the national and regional level;
- EHOs working for FN Tribal Councils;
- Health Directors of FN Tribal Councils;
- A water specialist from Environment Canada's National Water Research Institute (NWRI) at Burlington, Ontario;
- Assembly of First Nations staff involved in the Drinking Water Safety Program for Native People;
- A FN environmental specialist involved in environmental monitoring.

In order to assess the training component of the P/A P, the evaluation field team participated as trainees in the Split Lake's Water Quality Technician training course delivered in November 1995.

A progress report was presented to the steering committee following completion of the field visits. The report provided the steering committee with a description of the research activities conducted so far and offered a preliminary analysis of the data. This information allowed the steering committee to make suggestions for the completion of the final evaluation report.

The framework for the evaluation is presented in Tables 8 and 9 below. The itinerary for the field evaluation visits is presented in Appendix F.

Table 8 EVALUATION OF P/A PROGRAM: General Evaluation Framework

WQ technicians & their preparation :

- ◆ TRAINING COMPONENT

WQ technicians' tasks & how they are facilitated:

- ◆ EFFECTIVE UTILIZATION & RETENTION OF WQ TECHNICIANS
- ◆ MECHANISMS/ NETWORKS FOR FACILITATING TASKS
- ◆ INSTITUTIONAL ENVIRONMENT
(PROCEDURES, AGREEMENTS, REGULATIONS, POLICY, FINANCE)

Outputs:

- ◆ PROGRAM UTILIZATION & EFFECTS
(EFFECTIVENESS LEVEL) (IMPACT LEVEL)

Table 9. Training Component

Purpose of training: *Capacity Building Of First Nations Community Members as Water Quality Technicians*

Capacity: ability of WQ technicians to **perform appropriate tasks** effectively (in support of goals) & efficiently (in relation to resources available).

Indicators of Success:

- ◆ Scientific Competence of Technicians
 - ❖ Knowledge of Basic Tasks
 - ❖ Laboratory Set Up & Operation
- ◆ Personal Ability of Technicians
 - ❖ Ability to Seek Solutions to Operational Problems
 - ❖ Ability to Gain Cooperation of Others
 - ❖ Energy & Persistence to Overcome Bureaucratic Obstacles
 - ❖ Motivation to Accomplish High Quality Work

APPENDIX F- Itinerary of Field Visits

Table 10. Manitoba

Date Nov. 95	Travel and Location	Persons Interviewed
Thu 09	<ul style="list-style-type: none"> • flight to Toronto • drove to Burlington • flight to Winnipeg 	<ul style="list-style-type: none"> • Barney Dutka, scientist at the National Water Research Institute, member of DWSP Steering Committee and scientific advisor to the P/A P
Fri 10	<ul style="list-style-type: none"> • spent morning in Winnipeg • flight to Thompson 	<ul style="list-style-type: none"> • Peter Rogers, Environmental Health Officer, Health Canada, Winnipeg
Sat 11	<ul style="list-style-type: none"> • spent the day in Thompson 	<ul style="list-style-type: none"> • Susan Cook, EHO for the northern Manitoba region
Sun 12	<ul style="list-style-type: none"> • traveled to Split Lake • stayed overnight in Thompson 	<ul style="list-style-type: none"> • Doug and Alana Kitchekeesik, P/A programme trainers from Split Lake
Mon 13	<ul style="list-style-type: none"> • traveled to Nelson House • stayed overnight in Thompson 	<ul style="list-style-type: none"> • Clifford Hart, WQ technician in Nelson House
Tue 14	<ul style="list-style-type: none"> • traveled to Nelson House • stayed overnight in Thompson 	<ul style="list-style-type: none"> • Dennis Linklater, Community Health Representative (CHR) in Nelson House • Clifford Hart, WQ technician in Nelson House • Steve and Cathy Emery, secondary school teachers at the Nelson House School
Wed 15	<ul style="list-style-type: none"> • traveled from Thompson to Easterville (Chemawagin FN) 	<ul style="list-style-type: none"> • Norma Daniels, WQ technician in Easterville
Thu 16	<ul style="list-style-type: none"> • spent the day in Easterville • drove to The Pas 	<ul style="list-style-type: none"> • Norma Daniels, WQ technician in Easterville • Doris George, Band Administrator
Fri 17	<ul style="list-style-type: none"> • travel: The Pas to Dauphin and returned to The Pas 	<ul style="list-style-type: none"> • Barry Wasik, Water Quality Analyst and Advisor for the West Region Tribal Council
Sat 18	<ul style="list-style-type: none"> • travel: The Pas to Thompson 	
Sun 19	<ul style="list-style-type: none"> • spent the day in Thompson 	<ul style="list-style-type: none"> • met with Doug and Alana Kitchekeesik
20 & 21	<ul style="list-style-type: none"> • spent the day in Thompson 	<ul style="list-style-type: none"> • participated in the P/A P Technician training course
Wed 22	<ul style="list-style-type: none"> • spent the day in Thompson 	<ul style="list-style-type: none"> • participated in the P/A P Technician training course • Victor Spence, Manager of Tataskweyak Environmental Monitoring Agency & Manager of the Split Lake P/A P Technician Training Course
Thur 23	<ul style="list-style-type: none"> • drove from Thompson to Split Lake, and returned to Thompson in the evening 	<ul style="list-style-type: none"> • participated in the final session of the training session, including an end-of-course quiz and a course evaluation • met with Victor Spence in Split Lake

Fri 24	<ul style="list-style-type: none"> • return flight Thompson → FlinFlon → Winnipeg → Ottawa 	
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Table 11. Saskatchewan and NW Ontario

Date Dec. 95	Travel and Location	Persons Interviewed
Wed 06	<ul style="list-style-type: none"> • flight to Saskatoon 	
Thu 07	<ul style="list-style-type: none"> • flight to Prince Albert • stayed overnight in Prince Albert (P.A) 	<ul style="list-style-type: none"> • Alec Johnson, EHO for the Prince Albert Grand Council (PAGC)
Fri 08	<ul style="list-style-type: none"> • drove from Prince Albert to Meadow Lake • visit to Meadow Lake Tribal Council and Flying Dust FN • stayed overnight in Meadow Lake 	<ul style="list-style-type: none"> • Leslee Wilson, EHO for the Meadow Lake Tribal Council • Scotty Bear, WQ Technician for the Flying Dust FN
Sat 09	<ul style="list-style-type: none"> • drove back from Meadow Lake to P.A • spent day in P.A 	
Sun 10	<ul style="list-style-type: none"> • drove from P.A to Stanley Mission, Lac La Ronge FN 	
Mon 11	<ul style="list-style-type: none"> • spent the day in Stanley Mission 	<ul style="list-style-type: none"> • Brian Hardlotte, Senior Laboratory Technician for the Lac La Ronge FN • Jeannie Bear, CHR for Stanley Mission
Tue 12	<ul style="list-style-type: none"> • drove from Stanley Mission to La Ronge, from there to Montreal Lake FN and from there to Prince Albert 	<ul style="list-style-type: none"> • Annie McKenzie, Director of CHRs for the Lac La Ronge FN communities • Harry Halkett, WQ Technician for the Montreal Lake FN
Wed 13	<ul style="list-style-type: none"> • drove from P.A to Sturgeon Lake FN, and back • stayed overnight in P.A 	<ul style="list-style-type: none"> • Shirley Bighead, Health Director for Sturgeon Lake FN • Head Nurse for the Sturgeon Lake FN Health Centre • Orville Longihon, WQ Technician for Sturgeon Lake FN
Thu 14	<ul style="list-style-type: none"> • drove from P.A to Cumberland House, and back • stayed overnight in P.A 	<ul style="list-style-type: none"> • Kathy Settee, WQ Technician for Pine Island Cree FN • Lester Laliberté, Water Treatment Plant Technician for Pine Island Cree FN
Fri 15	<ul style="list-style-type: none"> • remained in P.A for the day 	<ul style="list-style-type: none"> • Alec Johnson, EHO for the PAGC

Sat 16	<ul style="list-style-type: none"> • flight from P.A. to Saskatoon • spent the day in Saskatoon 	
Sun 17	<ul style="list-style-type: none"> • flight from Saskatoon to Sioux Lookout (SxL), Ontario • stayed overnight in SxL 	
Mon 18	<ul style="list-style-type: none"> • flight from SxL to Sachigo Lake FN • stayed overnight in Sachigo Lake FN 	
Tue 19	<ul style="list-style-type: none"> • spent day in Sachigo Lake FN • evening flight back to Sioux Lookout 	<ul style="list-style-type: none"> • Ryan Kaminawash, WQ Technician for Sachigo Lake FN • Jethro Tait, Health Co-ordinator for Sachigo Lake FN
Wed 20	<ul style="list-style-type: none"> • spent day in Sioux Lookout 	<ul style="list-style-type: none"> • Bob Klages, EHO for NW Ontario Region, Health Canada
Thu 21	<ul style="list-style-type: none"> • return flight SxL→ Winnipeg → Ottawa 	

APPENDIX G- Listings of Communities That Participated In Training

Manitoba

Fisher River
Fox Lake
Grand Rapids
Indian Birch
Gods Lake Narrows
Garden Hill
Lac Brochet
Nelson House
Norway House
Pelican Rapids
Pukatawagon
St. Theresa Point
Tadoule Lake
Wasagamack
West Region Tribal Council

Saskatchewan

Black Lake
Cumberland House
Fond du Lac
James Smith
Lac La Ronge
Montreal Lake
Red Earth
Shoal Lake
Sturgeon Lake
Meadow Lake Tribal Council

Ontario

Sachigo Lake

APPENDIX H - Listing of Individuals Interviewed

Jeannie Bear, CHR, Stanley Mission, Lac La Ronge FN
 Scotty Bear, WQ Technician, Flying Dust FN
 Shirley Bighead, Health Director, Sturgeon Lake FN
 Tim Bonish, Regional Manager, Environmental Health, Health Canada Saskatchewan
 Harvey Campeau, WQ Technician (Trainee), Birch River FN
 Jaye Castleden, Centre for Indigenous Environmental Resources, Steering Committee Member
 Arlene Cochrane, CHR (Trainee), Fisher River FN
 Susan Cook, EHO, Health Canada, Manitoba
 James Dean, EHO, Cree Nation Tribal Health Centre, Manitoba
 Norma Daniels, WQ Technician, Chemawawin FN
 Rolland Duguay, Regional Manager, Environmental Health, Health Canada Quebec
 Barney Dutka, NWRI, Steering Committee Member
 Patrice Dupont, Consultant & Trainer, Quebec Region
 Cathy Emery, School Teacher, Nelson House FN
 Steeve Emery, School Teacher, Nelson House FN
 Doris George, Band Administrator, Chemawawin FN
 Brian Hardlotte, WQ Technician, Lac La Ronge FN
 Lloyd Harper, WQ Technician (Trainee), Island Lake FN
 Oliver Harper, WQ Technician (Trainee), Wasagamack FN
 Clifford Hart, Water Treatment Plant Operator, Nelson House FN
 Alec Johnson, EHO, Prince Albert Grand Council
 Ryan Kaminawash, WQ Technician, Sachigo Lake FN
 Alana Kitchkeesik, Trainer, Split Lake FN
 Doug Kitchkeesik, Trainer & Program Manager, Split Lake FN
 Bob Klages, EHO, MSB Health Canada, Ontario
 Lester Laliberté, Water Treatment Plant Operator, Pine Island Cree FN
 Henry Lickers, Environmental Division, Mohawk Council of Akwesasne
 Dennis Linklater, CHR, Nelson House FN
 Orville Longihon, WQ Technician, Sturgeon Lake FN
 Annie McKenzie, Director of CHRs, Lac La Ronge FN
 Jeff Moore, National Advisor DWSP, MSB, Health Canada, Steering Committee Member
 Wayne Okemow, WQ Technician (Trainee), God's Lake Narrows
 Kathy Settee, WQ Technician, Pine Island Cree FN
 Victor Spence, Tataskweyak Envir. Monitoring Agency, Steering Committee Member
 James Ransom, Coordinator, Environmental Unit, Assembly of First Nations
 Peter Rogers, Regional Manager, Envir. Health, Health Canada Manitoba, Steering Comm. Member
 Jethro Tait, Health Coordinator, Sachigo Lake FN
 Barry Wasik, WQ Analyst & Advisor, West Region Tribal Council
 Barry Wilson, WQ Technician (Trainee), Fisher River FN
 Leslie Wilson, EHO, Meadow Lake Tribal Council