

Certification Regimes for Water and Wastewater Facility Operators: A Review of Provincial and First Nations Approaches

Heather Edwards
Institute On Governance
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Introduction

Purpose

This report examines certification regimes for water and wastewater facility operators in Canada. Its purpose is to identify trends across the provinces and compare these with the provisions in place for First Nations communities through the Circuit Rider Training Programme.

Organisation and Methodology

The report is a summary of more extensive research and documentation, which can be found in a supplementary binder. Principle trends and key differences are highlighted in this report, but a more detailed summary of each provinces' approach can be found in the binder, as can reports from each DIAND region. Where ever possible, copies of legislation and other key documents have been provided in the binder. The material on the provinces was gathered through web research and communication with the provincial government employees responsible for certification. The material on First Nations was gathered through a questionnaire.

The report is organised into 3 major sections. The first reviews the different provincial approaches to certification of water and wastewater operators, drawing out the similarities and highlighting the differences across Canada. The second section provides an overview of the Circuit Rider Training Programme (CRTP) used for training water and wastewater operators in First Nations (FN) communities. Comparison of the provincial and CRTP approaches is undertaken in the third section, which concludes with options for amending the CRTP system to be more in line with the provincial approach. The appendix contains a document outlining one province's experiences in shifting to mandatory certification.

Provincial Certification Regimes

Requirements for Certification

The majority of the provinces use the certification guidelines set out by the Association of Boards of Certification (ABC) as the basis of their certification and/or training.[1] This organisation has set out a system of four levels of certification, each with different education and experience requirements (see tables 1 and 2). This system works in tandem with a classification system for water and wastewater facilities. There are four categories of facilities, arranged in

[1] Quebec is the exception: it sets its own standards. The remainder of the provinces, and indeed most American States, use ABC standards for certification, effectively making it the North American standard.

order of size and complexity.[2] The two classification systems are linked, such that a facility of class X is meant to be under the direction of an operator certified to level X or higher.

Table 1

Education Requirements	
Level	*Typical Requirements*
I	• Grade 12 or equivalent • Passing grade on Level I certification exam
II	• Grade 12 or equivalent • Class I certificate • Passing grade on Level II certification exam
III	• Grade 12 or equivalent • Class II certificate • Passing grade on Level III certification exam • 2 years relevant education or training, or equivalent
IV	• Grade 12 or equivalent • Class III certificate • Passing grade on Level IV certification exam • 4 years relevant training or education, or equivalent

Table 2

Experience Requirements	
Level	*Typical Requirements*
I	• 1 year operating experience
II	• 3 years operating experience
III	• 4 years operating experience, including 2 years direct responsible charge at a class II or higher facility
IV	• 4 years operating experience, including 2 years direct responsible charge at a class III or higher facility

Tables 1 and 2 list the average certification requirements, but there are some variations between provinces. For example, in Alberta the direct responsible charge requirements for Level III certification are waived if the operator is working in a class IV facility. In Ontario, there is an additional requirement for all operators to receive a certain number of hours of training every year. The details of each province's requirements can be found in the binder. Most provinces also offer the option of substituting additional experience to meet education requirements, or vice versa.

Most provinces require separate certification for different types of facilities. For example, an operator could be certified at Levels I through IV in each of the following four categories:

[2] Facility classification is usually done by assigning points to a facility according to a variety of criteria. Each level of facility corresponds to a range of points. Some provinces divide class level further according to populations served, or according to type of facility. See the Alberta section of the binder for an example of how facilities can be classified.

wastewater collection, wastewater treatment, water distribution and water treatment. This effectively creates sixteen different levels of certification.

Additional Levels of Certification

Some provinces have additional levels of certification, such as Operator-in-Training, Conditional Licenses, or Small Water or Wastewater Systems. These certificates are designed to accommodate instances where the regularly indicated level of certification is either not appropriate or not feasible. In Ontario, for example, every operator needs to be certified, but one year experience is required for a Level I certification. The solution is to have new operators apply for an Operator-in-Training license.

In Alberta and Ontario, all water and wastewater systems are required to be under the control of an operator licensed to the level of facility of higher. In some cases, however, such operators are not available and the province may, on a case by case basis, agree to offer a conditional license to an individual who has not met all the certification requirements. Such licences are generally valid only at a designated facility, and only for a fixed period of time.

In Saskatchewan, there are a number of small, uncomplicated water systems that serve a very limited population which do not require all the training of Level I certification to be safely and effectively operated.[3] A Small Water or Wastewater Certificate may be adequate. Examples of the requirements for these additional levels of certification can be found in Table 3.

Table 3

Certification Requirements	
Level	*Typical Requirements*
Operator-in-Training	• Grade 12, or equivalent • Passing grade on Operator-in-Training exam
Small System Operator	• Grade 10, or equivalent • Passing grade on small water or wastewater certification exam • 6 months operating experience at a small water system
Conditional License	• At discretion of issuing authority

Recertification

[3] According to section 3.1 of *Saskatchewan Water and Wastewater Works Operator certification Standards, 2000*, Small Water and Wastewater Facilities are defined as follows:

"Small Water Facilities include those Class I water treatment facilities and/ot those Class I water distribution facilities serving 500 people or fewer. The Small System water treatment facilities include only Class I facilities connected to groundwater sources. Surface water treatment plants are not included in Small Water Facilities.

Small Wastewater Facilities include those Class I wastewater treatment facilities and/or those Class I wastewater collection facilities serving 500 people or fewer. Mechanical wastewater treatment facilities, regardless of size, are excluded from this facility classification"

Another element of certification is *re*certification. The provinces vary greatly on this topic, from no requirement to renew certificates to annual requirements. The very act of renewal also varies between provinces, in some instances requiring nothing more than paying membership dues, and in other cases requiring training or active operating experience. Table 4 summarises the different approaches of the provinces.

Table 4

Recertification	
Region	*Recertification requirements*
ACWWVCP	Must maintain membership in the organisation: $20 every two years
Alberta	Every 2 years. Operator must have, over past 2 years, active operating experience for 30% of time OR 2 continuing education units of related training OR have rewritten the exam.
British Columbia	Annually, through Environmental Officer Certification Program dues of $40
Manitoba	In the process of developing new certification system
Newfoundland	See ACWWVCP
New Brunswick	See ACWWVCP
Nova Scotia	
Ontario	Every 3 years
PEI	
Quebec	No requirement for Ministry of Education certification. Other certification must be renewed every 5 years
Saskatchewan	
Territories	

Voluntary or Mandatory Certification

While ABC sets out standard prerequisites for each level of certification, not all provinces use this standard the same way. There are three basic approaches to this among the provinces.

1. *Voluntary certification*.
   Certification is not mandatory, although it may be encouraged. Some such regimes are accompanied by mandatory training requirements (i.e. each operator must undergo 40 hours of training per year), but others are not. See Newfoundland, New Brunswick or the Territories, for example.
2. *Facilities must be under the control of an operator certified to the level of facility or higher*.
   The operation, repair and maintenance of facilities must be conducted under the direct responsible charge (DRC) of an operator certified to the level of the facility or higher. There may be requirements for a similarly certified operator to act as second-in-command or to be available in case the primary person responsible is not available. See Alberta, Saskatchewan or Nova Scotia, for example.
3. *All operators must be certified and facilities must be under the control of an operator certified to the level of facility or higher*.

As per number 2, above, but with the additional requirement that all other operators also be certified to a minimum of Level I. See Ontario, for example.

Provision of Training and Certification Services

Certification may be awarded by the province or by specified institutions. Exams may be administered by the province, by specified institutions, or by ABC. Training may be offered by the province, by the facility owner, by approved institutions, or by any entrepreneur. Between these options, there are a large number of possible combinations. However, in most instances the province administers examinations, awards certification, and sets parameters for training, which is delivered by various associations and contractors. If certification is not mandatory, a local water association is likely to administer the exams and award certification. See Table 5 for a summary of the division of responsibilities in each province.

One interesting variation to note is when certification is awarded. In some provinces (Alberta, for example), the training and experience requirements for a given level of certification are considered prerequisites to writing the exam, and certification is awarded if a passing grade is achieved. In other provinces (Saskatchewan, for example), training and experience are not considered as prerequisites to write the exam, but upon achieving a passing mark, the operator must submit his grades, a record or his experience and training, and copies of his job description to a certification board, which decides whether to award certification.

Responsibility for Training and Certification

Whose responsibility it is to see that operators are adequately trained and/or certified? If certification is voluntary, it is the operator's responsibility to decide whether he or she wishes to become certified. Regional organisation, or even the province, may encourage operators to become certified, but it is ultimately the operator's decision and responsibility. In some provinces with voluntary certification, the province has assumed a separate responsibility to provide training to all operators. In such situations, it remains the operator's responsibility to be certified, but it is the province's responsibility to provide training, a responsibility which is sometimes discharged through provincial water associations.

Under mandatory certification regimes, there are two models of responsibility. In one, it is the responsibility of the facility owner to employ only certified operators (or to ensure that the facility is always under the charge of a properly certified operator) and to ensure that operators receive any additionally required training. In this instance, the operator frequently shares some initial responsibility for becoming certified (see Ontario or Saskatchewan, for example). In the other model, the province assumes greater responsibility, promising that it will ensure that all operators are certified (or all facilities are under the direction of a certified operator). Upgrading to new levels of certification can also fall under either model.

Table 5

Summary of Certification Regime Division of Responsibilities				
Province	*Mandatory*	*Standards set by*	*Certification done by*	*Training offered by*
Alberta	Certification for operator in charge (OIC). No other training requirements	Provincial legislation	Province	Province working with associations. Also private organisations
British Columbia	Only for sewage OIC, not water	Provincial legislation for wastewater; EOCP for water	EOCP	BCWWA & others approved by EOCP
Manitoba (developing new system)	Not yet. Old system voluntary.	Province is in process of developing new standards.	Will be ABC exams administered by province. Old system only experience and education, no exams.	Red River College, supported by province, & others
Newfoundland	No, but training provided for all operators	ACWWVCP (for certification) and province (for training)	ACWWVCP	Province, in consultation with local authorities and organisations
New Brunswick	No certification requirement. Site specific training requirements..	ACWWVCP	Exams administered by province	Associations and private contractors, in consultation with the province
Nova Scotia	Certification for OIC.	Provincial legislation	Province, ACWWVCP, ABC	
Ontario	Yes, for all operators	Provincial legislation	Province administers exam and evaluates license application	OETC, but mostly private contractors.
Prince Edward Island (new system)	Yes.	Provincial Drinking Water Strategy		
Quebec	Yes, for OIC	Provincial regulation	Wide range recognised	Cegep, and possibly others
Saskatchewan (new system)	Yes, for OIC, by 2005. Not required for remaining operators.	Provincial regulation	Certificates awarded by provincially appointed Certification Board. Exam administered by the Operator's Association, supervised by IAST, and provided by the province.	Several organisations in SK and elsewhere.
NWT & Nunavut	Voluntary. Encourage OIC to be certified to facility level	NWTWWA	NWTWWA	NWTWWA – but does not have comprehensive package.
Yukon	Voluntary. Looking into piggybacking on BC	EOCP	EOCP	BCWWA & others approved by EOCP

The direct responsibility for training and certification may not lie with the province, but in all instances the provinces are involved in the training and certification process; they have a responsibility to ensure a high quality water supply, and training and certification of operators is part of that. The provinces that are not directly involved in providing training usually maintain close ties with the provincial water association, working with it to identify acceptable standards and collaborating on educational initiatives.

Cost Allocation

Costs are shared between the province, the facility owner and the operators. A fee is levied for writing the examination and for the training courses, usually on a cost-recovery basis. Fees are usually paid by the operators, especially when certification is voluntary, but where the facility owner has a responsibility for training and/or certification, he may cover a large portion of the operator's expenses. The province often supplies logistical support, and in some cases runs training course at little or no cost to the attendees. The more the province feels that it is responsible for the level of training and certification of the operators, the more it assumes the cost of these activities.

It is difficult to be any more precise about training costs as most provinces and associations do not keep records that can easily provide this type of financial information: for example, the cost per course may be known, but not the number of operators trained; or the number of certified operators may be known, but the total number of operators is not. Additionally, the provinces contract with third parties, different facilities bring in trainers and individuals seek out courses that the province may not know about. The cost of certifying operators, in as much as training is part of certification, is very often not under the control of the province. (Lack of information raises accountability questions.)

The information that is most readily available is the costs applied to the operators. These are summarised in Table 6.

Table 6

Fees				
Province	*Exam*	*Cert*	*Penalty for lapsing*	*Training classes*
ACWWVCP	$45	$10	$5 to $10 plus back fees	
Alberta	$0 (?)		6 months current operations experience, possible re-examination	$170 (or $2000 for extended training at community college)
British Columbia	$50 + $15 admin fee + EOCP dues OR $300 (min) for evaluation of non-EOCP certification		Penalty plus back dues	$190 to $490
Manitoba				Various, according to who offers the course
Newfoundland	See ACWWVCP			$0 (?)

New Brunswick				Various, according to who offers the course
Nova Scotia				
Ontario		$75 (free for small systems)		Various, according to who offers the course
PEI				
Quebec				CEGEP
Saskatchewan		$130		Various, according to who offers the course
Territories	See BC			

Training Courses

Who Provides Training?

There are four options: the province, a provincially recognised association, general associations, and private contractors. In some cases, all four operate in tandem within rudimentary controls, but in other cases the provision of training courses is strictly controlled (see table 5). As explained in the previous section, the most prevalent approach is collaboration between the province and a water and wastewater association. This can take a variety of forms, including standard setting, course design, approval of third party training organisation, logistical assistance and financial assistance.

While this collaborative approach is most common among the provinces, Ontario and Quebec, with very large populations, have a different approach. In Ontario, the province sets broad guidelines for training, but a wide variety of groups offer training courses within these broad parameters. In effect, almost anyone can offer training course to meet the certification requirements. In Quebec, the only province where ABC standards are not followed, the province offers a training and certification programme at one Cégep, but also recognises almost any other training and certification system. In neither instance does there appear to be much oversight of course content or instructor qualifications, although Ontario is considering instituting some controls.

Content

The common thread between all of these approaches is the desire to provide operators with the skills and knowledge to operate water and wastewater facilities safely and effectively. This desire is frequently enacted through courses designed to enable operators to pass ABC certification exams, but in some cases is enacted through an independently developed training regime (as in Newfoundland, but even here the training programme is influenced by ABC certification standards). Examples of course content can be found in the binder; see especially Alberta and Quebec. Some provinces require certain standards to be met for the training to be considered valid, but others do not.

Location

Each province has its own approach. In some, the province offers comprehensive training at the principal metropolitan areas (Alberta). In others, training is offered in a wide variety of locations, but only on a few topics which vary each year (BC). In yet other provinces, a few regions are visited during each round of training, such that all are incorporated. In still others, training is "out-sourced" to third parties, who set themselves up wherever they think they can draw enough business to remain financially viable (Ontario).

Operator Data

This is another area where the provinces engage in little record keeping. In general, the only information available is the data submitted to the province in applications for certification. Hence, only provinces who administer certification have the data, and then only about certified operators.[4]

Conclusions

There is a high degree of variance between provinces, but a few general trends can nonetheless be discerned. All provinces except Quebec operate with the ABC standards in mind – this is the generally recognised standard in North America. There is a definite move towards mandatory certification of the operator in charge, and some newer certification systems also specify either training or certification for the remaining operators. In fact, there is a trend for more stringent standards and requirements across the board. This is manifest in more highly educated operators, more aggressive training efforts and increased regulation and monitoring.

The decision to put a mandatory certification system in place has been taken quite recently in a number of provinces. See Appendix I for an interesting overview of how Saskatchewan examined the many variables implicated in this decision, and how it is planning to manage the transition from a voluntary to a mandatory system.

First Nations Certification and Training

Overview

Water is an area of provincial jurisdiction; at the federal level there are only non-binding guidelines, which do not cover training or certification of water and wastewater system operators. However, a programme has been developed for voluntary training of FN operators. The Circuit Rider Training Programme (CRTP) is an on-site, hands-on training programme

[4] Annecdotal data collected from interviews with provincial administrators indicated that levels of turn over vary widely between provinces and that there is a general trend for higher education levels among operators.

tailored to the specific needs of individual operators and their communities. It aims to provide operators with the knowledge and skills necessary for safe and effective operation of water and wastewater facilities. First Nations community leaders are engaged in the training process to facilitate the development of a community of support and to enhance compliance. The overall CRTP programme is designed at the macro level by the federal government (Health Canada & DIAND) with the Assembly of First Nations, and is implemented regionally to specific community requirements.

The programme addresses specific needs of First Nations communities:

- allows for trouble shooting and advisory services, available to operators from trainers
- provides follow-up visits to ensure that facilities are being operated correctly
- provides training for operators without sophisticated mathematical skills
- allows operators to learn on their own equipment
- meets FN cultural needs

Common problems among FN include:[5]

- retention of trainers
- FN operators leaving the community for more lucrative positions
- establishing an effective administrative organisation for the CRTP
- differences in needs of communities versus the lack of cost effectiveness in a fragmented programme
- inadequate funding

Before the CRTP is offered in a FN community, the community must express a desire to participate in the programme. After assessing the community's needs, a training schedule is established and trainee accomplishment is tracked for each of the various competence areas. Occasionally, seminars or workshops are presented for groups of operators, and most jurisdictions operate an emergency or troubleshooting hotline. Certain jurisdictions use CRTP to certify operators according to provincial standards (see British Columbia), but the norm is training only.

The CRTP is a voluntary training regime; it is not obligatory for FN operators to be trained, either through this programme or otherwise. Some communities elect not to participate in the CRTP, although a consultant may be employed on a project by project basis. Alternately, FN operators may not participate in established CRTP programme because they feel that they are already adequately trained, they are intimidated by the process, or due to political reasons. See table 7 for more details.

The materials available on the financial costs of the training programme are more extensive for CRTP than for the provinces. However, there is great variety between regions. When the costs per year are compared with the number of communities receiving training, the cost per community varies greatly from a low of about $8000 to a high of $16 400. For a further break down of costs for the CRTP programme, see the materials in the FN section of the binder.

[5] According to government officials

Table 7

Summary			
Region	*Communities with water facilities under CRTP*	*Certification offered*	*Organisation*
BC	150 of 330	small systems	INAC-RPS
Alberta	22 of 60	No	through tribal councils
Saskatchewan	54 of 85	trial programme. First Nation Water and Wastewater Association desires mandatory certification	through SaskWater and tribal councils; also Prince Albert Grand Council
Manitoba	47 of 47?		West Region Tribal Council
Ontario	45 of 111	pending funding	OFNTSC
Quebec	21 of 21?		tribal councils
Atlantic	16 of 16		CRTP or private consultants
Yukon	no CRTP		CD ROM training programme developed by BCWWA; often collaborate with territorial government

Programme results

The CRTP programme is designed to meet specific needs of FN operators. However, in some regions less than 50% of FN communities make use of the CRTP, indicating possible dissatisfaction. Within the programme, operator levels of knowledge and competence are frequently not evaluated as very high. In Saskatchewan, for example, regional officials estimate that 30 % of operators in the CRTP have only the bare minimum of knowledge necessary to operate a plant; in Quebec, however, officials estimate that 40 % of operators do not have sufficient knowledge to operate the facilities.[6] The result is that numerous water and wastewater facilities in FN may not be competently operated.

Conclusions

The strength of the CRTP programme is its responsiveness to a number of FN specific concerns. However, within the CRTP programme, there is considerable variation in implementation and results. FN community leaders and the federal government may wish to consider stricter requirements for operator knowledge and training as a means to increase the effectiveness of their water systems and to ensure the quality of their drinking water.

[6] According to questionnaires returned by DIAND regional officials.

Comparison of FN & Provincial Regimes

The provincial standard is mandatory certification of the operator-in-charge. Some provinces additionally require certification of back-up operators or of all operators. In order to reach this level, FN communities would at minimum need to evaluate the level of their facilities, have the operator in charge certified to the level of the facility, make arrangements to certify the operator to this level, and provide for on-going training of certified operators. Additionally, FN communities should offer ongoing training to all operators, regardless of whether they are in charge of a facility.

While the provinces generally have more rigorous demands for certification, the CRTP also has provisions that are not found in all provincial regimes, such as sensitivity to cultural differences, allowances for low education levels, on site training and help lines for operators. Additionally, the CRTP seems to be especially strong in providing training to operators, regardless of certification aims. In seeking to close the gap between provincial and FN training and certification regimes, the strengths of the CRTP should not be forgotten.

The specific differences can be further broken down according to specific issues. Table 8 outlines the most common approaches of the provinces and the FN regions.

Table 8

Differences in approach to certification		
Issue	*Provincial approach*	*FN approach*
Overall strategy	Trend towards requiring all facilities to be under the direction of a well-trained, certified operator	Provide opportunities for training on a voluntary basis
Training		
Attendees	From a variety of communities	Usually from a single site
Size	30 +	1 to 3
Duration	Sufficient to meet certification requirements; specifics unknown	Various. Generally 3 visits per year.
Location	Training available at a few central locations	On-site training
Pre-requisites	Yes, experience and education.	None
Delivery	By province, associations or private contractors	Contractors, generally hired by a coordinating association
Certification	Trend towards mandatory certification	No requirement in most FN
Costs	Unknown	Ranging from $5000 to $16 400 per FN in 2000/2001.

Options for Closing the Gap

Decision-Making/ Methodology

The following questions outline some of the decisions that would need to be made once a decision has been taken to encourage certification among water and wastewater facility operators in FN communities.

1. Should certification be according to ABC standards or not?
   a) If yes, are additional certification levels required (i.e. operator in training, conditional licenses…)
   b) If no, how will standards of certification be established?
2. Should certification be of all operators, or only the operator-in-charge?
3. Should certification be mandatory or voluntary?
   a) if voluntary, how will operators be encouraged to comply?
4. Who should bear the costs of certification?
5. Should the certification programme be nationally or regionally administered? (another way of asking this question is what is the desired level of decentralisation, and how does it balance with the need for constant standards?)
   a) If nationally, by the federal government? by a FN organisation? other?
   b) If regionally, by the province or other (water association? FN organisation? other?)?
6. How will the specific needs of FN communities be met?
7. How will any new programme be promoted, and how will "buy-in" be effected?
8. What approach should be taken towards FN communities not currently under the CRTP?

Appendix I provides an insight into the decision-making process used in one province as it examined its approach to the training and certification of water and wastewater system operators.

Anticipated Hurdles

There are also a few other concepts to keep in mind during the decision making process: level of certification likely to be required, education, buy-in and turn over. It is quite possible that these four issues could pose problems for a certification regime for FN communities.

Level of Certification
The difficulty of implementing a certification regime will depend in part on the complexity of the facilities. The certification requirements for small systems or Class I facilities are not as extensive as those for Class IV facilities. Therefore, if most FN communities have simple systems serving a limited population, certifying operators will require less effort and resources than if water facilities are complex systems serving large populations.

Education
The basic educational pre-requisite for all ABC certification is grade 12 education but in many FN communities there are may be individuals with such a level of education. One option for managing this difficulty is to allow experience to stand in for education. Most provinces allow operators to substitute one year of operating experience for one year of high school (grades 10 through 12) or 2 years of grade school (grades 1 though 8). Hence, an operators with only grade 8 education could use 3 ½ years of operating experience to make up the missing educational requirements. These 3 ½ years would be in addition to whatever experience requirements are in place for the level of certification desired.

Buy-in
If FN communities participate in provincial certification regimes already established, there would be less cost and duplication (overhead, equipment…). However, if FN are asked to join systems already established by the provinces or by the federal government, there is less opportunity to adapt the programmes or to foster a sense of buy in or ownership.

Turn Over
If training for FN operators is provided at little cost (compared to the provinces), with special consideration for educational requirements, and the final positions are not as well paying as similar off-reserve positions, there will likely be high operator turn-over.

Provincial Concerns
Because the provinces are deeply involved in their own water regulations, attention should be paid to establishing a certification system that will not cause conflict between FN communities and provincial water regulations.

Implementation Options

There are a number of responsibilities (training modules, module delivery, examination, awarding certificates) and a number of possible agents to assume each (federal government, provincial government, FN organisation, tribal councils, private organisations or contractors, independent associations). The following are some of the most likely combinations of these variables.

1. *Status quo*
   Maintain the current CRTP programme, as is.

2. *Adapted CRTP*
   Use the CRTP to prepare FN operators for certification. Operators could develop the necessary knowledge and experience through the CRTP, and then take a standardised certification exam. The exam could be administered by the province, federally, or by some other association. The content of the CRTP would be adjusted to allow operators to develop the expertise needed to meet the exam criteria.

3. *Licensing board*

Instead of having prerequisites to write the certification exam, operators could take the exam when they saw fit, and submit a record of their grade, training and experience (CRTP or otherwise) to a certification board for evaluation (see Ontario model). There could be one centrally administered board, or a number of regional boards. This would allow communities to select their own preferred methods of training.

4. *New FN training programme*
   The CRTP could be replaced by a new training regime, the objective of which is operator certification rather than just training. Training programme content could be informed by the knowledge required to pass the certification exams.

5. *Piggyback on provincial certification systems (with fallback option)*
   Where there is a provincial certification requirement, FN communities within the province could participate in it, in the same fashion as any other provincial community. Where is no provincial certification system, or if the system does not meet an approved standard, a fall back option (similar to 2 or 4) would be implemented.

6. *Provincial system with special training arrangement*
   As per option 5, but work with special options for delivering training to meet FN requirements. They could be provincially run, CRTP run, or otherwise available.

7. *Hub system*
   Train a small number of operators to undertake the operation of a larger number of facilities. This would work only if the nature of the facilities is such that they do not require full time supervision for proper operation.

8. *Primacy*
   Allow FN communities with demonstrable capacity to undertake their own training and certification regime, provided it meets certain established standards. FN communities would be granted "primacy" over water systems if they met the necessary prerequisites (see US model).

In options 2, 3 and 4, it might make sense to institute a special level of certification for FN communities, based on the needs of these facilities, and which only allows operators to operate designated facilities.

Special attention should be paid to how any of these options could be enforced – what are the incentives for compliance, and what are the options in case of non-compliance?

Next Steps

Identifying the exact nature of the gap

It may prove useful to examine more closely how far FN operators are from meeting the provincial standard. To do this, the following steps would have to be taken.

1. Establish what level of facilities are being operated in FN communities. This information can be used to establish what level of certification would be required of the facility operators, and hence what knowledge, education and experience might be required of them.

2. Establish what knowledge, training, experience and education FN operators currently have. This can be compared with the data from point 1, above, to establish exactly what distance remains to be covered for FN operators.

3. Knowing the exact nature of the gap would enable the development of quite precise costing and timeframe. Moreover, this information could be used to develop the content of a training programme that meets the immediate needs of the operators.

Moving forward

Using this report as a starting point, the next step is to narrow down the options for adapting the FN approach to operator training and certification. Consultation with key stakeholders through discussions or workshops may prove useful. Any needs for further information (such as identifying the exact nature of the gap) should be identified and addressed at this point.

Once a few (two or three) options are identified as likely candidates, further detailing of these possibilities will be carried out. This would include costing out the selected options, and identifying a likely timeframe required for implementation.

Finally, a decision among the options would be taken, and one approach implemented among the First Nations.

List of Acronyms and Abbreviations

ABC	Association of Boards of Certification
ACWWVCP	Atlantic Canada Water and Wastewater Voluntary Certification Programme
CEUs	continuing education units
CRTP	Circuit Rider Training Program
DIAND	Department of Indian Affairs and Northern Development
DRC	direct responsible charge
EOCP	Environmental Officer Certification Program (BC)
FN	First Nations
IAST	Institute of Applied Science and Technology (Saskatchewan)
INAC	Indian and Northern Affairs Canada
NTWWA	Northern Territories Water and Wastewater Association
OIC	operator-in-charge

Appendix I: Operator Certification in Saskatchewan

Prepared by Gus Feitzelmayer, Environmental Protection Branch, Saskatchewan Environment and Resource Management

The Program had been voluntary since late 1977, following ABC (Association of Boards of Certification) criteria of education and experience. Certificates were issued by the Department on the advice of a Ministerially-appointed Operator Certification Board. Voluntary certification accounted for about 23% of the water/wastewater works operators that were on our database of operators working for water/wastewater works that were "licensed" by the Department. Certificates were site-restricted.

Over time the number of operators becoming certified levelled off at about 23% and attendance at Department-sponsored training events also began to level off and even decline. The Department was sponsoring annual workshops that were topic-specific with new topics being added, and speciality workshops with out-of-province subject experts being offered as well.

In about 1992, all operators and municipal administrators (as owners of the water and wastewater works) were surveyed for what they were looking for in the future of operator certification . Survey results were studied by a stakeholder group representing owners of water/wastewater works, the operators themselves, the Operator Certification Board, Post-Secondary Education, our Department and a Crown Corporation overseeing all water use in the province. The final recommendation was that there should be a mandatory operator certification program to be established by regulation by the Department, training and education was to be done by the Technical Institute and the certification program was to be administered through the Operators' Association on behalf of the Department. This eventually came about in July 2000, and a Certification Board was appointed by our Minister with the Board having the authority by regulation to issue site-unrestricted certificates to operators who met Department set Standards of education, experience and examination, using certification criteria, including examinations established by ABC. It was to be stepped program where operators have to write and pass exams level by level. The Board and the examinations are to be administered on a cost-recovery basis.

The regulations state that each water and wastewater works that is "licensed" by the Department has until July 2005 to ensure that the operation, maintenance and repair of these water and wastewater works has to be under the direction of an operator who is certified at the facility classification level established for each facility. These classifications are performed according to ABC criteria. Operators are to be certified by education, experience and examination, following ABC criteria. The regulation only states that one operator has to be certified, but since a facility has to be under a certified operator's direction at all times (24/7) it means that back-up operators have to be certified as well unless the main operator is to be available at all times. Also there is no "grandparenting" of operators; everyone entering the new program has to pass appropriate examination. The only allowance is to operators who were previously certified in the voluntary program at a level of Class-2 or higher; they have until January 13, 2002 to write their exams at those higher levels and to apply to the Board to become certified—without having to write the lower level exams.

1. How is training delivered?

   Regulations require operators to have certain levels of education (per ABC criteria) for each level of certification. The regulations require operators to pass certification exams, but entry- or ongoing- training is not required. Training to prepare for exams and to learn how to operate treatment systems is offered in the province by our Saskatchewan Institute of Applied Science and Technology (the same campus offers a Water and Environmental/Civil Engineering Technology program) in the form of correspondence courses, 3-day courses, 5-day courses, and topic-specific workshops. There are a number of Canadian membership associations that provide workshops and conferences, and correspondence courses, text-books, manuals, study guides, etc. are available from a number of national and international organizations. There are also a number of private contractors that provide training.

2. Estimates for operator data:

   a) Operators are at different education levels. Information is only available for certified operators since we do not get educational background on uncertified operators:

22	less than* Grade 12
142	GED-12
252	Grade 12
1	Grade 13
7	Grade 12 + 1 year Technology
51	Grade 12 + 2 years Technology
13	From 1 to 6 years University

      Note * ABC allows operators to substitute facility work experience for missing public and high school education. We have included that in our Certification Standards during the five-year phase-in period to allow those operators who were already working in a water/wastewater facility when mandatory certification took effect to continue to work and become certified by meeting the other certification criteria, including passing exams. This option will be removed from the Standards after the phase-in period is over in 2005. Currently new-entry operators must have Grade 12 or GED-12 as the basic educational component of certification.

   b) The new mandatory certification program is in the very early stages of approving certificates. At present there are about 150 certified operators; this may be about 10% of the provincial operators.

   c) Operator turn-over per year: too early to tell now. 3 operators newly certified in the new program have moved to Alberta. During discussions leading to mandatory certification, we were looking at about 15-20% annual turn-over.

d) Number of certificates issued per year: the Board began to issue certificates in January 2001, and have approved about 150 so far. There have been a number of operators who have upgraded their certificates this year after writing exams in other or higher categories than originally issued.

e) Resources required to provide certification: The certification Board has one Administrative staff person who handles the Board's paperwork, certification applications, fees, mailing certificates, maintaining databases, etc. Core hours are Monday – Thursday, 9:00 to noon. The three-member Board meets monthly (give or take a bit), but not during the summer. Certification exam session organization, advertising, registrations and finances are handled through the Operators' Association that has hired one part-time person (one morning a week) to do this. All exam sessions are invigilated by the Institute of Applied Science and Technology. Exams are provided by the Department from ABC, marked by ABC and candidates receive exam results from the Department. The same person updates and revises the exams, tracks exam results, maintains an operator data base, advises the Board, and looks after certification related affairs; about 0.75 py.

f) There are approximately 600 – 650 waterworks and wastewater works in the province and most would not be under the direction of an operator certified by examination, but then the program is new and there are still four years in the phase-in period left. In the end it is anticipated that about 750 operators would have to be certified, minimum, with one per facility for the smaller ones; we have been strongly encouraging owners of facilities to ensure that there are certified back-ups to the certified main operators.

3. Why has Saskatchewan has chosen to follow this route with regards to certification? Does it capitalise on any specific strengths, avoid any significant weaknesses, or respond to particular community needs?

   The particular certification model that was chosen stems from deliberations that our Certification Advisory Committee held. It had studied the earlier survey results and made recommendations for the certification program based on those results. The Committee explored a number of models from total devolution of the program to the private sector to total administration by the Department, to abandoning certification altogether. The final model evolved into the current program. It was established such that the Department provided the regulatory component, the Technical Institute provided the academic component and the operators' association provided the administrative component. In the present model, the operators' association did not provide the administrative component, but provided the administration of the certification exams. The Technical Institute had wanted to administer the exams but the Advisory Committee decided that since they provided the training, it would be best to separate the supervision of the examinations from the training.

   Over the many years that the Department provided operator training opportunities, there had been a reasonably strong participation by First Nations water and wastewater operators. There were approximately 170 First Nation operators on our training and certification database, yet only one had become certified. There was also a fairly strong participation in

the operators' association annual conference. Yet in about 1996 First Nations operators decided to form their own Fist Nations Operators' Association, despite lobbying by the operators' association. In fact the First Nations Operators' Association has become a member of ABC. Bill Marion, First Nations Water Association Inc. PO Box 641, Kinistino, SK S0J 1H0, is the President.

During the same time there had been discussions between the Department and the President of the First Nations Operators' Association about operator certification, with the Department urging the First Nations Operators to follow the certification criteria of ABC to give their operators the greatest flexibility in terms of employment opportunities not only in Saskatchewan but in other provinces as well.

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