



Forest Harvesting in Protected Water Supplies in Newfoundland and Labrador

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Table of Contents

Table of Tables.....	iii
Table of Figures.....	iii
INTRODUCTION.....	1
Context.....	1
Background – Source Protection.....	2
Forest Harvesting in Protected Water Supply Areas in Newfoundland and Labrador.....	3
PART 1: THE PROTECTION OF DRINKING WATER SOURCES IN CANADA FROM THE POTENTIAL EFFECTS OF FOREST HARVESTING.....	5
Prince Edward Island.....	6
New Brunswick.....	6
Yukon Territory.....	8
Nova Scotia.....	8
Saskatchewan.....	8
Newfoundland and Labrador.....	9
Alberta.....	9
Manitoba.....	9
Ontario.....	9
Quebec.....	10
British Columbia.....	10
Northwest Territories and Nunavut.....	11
PART 2: LEGISLATION IN NEWFOUNDLAND AND LABRADOR.....	12
Protected Public Water Supply Areas.....	12
Guidelines for Forestry Operations within Protected Water Supply Areas.....	14
General Forest Harvesting Guidelines.....	15
PART 3: SURVEY OF MUNICIPALITIES.....	17
Methodology.....	17
Results.....	17
Points for Discussion.....	25
PART 4: RESULTS OF MEETING WITH STAKEHOLDERS.....	26
PART 5: PAST RESEARCH IN NEWFOUNDLAND AND LABRADOR RELATED TO FOREST HARVESTING AND DRINKING WATER QUALITY.....	29
PART 6: RECOMMENDATIONS.....	30
Components of the Watershed Management Planning Process.....	31
APPENDIX A.....	34
P. E. I.....	34
Nova Scotia.....	34
Alberta.....	34

Ontario	35
Quebec	35
APPENDIX B	36
Policy for Land and Water Related Developments in Protected Public Water Supply Areas.....	36
APPENDIX C	42
Cover Letter	42
Survey	43
APPENDIX D	46
Survey Respondents.....	46
APPENDIX E	48
Forest Watershed Forum – January 24, 2002.....	48
APPENDIX F	49
Elements of Nova Scotia’s Approach	49
Elements of Alberta’s Approach	49
Elements of British Columbia’s Approach.....	50
Elements of Quebec’s Approach	51
The Protection Policy	51
LITERATURE CITED	53

Table of Tables

Table 1. Summary of provincial approaches to forest harvesting and drinking water protection.	6
Table 2. Banned and regulated activities in public water supply areas in Newfoundland and Labrador (Source: see Appendix B).	14
Table 3. Buffer zone guidelines for Newfoundland and Labrador. (Source: DFRA 1998).....	15

Table of Figures

Figure 1. Elements of a source water protection plan. (Source: Health Canada 2002).....	3
Figure 2. Percentage of population reliant on groundwater (Source: Environment Canada 2002b).....	5
Figure 3. Public water supplies in Newfoundland and Labrador (Source: GNL 2002).....	13
Figure 4. Question 1 - Are you interested in receiving information on how to ensure that your protected water supply is being managed effectively?	18
Figure 5. Question 6 - Would your municipality be interested in having a professional forester assess your protected water supply to determine the potential for timber harvest?	19
Figure 6. Question 2a - Is forest harvesting currently permitted in your protected water supply (domestic)?.....	19
Figure 7. The percentage of municipalities that allow domestic harvesting and see it as a cause for concern.....	20
Figure 8. Question 2b - Is forest harvesting currently permitted in your protected water supply (commercial)?.....	20
Figure 9. The percentage of municipalities that allow commercial harvesting and see it as a cause for concern.....	21
Figure 10. Question 3a - Has forest harvesting ever been permitted in your protected water supply (domestic)?.....	21
Figure 11. Question 3b - Has forest harvesting ever been permitted in your protected water supply (commercial)?.....	22
Figure 12. Cumulative history of harvesting in water supplies.....	22
Figure 13. Question 5a - Is forest harvesting currently a cause for concern in your protected water supply (domestic)?	23
Figure 14. Question 5b - Is forest harvesting currently a cause for concern in your protected water supply (commercial)?	23
Figure 15. Municipalities' descriptions of the processes used to determine whether forest harvesting should be permitted in their water supplies.	24
Figure 16. Processes used by municipalities to determine whether harvesting should occur in their protected water supplies.....	25

INTRODUCTION

Forest harvesting in protected water supply areas is an issue for many municipalities in Newfoundland and Labrador. Forest companies are looking to protected water supply areas to provide them with much needed fibre, while municipalities have concerns over the quality of their drinking water. The following report outlines how each of Canada's provinces and territories are dealing with the issue of forest harvesting and drinking water quality. The research component of this report seeks to characterize the current situation in Newfoundland and Labrador with respect to this issue, and provide recommendations for an approach that can help ensure a symbiotic relationship between forest managers and municipalities.

Context

In May of 2000 in Walkerton, Ontario, seven people died and 2300 became ill due to contamination of their drinking water with deadly bacteria (O'Connor 2002a). The tragedy triggered an alarm about the health of drinking water across the country. Walkerton also brought to the attention of resource managers the need for good scientific information and cooperative action when working near drinking water sources. An inquiry was held post-Walkerton and the Commissioner for the inquiry, Honourable Robert D. O'Connor, recommended a multi-barrier approach to drinking water (O'Connor 2002a). A multi-barrier approach refers to the protection of drinking water on a variety of levels. Here in Newfoundland and Labrador, water resources are abundant and often taken for granted. Nevertheless, the Government of Newfoundland and Labrador has made a commitment to providing clean drinking water by implementing a Multi-Barrier Strategic Action Plan (MBSAP). The components of this plan are complimentary to those suggested in the Walkerton Inquiry and include: source protection; water treatment; operation and maintenance of water supply systems; comprehensive drinking water quality monitoring and reporting; appropriate inspection, abatement and enforcement measures; and operator education and training (GNL 2002). The scope of the following paper is limited to the first barrier: source protection.

Background – Source Protection

“In short, good protection of drinking-water sources increases the reliability of our water supplies by adding to their levels of protection. It can also reduce, delay or avoid the cost of additional water treatment beyond disinfection.” (Auditor General of British Columbia 1999)

Source protection involves the selection and protection of reliable, high quality drinking water sources (O’Connor 2002b). Source protection is likely the most cost-effective barrier in a multiple-barrier approach to drinking water (O’Connor 2002b, Auditor General of British Columbia 1999). In other words, it is cheaper to prevent contamination than it is to purify contaminated water. “The key to source protection is managing the human activities that affect drinking water sources” (O’Connor 2002b, page 93). There are many factors and activities that can affect the quality of a drinking water source. These include (but are not limited to): human waste, septic systems, bio-solids, agriculture, spreading of road salt, forestry, mining, urban development, and industrial plants. When considering source protection, it is important to consider all potential impacts cumulatively as opposed to individually (Figure 1). That said, however, to consider cumulative impacts, one must have a solid knowledge of each individual impact. The scope of this paper is limited to forest harvesting operations (including road construction, harvesting, renewal and tending, and transportation) and their potential impacts on drinking water quality in Newfoundland and Labrador.

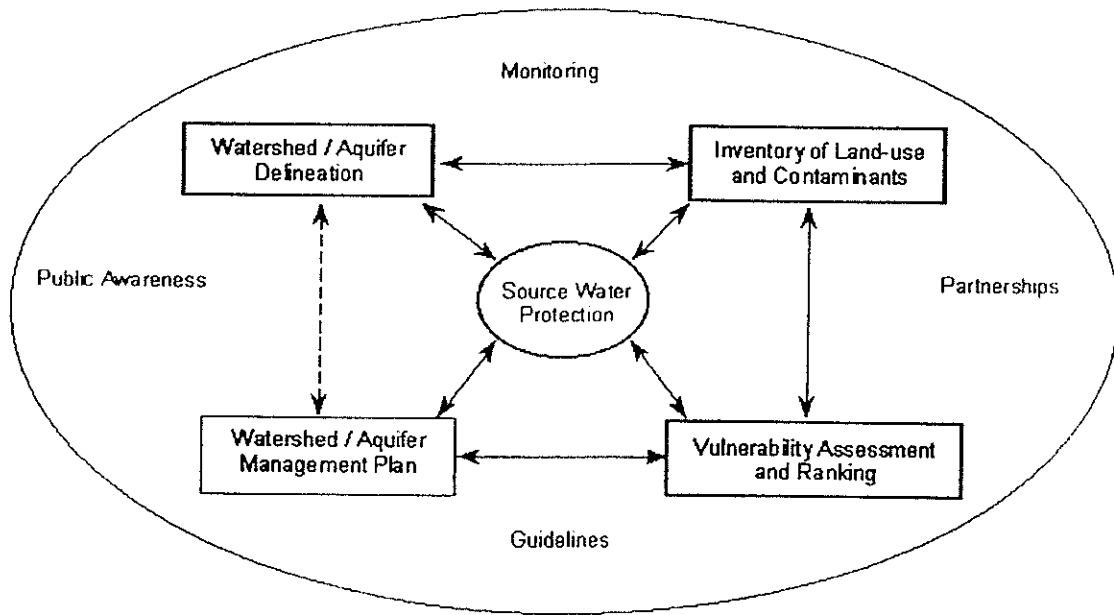


Figure 1. Elements of a source water protection plan. (Source: Health Canada 2002)

Forest Harvesting in Protected Water Supply Areas in Newfoundland and Labrador

The potential impacts of forest harvesting on drinking water quality are not clearly understood. To complicate matters further, in Newfoundland and Labrador, the authority to allow or ban harvesting in a protected water supply area falls to the municipality. If the “experts” are still struggling to quantify and predict forest harvesting impacts, how are we to expect municipalities to make wise and safe decisions around this issue? The following report outlines steps that have been taken by the Western Newfoundland Model Forest to:

- aid municipalities and resource managers to better understand this issue
- better understand municipality’s perceptions of this issue.
- provide a background report to the Canadian Model Forest Network outlining possible areas of collaboration.

This report is organized into 6 parts as follows:

- Part 1 – A summary of how other Provinces and Territories in Canada deal with the issue of forest harvesting and drinking water quality.
- Part 2 – Description of the current regulatory situation in Newfoundland and Labrador.

- Part 3 – Results of a short survey that was administered to each municipality in Newfoundland and Labrador.
- Part 4 – Results of a meeting with key stakeholders.
- Part 5 – Past research in Newfoundland and Labrador related to forest harvesting and drinking water quality.
- Part 6 – Recommendations.

PART 1: THE PROTECTION OF DRINKING WATER SOURCES IN CANADA FROM THE POTENTIAL EFFECTS OF FOREST HARVESTING

There are two main sources of drinking water in Canada - groundwater and surface water. Groundwater can be defined as subsurface water, the upper surface of which forms the water table in geological materials such as soils, sand and gravel deposits, and bedrock formations (Environment Canada 2002). Surface water, on the other hand, is water from above-ground sources such as lakes, rivers and estuarine waters. In Canada, 26% of the population relies on groundwater for domestic use. This part of the population is located predominantly in rural areas or smaller municipalities. The remainder of the population is dependent on surface water for drinking (Environment Canada 2002).

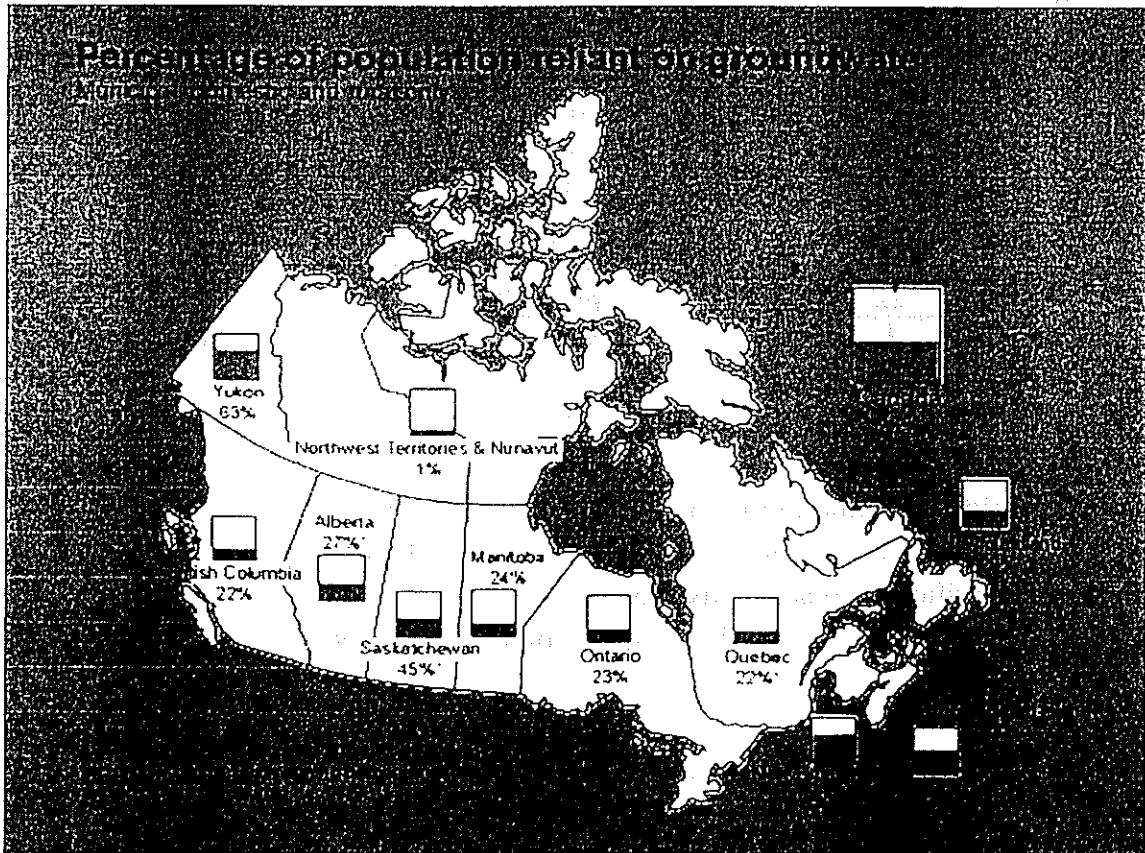


Figure 2. Percentage of population reliant on groundwater (Source: Environment Canada 2002b)

Surface supplies of water are much less reliable than groundwater sources in terms of water quality and generally have to be treated in order to make the

water safe for drinking (PWGSC 2002). Groundwater is generally a better quality source of water since it maintains a fairly consistent temperature year-round and usually contains fewer contaminants than surface water (PWGSC 2002).

The following sections describe each province's approach to the protection of drinking water quality from the potential effects of forest harvesting. The sections are arranged by province in order of decreasing groundwater dependency. A summary is provided below (Table 1). For those provinces with no specific forestry guidelines for drinking water, general guidelines for forestry operations in proximity to any water body can be found in Appendix A.

Table 1. Summary of provincial approaches to forest harvesting and drinking water protection.

Province	% groundwater drinking source	Existence of guidelines specific to drinking water sources	Existence of separate process to address harvesting in drinking water source areas
PE	100	no	no
NB	64	yes	no
YK	63	no	no
NS	50	yes	yes
NL	29	yes	yes and no
PQ	22	no	yes
ON	23	no	no
MB	24	yes	no
SK	45	no	no
AB	27	no	yes
BC	22	yes	yes
NW/NU	1	no	no

Prince Edward Island (100% groundwater)

P.E.I is unique in Canada in that almost 100% of drinking water originates from groundwater well sources (Environment Canada 2002). There are no regulations that are specific to forestry activities, however, there are all-encompassing protective restrictions in the form of 100 metre buffers for production wells (McAskill 2002).

New Brunswick (64% groundwater)

In addition to groundwater drinking water, New Brunswick has identified 30 different surface water watersheds that supply municipal drinking water (NBDE ???). The government has also developed the Watershed Protected Area

Designation Order (the Order) as part of its long-term Watershed Protection Program. Each area designated under the Order has three distinct zones of protection: the watercourse itself (Protected Area A); the 75 metre setback zone adjacent to the water body (Protected Area B); and the remainder of the watershed's drainage area (Protected Area C).

Certain activities are permitted in each of the protected areas. Forestry activities are addressed specifically in the Order as follows:

Protected Area A – No forestry activities permitted.

Protected Area B – *Within 1 km upstream of a public water supply intake, you can:*

- plant trees between 30 m and 75 m of watercourses
- practice selection cutting within 30 m and 75 m of watercourses provided that: no more than 30 % of trees (or up to 30% of volume) is removed; selection cutting is not carried out more than once every five years; and designated time frames are adhered to.

Beyond 1 km upstream of a public water supply intake, you can:

- plant trees between 15 m and 75 m of watercourses
- practice selection cutting within 15 m and 75 m of watercourses provided that: no more than 30% of trees (or up to 30% of volume) is removed during a five-year period, OR the volume of trees removed follows a forest management plan prepared by a registered professional forester; and designated time frames are adhered to.

Protected Area C – Forestry activities may be carried out provided that:

- clearcuts are no larger than 25 hectares
- a buffer strip of at least 100m is left between clearcut areas (or 50 m where adjacent to property lines). Selection cutting may be practiced in the strip. Clearcutting in the strip must not occur until either 10 years has passed or regeneration reaches an average height of 2 m.
- No more than 25 % of the land can be clearcut for those holdings greater than 10 ha. The same land may not be clearcut until either 10 years has passed or regeneration reaches an average height of 2 m.
- Suspended solids in runoff or drainage flowing in to watercourses must not exceed 25 mg/l above background levels.

- Bulldozing activities must not expose mineral soil on more than 5 % of any land parcel (including roads and landings).

Yukon Territory (63% groundwater)

Forest harvesting has not yet become an issue in relation to drinking water in the Yukon since it is still carried out at a small scale. Less than two percent of any of the water basins are currently harvested. Conflicts over activities in watersheds are relatively rare, very site-specific and easily avoidable given the present and historical harvest demand (Burgess 2002).

Nova Scotia (50% groundwater)

There are approximately 3000 public drinking water supplies in Nova Scotia (ground and surface water). Municipalities in Nova Scotia can have their water supply areas designated as protected and make regulations pertaining to activities within these areas. Of over 80 surface water supply areas in Nova Scotia, there are currently 23 designated as Protected Water Areas (PWA). The surface water sources tend to supply the larger population groups. Rural private supplies tend to access groundwater sources (Mosher 20002). The Department of Environment and Labour encourages municipalities to establish watershed committees to assist them in identifying activities that should be restricted or prohibited. As such, the restrictions vary from PWA to PWA. Watershed committees can also carry out the public consultations required under the Environment Act of 1995. The municipalities are responsible for enforcement of their own Protected Water Area regulations (Theakston 2002).

Saskatchewan (45% groundwater)

Saskatchewan does not have specific regulations dealing with drinking water source protection for communities. Saskatchewan is supportive of communities developing watershed plans and will assist them when possible (Will 2002).

In 2002, the Saskatchewan Watershed Authority was formed to consolidate the watershed management responsibilities of Sask Water, Saskatchewan Environment, and Saskatchewan Wetland Conservation Corporation. Once active, the Authority will be responsible for watershed planning and source water protection. Until then, there are no guidelines in Saskatchewan relating to specifically to forest harvesting and drinking water supply areas.

Newfoundland and Labrador (29% groundwater)

The existing approaches to forest harvesting in drinking water supply areas vary from community to community in Newfoundland and Labrador although the guidelines and regulations are standard. Some communities have a separate process to address harvesting in drinking water source areas, whereas others do not. (This is why Table 1 lists yes and no under this column). The variety of situations existing in this province will be discussed in terms of survey results in Part 3.

Alberta (27% groundwater)

Alberta does not designate municipal or community watersheds. The majority of drinking water originates in the mountains and is sourced from headwater streams. There are no regulations specific to drinking water sources. That said, however, Alberta Environment encourages the preparation of water management plans. Anyone can prepare a water management plan provided it is consistent with the Framework for Water Management Planning (Alberta Environment; Date Unknown). The decision of whether to proceed with a water management plan is made in consultation with the Director responsible for water management in the region. The government has the responsibility for the approval and adoption of water management plans and decisions.

Manitoba (24% groundwater)

In Manitoba, much of the drinking water in the south is from ground water. Where surface water sources are present, commercial harvesters must leave a 100 m buffer. This buffer may also be increased if circumstances warrant it (Bulloch 2002).

Ontario (23% groundwater)

In Ontario, there are no forestry-related guidelines that are specific to drinking water. Rather, universal guidelines apply for forestry operations in proximity to water bodies (see Appendix A). Ontario has begun to investigate increased water source protection with a focus on groundwater. Municipalities are being provided with funding to better map and understand their groundwater drinking water sources. As with other provinces, municipalities in Ontario are

encouraged to develop drinking water management plans. Some municipalities make use of Conservation Authorities to help them with this process, whereas others do not yet have the capacity for this level of planning (Newfeld 2002).

Quebec (22% groundwater)

In 1996, Quebec released a Protection Policy for Lakeshores, Riverbanks, Littoral Zones and Floodplains (French only) as well as an accompanying Guide to Best Management Practices for Lakeshores, Riverbanks, Littoral Zones and Floodplains (French only). The Protection Policy provides direction to municipalities regarding how they can best ensure the protection of their water resources. (Elements of the protection policy and accompanying guide will be discussed in more detail in Part 5.) When it comes to forest harvesting, the Protection Policy refers the reader to existing forestry legislation and regulations including la Loi sur les forêts (the Forest Act) and the Règlement sur les normes d'intervention dans les forêts du domaine public (Regulation respecting standards of forest management for forests in the public domain) (Appendix A). In addition to existing forestry legislation, the Protection Policy allows for the following to be conducted in proximity to water:

- Salvage harvesting
- Harvesting of up to 50% of stems greater than 10 cm in diameter on private land.

Municipalities do have the power to provide recommendations to the Minister of Natural Resources regarding proposed changes to existing legislation in circumstances where the legislation does not meet the protection requirements of the municipality. If the municipality has an approved management plan in place, the management plan will replace any existing legislation, including the Protection Policy.

British Columbia (22% groundwater)

Over half of British Columbia's surface water-dependent population lives in Vancouver or Victoria. The watersheds of these communities are closed to harvesting. The remainder of surface water supplies are in multiple use watersheds. Some of these watersheds (467) are designated as community watersheds under the Forest Practices Code of British Columbia Act. Special standards of forest management are required in these watersheds, including the completion of watershed assessments prior to harvesting, and terrain stability

mapping for the watershed (Webber Atkins 2002). Specific guidelines also exist for all forestry operations in community watersheds. More detail will be provided on these processes in Part 5.

A proposed results-based Forest Practices Code has been tabled in the B.C. legislature as Bill 74-2002, "Forest and Range Practices Act". This new legislation (effective as of April, 2003) could bring about changes to the current handling of forest harvesting in drinking water supply areas. Specific reference to watersheds is made in Section 150 (Part 9) as such,

"The Lieutenant Governor in Council may make regulations

- (a) designating or continuing an area of land in a watershed as a community watershed,
- (b) or designating an area of land in a watershed as a domestic watershed or fisheries sensitive watershed, and
- (c) prescribing requirements in relation to the watersheds designated or continued under this section."

Northwest Territories and Nunavut (1% groundwater)

In these two territories, the low proportion of groundwater used for drinking water can be directly attributed to the presence of permafrost. Despite the high dependence on surface water, there is very minimal industrial activity of any kind occurring in these territories – particularly in Nunavut. As such, forestry activities and drinking water quality have not yet become an issue of concern.

Despite the above, in the Northwest Territories, the responsibility for ensuring safe drinking water is vested in the government. Specific public health legislation has been passed and the Ministry of Health and Social Services is responsible for the enforcement of the Public Health Act, the Public Water Supply Regulations, and General Sanitation Regulations as well as ensuring that the Guidelines for Canadian Drinking Water Quality are met. Specifically related to activities in water supply source areas, Section 8 of the Public Health Act refers to Public Water Supply Regulations as such: "Where a surface water source is approved for use in a public water supply, nothing which may adversely affect the quality of the raw water may be done on the watershed without approval by the Chief Medical Health Officer".

PART 2: LEGISLATION IN NEWFOUNDLAND AND LABRADOR

Applicable documentation:

- Water Resources Act (SNL 2002 c. W-4.01)
- Municipalities Act (SNF 1999 c. M-24)
- Policy for Land and Water Related Developments in Protected Public Water Supply Areas. (Water Resources Division, Department of the Environment)
- Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Newfoundland Forest Service, Department of Forest Resources and Agrifoods)

Protected Public Water Supply Areas

Section 39 of the Water Resources Act (SNL 2002 c. W-4.01) gives the Minister the authority to designate public water supply areas (Figure 3). This section of the Act also gives the Minister the power to regulate resource development in public water supply areas that may impair the quality of the water. Authorization in the form of a permit is required from the Minister prior to undertaking resource development activities in public water supply areas. The Minister may also require the proponent of the resource development activity to carry out water quality analysis and testing.

Further, section 414 (2) of the Municipalities Act (SNL 1999 c. M-24) gives municipal councils the power to make regulations respecting: “the cutting of timber, or the erection or establishment of a building, structure or work, on, in, over or under land or water within the water catchment area providing the water supply, whether the watershed is wholly or partially within or outside the boundaries of the municipality.”

In other words, the Water Resources Division will not approve a permit for harvesting activities in a public water supply area unless they have obtained expressed written permission from the municipality. It is up to each municipality, therefore to determine whether harvesting will be permitted in its water supply area. Some municipalities have developed a process and committee to deal with the issue, whereas others simply make a decision.

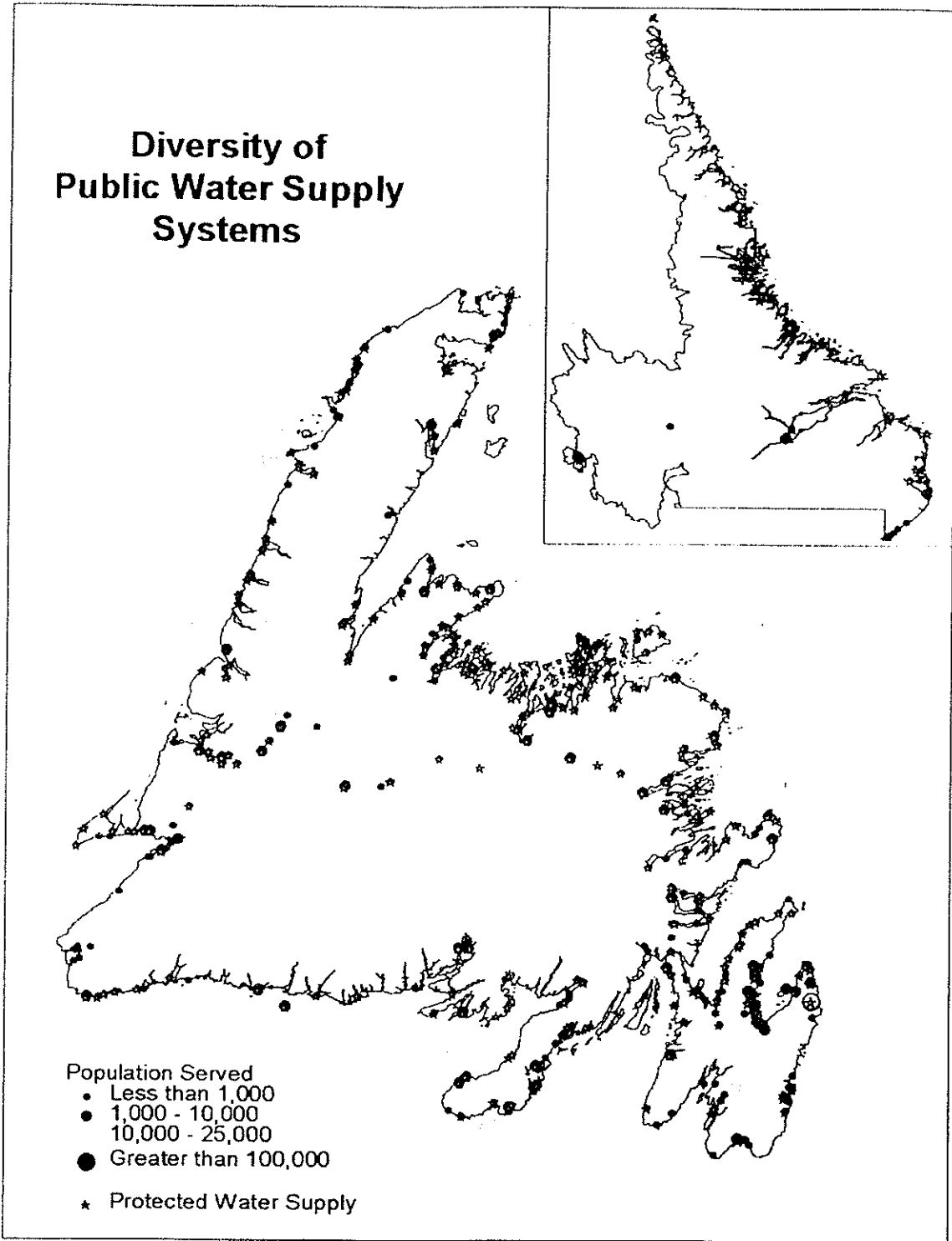


Figure 3. Public water supplies in Newfoundland and Labrador (Source: GNL 2002).

If a municipality does decide to allow forest harvesting in its public water supply area, there are several requirements and guidelines to be followed as described below. In addition to the following requirements, the Department of the Environment – Water Resources Division has a policy paper (Appendix B) outlining activities not permitted in designated public water supply areas and activities to be regulated in designated water supply areas (Table 2). The policy document also outlines the approval process for activities in public water supply areas as well as the responsibilities of the municipal authority.

Table 2. Banned and regulated activities in public water supply areas in Newfoundland and Labrador (Source: see Appendix B).

Not Permitted	Regulated
<ul style="list-style-type: none"> • Clearcutting of forest in sensitive areas • Establishment of camps and camp facilities • Storage of chemicals • Application of pesticides • Drainage of peat land for afforestation • Application of toxic fire retardants 	<ul style="list-style-type: none"> • Forest logging • Resource road construction and use • Stream crossing for controlled access • Preparation of skid trails and landing areas • Silvicultural activities • Tree farming and other environmentally acceptable forestry operations

Guidelines for Forestry Operations within Protected Water Supply Areas

Prior to beginning forestry operations in a public water supply area, there are several required permits and approvals as follows:

- Approval of the forest operating plan by the Newfoundland Forest Service.
- Approval of the forest operating plan by the Department of Environment and issuance of a permit under Section 39:6 of the Water Resources Act.
- Quarry permits from the provincial Department of Mines and Energy for all borrow areas and ballast pits on Crown lands.
- Stream Crossing permits under Section 48 of the Water Resources Act and from the federal Department of Fisheries and Oceans.
- Other permits or approvals as required by natural resource management and regulatory agencies.

The Department of Forest Resources and Agrifoods attaches a series of guidelines to all permits and Certificates of Managed Land. The *Environmental Protection Guidelines for Ecologically Based Forest Resource Management* contain guidelines that are specific to forest harvesting and water, as well as guidelines

specific to forest harvesting in protected public water supply areas. The following points summarize the public water supply area-specific guidelines:

- For activities in public water supply areas, a forest operating plan must include information in addition to that which is normally required.
- Forest access road construction guidelines
- Landings must be located at least 100 m from a water body.
- Harvesting equipment may not enter a buffer zone
- Buffer zone guidelines must be adhered to as follows:

Table 3. Buffer zone guidelines for Newfoundland and Labrador. (Source: DFRA 1998)

Water Body	Minimum Width of Buffer
1. Intake pond/lake/reservoir	150 m
2. River intake	150 m for 1 km upstream and 100 m downstream
3. Main river channel	75 m
4. Major tributaries/lakes/ponds	50 m
5. Other water bodies	30 m

- Clean-up kits must be kept on site in case of spills of oil, fuel, or chemical.
- Pesticide storage, camps, garages and new sawmills are all prohibited in public water supply areas.
- An abandonment plan should be developed to ensure that post-harvest conditions do not lead to water quality impairment and to discourage activities or use of the area that could lead to water impairment.
- Forestry operations will be periodically monitored by the Water Resources Division of the provincial Department of the Environment.

General Forest Harvesting Guidelines

The provincial Department of Forest Resources and Agrifoods attaches a series of guidelines to all permits and Certificates of Managed Land. The following points summarize the guidelines relating to water in general:

- 20 m tree buffer zones are to be established around all water bodies identified on the latest 1:50 000 topographic maps and around water bodies greater than 1 m in width that do not appear on the maps.
- Where the slope is greater than 30%, there shall be a no-harvest buffer of 20 m + (1.5 * % slope).

- No equipment is permitted in water bodies.
- Intermittent streams are to be subjected to the above requirements.
- Larger buffer zones are required in areas of sensitive fish and wildlife habitat as per the guidelines.
- No equipment is to be re-fuelled, serviced or washed within 30 m of a water body.
- Gas and lubricant deposits must be placed 100 m from the nearest water body.
- Above ground storage tanks shall be surrounded by a dyke.
- Silt entering a water body must be dealt with immediately.
- No woody material is permitted to enter a water body (GNL 1998).

PART 3: SURVEY OF MUNICIPALITIES

Methodology

A two page survey and accompanying cover letter (Appendix C) were administered via Info-Fax to all municipalities that are members of the Newfoundland and Labrador Federation of Municipalities (NLFM). There are 276 municipalities (after amalgamations of those municipalities that share a protected water supply area). Within two months, 22 surveys had been returned giving a response rate of 8%.

At the annual general conference of the NLFM (October 31, November 1 and 2nd, 2002), municipalities were required to complete a survey before their "Trade Show Passports" were stamped at the Western Newfoundland Model Forest booth. The WNMF booth also provided information to municipalities regarding the purpose of this study. A further 101 surveys were completed for a total of 123 giving a response rate of 45%.

A second copy of surveys and cover letters were faxed (and mailed when fax numbers were not available) to the remaining 153 municipalities, this time with a deadline of November 15, 2002. Those whose faxes did not go through got mailed. The final count of returned surveys is 140 (Appendix D) giving a response rate of 51%.

Responses were tabulated in a Microsoft Excel spreadsheet by municipality. As such, it is possible to isolate, filter and/or group responses. This enables a wide array of analyses to be performed on the questions. For example, all of those municipalities that answered "yes" to a particular question can be isolated and their answers to other questions can then be compared to one another.

It is important to note that the administered survey was not screened by a social-scientist or expert in survey methodology. Questions and answers should be viewed in light of this fact.

Results

Of 140 returned surveys, six were not included in the result tallies since four of the six have no protected water supply areas and the remaining two have no

forest in their water supply areas. The following results reflect the responses of 134 municipalities. In some cases numbers do not add up to 134. This is because some respondents chose not to answer some questions.

Interest in receiving information on how to ensure that the protected water supply is being managed effectively, and interest in having a professional forester assess water supplies for timber harvest potential.

Of 134 municipalities, the majority (91.8% or 123 municipalities) are interested in receiving information, whereas 4.5% (6 municipalities) are not (Figure 4).

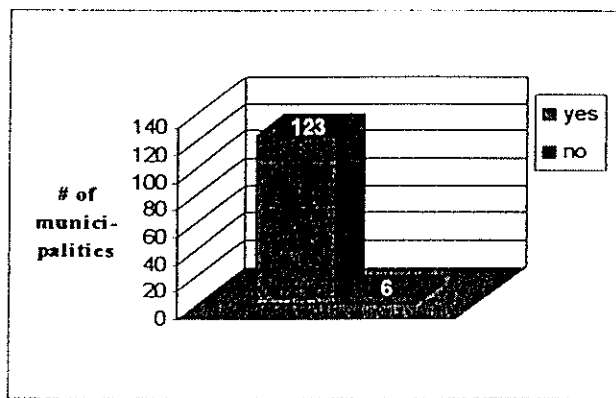


Figure 4. Question 1 - Are you interested in receiving information on how to ensure that your protected water supply is being managed effectively?

When asked specifically if municipalities would be interested in having a professional forester assess their water supply to determine the potential for timber harvest while ensuring maintenance of water quality, only 77 municipalities (57.5%) expressed interest (Figure 5). Conversely, 37 municipalities (27.6%) are not interested in having a forester assess their water supply.

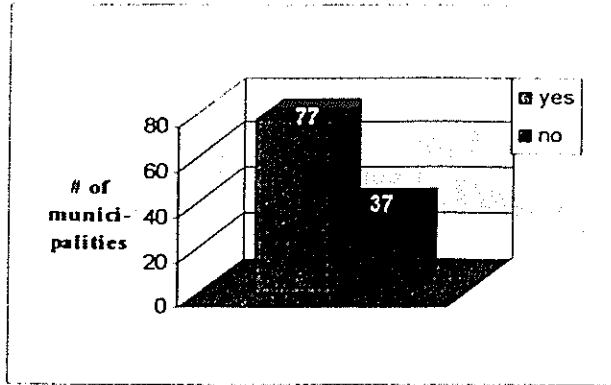


Figure 5. Question 6 - Would your municipality be interested in having a professional forester assess your protected water supply to determine the potential for timber harvest?

It is interesting to note that of the 123 municipalities that are interested in receiving information about effective water supply management, 30 of those are not interested in having a professional forester assess their water supply.

Current extent of domestic harvesting in protected water supplies.

Domestic harvesting is currently not permitted in the majority of municipalities (70.9% or 95 municipalities). There are, however, 37 municipalities (27.6%) that do allow domestic wood cutting in their water supplies (Figure 6).

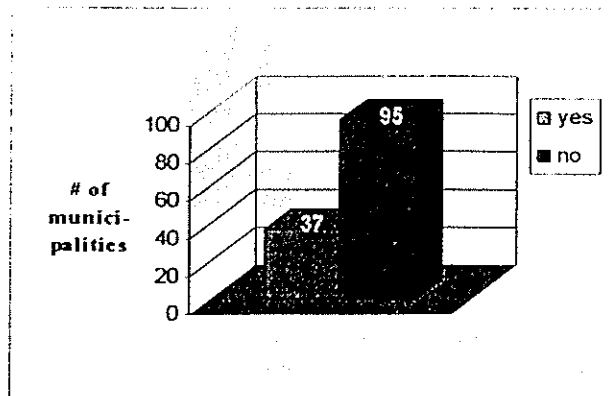


Figure 6. Question 2a - Is forest harvesting currently permitted in your protected water supply (domestic)?

Of the 37 municipalities that do allow domestic harvesting in their water supplies, 63% see it as being a cause for concern (Figure 7).

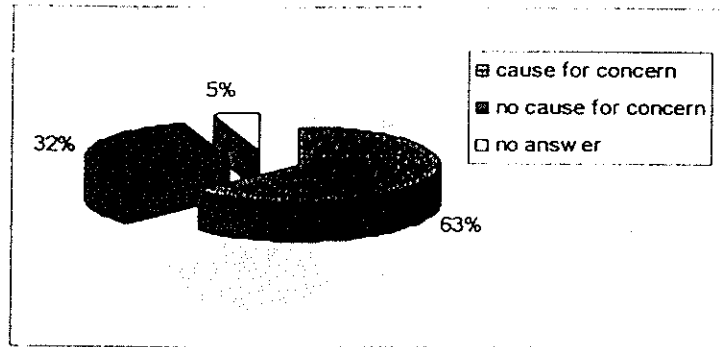


Figure 7. The percentage of municipalities that allow domestic harvesting and see it as a cause for concern.

Conversely, of the 95 respondents who do not allow domestic harvesting in their water supplies, 28% see it as a cause for concern.

Current extent of commercial harvesting in protected water supplies.

Commercial harvesting is currently not permitted in the majority of municipalities (75.4% or 101 municipalities). There are only 19 municipalities (14.2%) that do allow commercial harvesting in their water supplies (Figure 8).

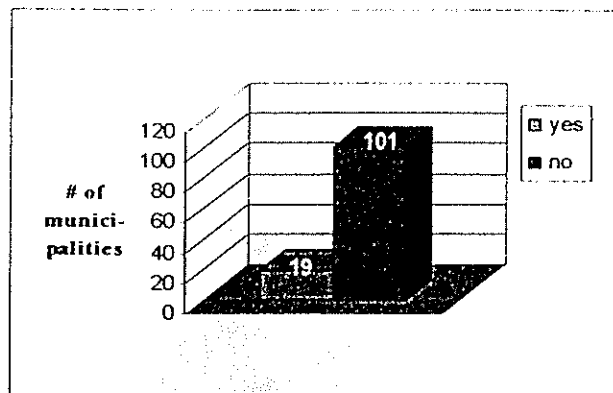


Figure 8. Question 2b - Is forest harvesting currently permitted in your protected water supply (commercial)?

Of the 19 municipalities that allow commercial harvesting, 58% see it as a cause for concern (Figure 9).

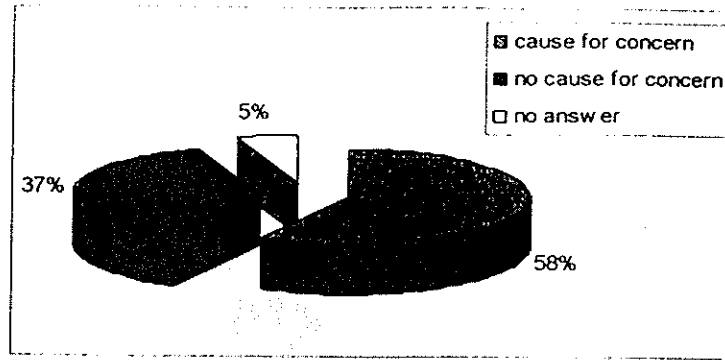


Figure 9. The percentage of municipalities that allow commercial harvesting and see it as a cause for concern.

Conversely, of the 101 municipalities that do not allow commercial harvesting in their water supplies, 16% see it as a cause for concern.

The historical extent of domestic harvesting in municipal water supplies.

Domestic harvesting has been permitted in the past in 32.8% of municipalities (44 municipalities) (Figure 10). Municipalities were asked to state when harvesting did occur, however, many were unsure and thus this portion of the question will not be included in the results.

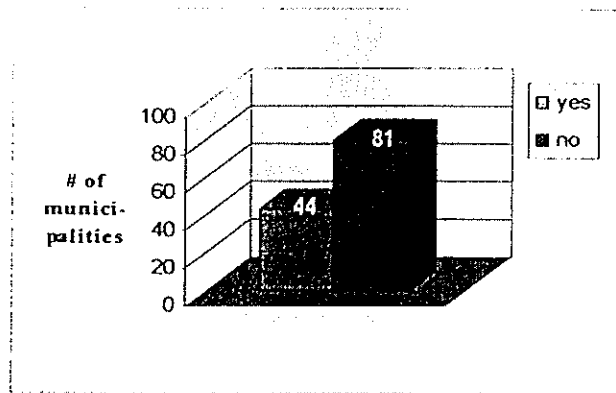


Figure 10. Question 3a - Has forest harvesting ever been permitted in your protected water supply (domestic)?

The historical extent of commercial harvesting in municipal water supplies.

Commercial harvesting has been permitted in the past in 14.2% of municipalities (19 municipalities) (Figure 11). As with the question 3a, many municipalities

were not able to comment on when harvesting has occurred and thus that portion of the question is not included in the results.

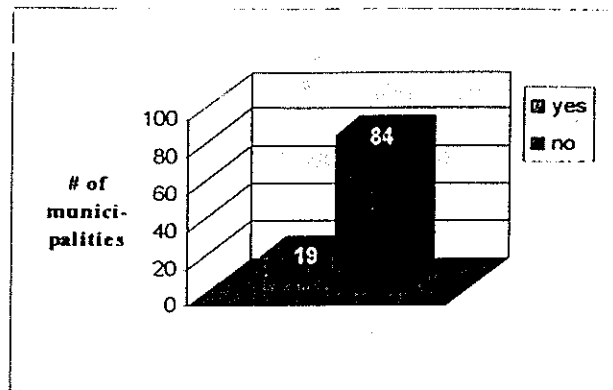


Figure 11. Question 3b - Has forest harvesting ever been permitted in your protected water supply (commercial)?

After combining the results of questions 2 and 3, it is apparent that several municipalities that used to allow forest harvesting (either domestic or commercial) in their water supplies no longer do so (Figure 12).

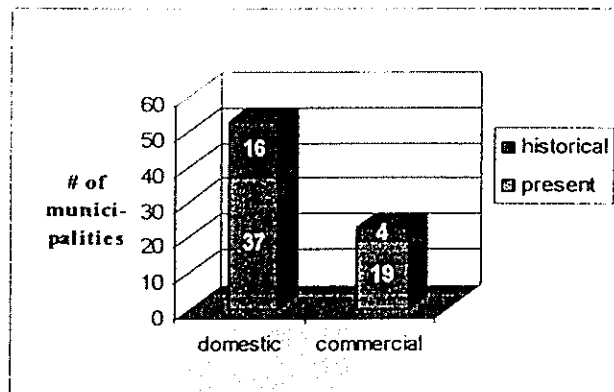


Figure 12. Cumulative history of harvesting in water supplies.

Concern over domestic forest harvesting in protected water supplies.

There are 50 municipalities (37.3%) that see domestic harvesting in protected water supplies as a cause for concern (Figure 13). Of those 50 municipalities, 27 (54%) do not currently allow domestic harvesting whereas 23 (46%) do currently allow domestic harvesting.

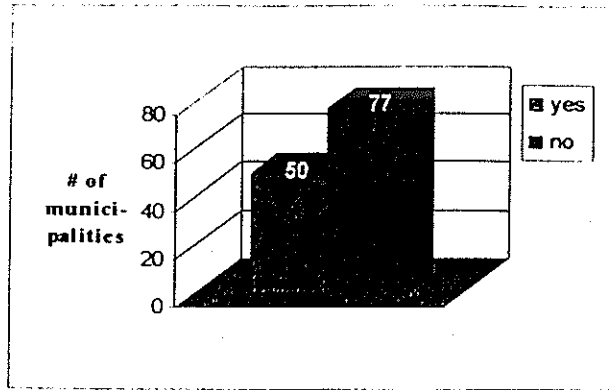


Figure 13. Question 5a - Is forest harvesting currently a cause for concern in your protected water supply (domestic)?

Conversely, of the 77 municipalities that do not see domestic harvesting as a cause for concern, only 12 of them (15.6%) currently allow domestic harvesting.

Concern over commercial forest harvesting in protected water supplies.

There are 28 municipalities (20.9%) that see commercial harvesting in protected water supplies as a cause for concern (Figure 14). Of those 28 municipalities, 16 (57.1%) do not currently allow commercial harvesting whereas 11 (39.3%) do currently allow domestic harvesting.

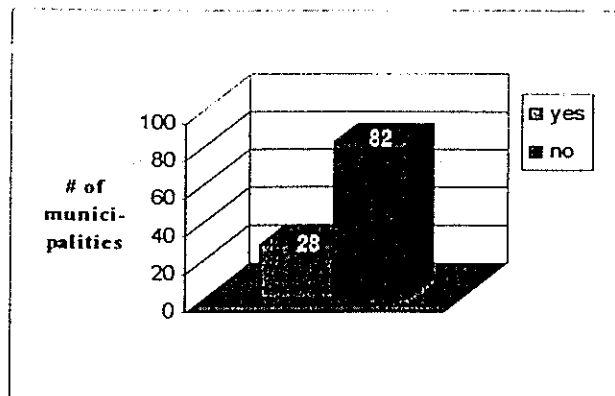


Figure 14. Question 5b - Is forest harvesting currently a cause for concern in your protected water supply (commercial)?

Conversely, of the 82 municipalities that do not see commercial harvesting as a cause for concern, only 7 of them (8.5%) currently allow commercial harvesting.

Description of the processes used to determine whether forest harvesting should be allowed in protected water supplies.

When asked to describe the process that each municipality uses to determine whether to allow forest harvesting in their water supply, 39 municipalities (29.1%) do not have a process 65 municipalities (48.5%) provided no answer, 3 (2.2%) stated that there is no forest in their water supply area, 3 municipalities (2.2%) were unsure, 6 (4.5%) stated simply that forest harvesting is not permitted. The remainder of respondents (17 municipalities or 12.7%) provided varying answers (Figure 15).

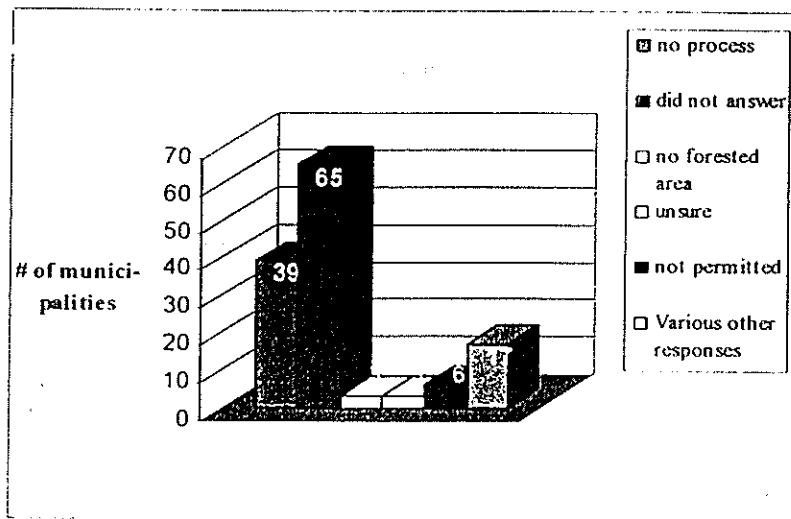


Figure 15. Municipalities' descriptions of the processes used to determine whether forest harvesting should be permitted in their water supplies.

Of those 17 municipalities that provided detailed answers to the fourth question, many of these answers could be grouped categorically (Figure 16).

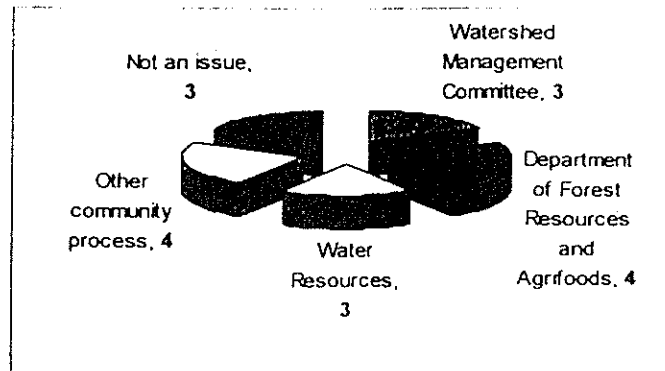


Figure 16. Processes used by municipalities to determine whether harvesting should occur in their protected water supplies.

Points for Discussion

- Municipalities are concerned about management of their water supplies.
- Just over half of surveyed municipalities (77) are interested in assessing the potential for timber harvest in their water supply.
- 37 municipalities have no interest in timber harvest in their water supplies.
- Domestic harvesting is more commonly permitted compared to commercial harvest.
- 38 municipalities permit some type of harvesting (domestic, commercial, or both) in their water supplies.
- 83 municipalities do not permit harvesting of either type in their water supplies.
- For many municipalities, forest harvesting is likely not considered to be a cause for concern because it is not permitted.
- Of those municipalities that allow harvesting, over half see it as a cause for concern (for both domestic and commercial harvesting).
- 16 municipalities that used to allow domestic harvesting no longer do.
- 5 municipalities that did not allow domestic harvesting in the past, allow it now.
- 4 municipalities that used to allow commercial harvesting no longer do.
- 2 municipalities that did not used to allow commercial harvesting, allow it not.
- In the majority of municipalities, there is no process by which decisions regarding harvesting can be made.
- Only 3 municipalities mentioned the use of Watershed Management Committees to aid in the decision making process (Appleton, Corner Brook, and Gander).

PART 4: RESULTS OF MEETING WITH STAKEHOLDERS

A meeting was held on January 31, 2003 to discuss future directions with respect to this issue and the role of the WNMF. The following minutes provide the results of this meeting:

In Attendance:

Paul Barnable – Water Resources

Ron Burton – Department of Fisheries and Oceans

Matt Churchill – Corner Brook Pulp and Paper Ltd.

Jim Evans, Dave Poole – Abitibi Consolidated Company of Canada Inc.

Colleen Humphries – City of Corner Brook

Len Moores – Department of Forest Resources and Agrifoods

Bruce Roberts – Natural Resources Canada, Canadian Forest Service

Jim Taylor, Karen Saunders – WNMF

Agenda

1. Contents of Draft Report
2. Comments
3. Discussion: Future Directions
4. Network Opportunities

2) **Contents of Draft Report**

- Part 1 -- The Protection of Drinking Water Sources in Canada from the Potential Effects of Forest Harvesting. This section includes a cross-Canada summary of each province's legislation relating specifically to forest harvesting and drinking water supplies.
- Part 2 – Legislation in Newfoundland and Labrador. Describes legislation applicable specifically to forest harvesting and drinking water in NL.
- Part 3 – Survey of Municipalities. Survey completed by 140 municipalities. Accuracy questionable due to level of knowledge of some that filled out surveys. What is clear, however, is that this is an issue and there is a need for further education of municipalities surrounding the issue.
- Part 4 – The intent was to include the results of the next steps as Part 4.
- Part 5 – Recommendations. The current recommendations are based on other province's approaches to watershed planning. The intent was that the recommendations section would be adapted to reflect the results of Part 4.
- Appendices – forestry/water regulations (non-drinking water-specific), other province's approaches

2) **Comments**

- Report should include historical perspective with information from research conducted in NL.

- Brian Carter/Cheeks put off a Forest Watershed Forum in January 2002. It was highly successful and information should be collected from them for inclusion in the report (see Appendix E).
- There are many results available from many studies conducted on harvesting and water in the province that should also be compiled.
- Water Resources has changed their policy. In the past, municipalities had the final say regarding activities in their water supplies whether the water supply was inside or outside the municipal boundaries. Water Resources is now adopting the final say for water supply areas outside municipal boundaries. In theory, therefore, a council could reject a proposed development/operation and Water Resources would be capable of over-ruling and issuing a permit. (Final decision rests with Minister).
- Education is key. Most municipalities are not versed in accurate, reliable information surrounding activities and their potential impacts on water quality. There are many misconceptions and misinterpretations of facts by people.
- Watershed Management Plans would offer a solution to some of the concerns surrounding activities in water supplies.

3) Discussion

- The larger municipalities seem to be capable of pooling the resources (human and \$) to develop management plans and for watershed management committees.
- Water Resources encourages communities to form committees and develop plans, however, does not have the resources (human or \$) to aid them.
- Of most concern are medium-sized municipalities with larger watersheds. These municipalities often lack the resources for plan development.
- Watershed management plans should be drawn up for the watershed so as to ensure that cumulative impacts are addressed. Reference of watershed management within a forest management plan does not suffice.
- An Option – classify watersheds according to size. Apply different levels of planning and process depending on watershed size. (Some are so small that they don't need comprehensive plans.)
- Ideally, the watershed management planning process should be administered by the Department of Environment – Water Resources Division.
- Municipalities must be aware of the steps they need to take, the people they need to bring to the table, and the information they should have before being required to make a decision.
- Companies have a clean track record and lots of experience working in protected water supplies. There is legislation in place to prevent impacts from occurring and mitigative measures are well documented in case an accident occurs.
- Water Resources has drawn up a Terms of Reference for the Town of Steady Brook for the development of a Watershed Management Plan. A consultant may be hired to do the work.
- Main concern is that nobody has the money to pay for Watershed Management Plan development – not the municipalities, not Water Resources, not Municipal Affairs.
- A template process and Management Plan are desirable. This could be piloted in several areas and if successful, could be handed off to all municipalities.

- Such a template process and Plan should be implemented by government rather than a consultant.

Future Directions

- Education – Absolutely key. Municipalities need to know more about: the nature of their water supplies, threats to water supplies and their associated probabilities, the potential impacts of forest harvesting, the probability of impacts occurring, the preventive and mitigative measures already in place, the history of harvesting in water supplies in NL. A tangible item would be desirable that can be passed out to municipalities as background information – the first step in heightening their capacity to make *informed* decisions about their water.
- Workshop – It would be nice to hold a West Coast workshop similar to that in Central last year. Municipal councils and leaders would be invited for a day of information and education from experts in topics related to forest harvesting and water supplies.
- Pilot Project – If Steady Brook does not get \$ to hire a consultant, it is proposed that the WNMF offer to act as consultant and lead the Town through a pre-determined process that will result in the development of a Watershed Management Plan. There are many existing processes in other jurisdictions (including Corner Brook, Gander, etc. as well as other provinces) that could be used as a basis. Most of the information required for a Watershed Management Plan is already available from various government departments and stakeholders. The pilot project would involve primarily: compilation of material, writing of plan and consultation with council. It was suggested that two public forums be held: one at start of process to document public's concerns. Another forum at the end of the process would serve to present the plan – including documentation of how the concerns of the public have been addressed in the plan. If successful, the process could be transferred to other municipalities.

The three future directions above are to be brought up at the Management Group Meeting next week for consideration by the Management Group.

4) Network Opportunities

- It was agreed that the three points outlined above (Future Directions) are the most appropriate for the development of a Concept Paper to submit to the Model Forest Network as a potential Network Strategic Initiative.

The Management Group has agreed to incorporate the above points into their 2003-2004 Work Plan.

PART 5: PAST RESEARCH IN NEWFOUNDLAND AND LABRADOR RELATED TO FOREST HARVESTING AND DRINKING WATER QUALITY

While there has been limited research in this province on forest harvesting and drinking water quality specifically, there has been significant research on forest harvesting and water quality in general. Randy Decker of Fisheries and Oceans Canada was hired to conduct a literature review on the topic of forest harvesting and buffer zones. This comprehensive literature review incorporates research from Newfoundland and Labrador and across North America. The literature review is available from the Western Newfoundland Model Forest.

Western Newfoundland Model Forest

Forest Centre, University Drive,
Suite 324, P. O. BOX 68,
Corner Brook, NL
A2H 6C3

Tel: (709) 637-7300

Fax: (709) 634-0255

PART 6: RECOMMENDATIONS

There is no “one size fits all” approach to the development of regulations to protect drinking water. The Walkerton Inquiry, however, recommends that sources of drinking water be examined at the watershed level. Further, each watershed should have an associated source protection plan in place. Several of the provinces have progressed toward ensuring source protection through the development of watershed management plans complete with multi-stakeholder (including public) participation. The following section is based – in part – on summaries of the key elements of some province’s watershed management planning processes (Appendix F). The following provides recommendations as to the necessary and desirable elements of a watershed management planning process.

In British Columbia, the Auditor General (1999) identified the key problem in watershed source protection for that province, as the lack of an effective, integrated approach to land-use management. (This is also an often-cited problem related to the provincial forest management planning process, as well as water management in Newfoundland and Labrador). The absence of effective land-use planning in the context of water management could result in less-than-optimal choices being made between the need to protect source water and the need to allow other activities.

The B.C. Auditor General also outlines three elements that are key to the successful integrated management of drinking water sources: representation, information and implementation.

The following arranges common key components from several provinces’ documents into the Auditor General’s three elements. The result is a list of desirable components of a water management planning process.

Components of the Watershed Management Planning Process

A. Representation: All stakeholders should have meaningful involvement in the management process

Stakeholders will vary depending on the characteristics of the watershed. The following constitute possible stakeholders that should be invited to participate in a water management planning process:

Local landowner interests including:

- Forestry
- Mining
- Agriculture
- Outdoor Recreation
- Transportation
- Human Settlement

Municipal councils

Local government associations (conservation area authorities, watershed associations, etc.)

Local non-governmental organizations

Government agencies including:

- Federal Government (eg. Department of Fisheries and Oceans)
- Provincial Department of Environment
- Provincial Department of Forest Resources and Agrifoods
- Provincial Department of Tourism, Culture and Recreation
- Provincial Department of Crown Lands
- Provincial Department of Municipal and Provincial Affairs
- Provincial Department of Mines and Energy
- Provincial Department of Works Services and Transportation
- Provincial Department of Health and Community Services

B. Information: The process should be supported by good information on both natural conditions in the watershed, and values and impacts of competing watershed uses.

It is important to get a good picture of the current state of the watershed and the values that depend on the area in question (either now or in the future). Many of the information requirements listed below are currently available from various government agencies. Some may require additional research.

1. Natural Conditions of the Watershed

Geographical extent

Location of water intakes

Soil, topography, vegetative cover

Current water quality

Hydrological profile

Risk assessment (erosion potential, identification of sensitive sites, etc.)

2. Impacts of Competing Watershed Uses

Property ownership

Existing development

Identification of stakeholders

Characterization of stakeholder's land use needs

Identification of potential impacts of land uses

Identification of areas with potential cumulative effects

C. **Implementation: There should be an effective "hand-off" from the planning stage (stakeholder recommendations) to the implementation stage (elected or appointed officials acting on the recommendations).**

Outline of planning process terms of reference including:

- objectives of the process
- proposed schedule
- roles and responsibilities
- public consultation process
- information requirements
- work plan

Definition of roles, responsibilities and authorities including:

- responsibility for providing and/or gathering required information
- responsibilities for enforcement of legislation and guidelines
- responsibilities related to decision-making

Development of guidelines related to activities in water supply watersheds

Setting of plan objectives

Identification of performance measures. (These are typically linked to plan objectives and any guidelines that have been developed).

Development of a monitoring program including:

- elements to be monitored
- persons responsible for monitoring
- frequency of monitoring

Development of a reporting framework including:

- frequency of reporting
- content of reports
- responsibilities for report contents
- public reporting commitments

APPENDIX A

P. E. I.

P.E.I. has buffer regulations in place for forestry activities in proximity to surface water, although this water is not considered a source of drinking water. Buffer regulations are such that 20 metre buffers must be left on water bodies with less than 9% slope. When slopes exceed 9%, buffers increase to 30 metres.

Harvesting may occur in buffers to a maximum of 33.3% of live trees between 10 and 30 centimetres in diameter and 33.3% of live trees over 30 centimetres (McAskill 2002).

Nova Scotia

Despite the variation in regulations for each protected water area (PWA), there are standard province-wide regulations applying to forestry operations in proximity to water. A special management zone (SMZ) of 20 m is required on all streams and rivers wider than 50 cm, lakes, marshes with permanent water, and salt water bodies. Partial harvesting is allowed in the SMZ, however, at least 20 m² of basal area is to be left standing, regeneration should be disturbed as little as possible, no vehicles are permitted within 7 m of the water body, no openings are to be created larger than 15 m, and no sediments are to enter the water.

Average slopes of greater than 20% are to have larger SMZs. The width of the SMZ is to increase by 1 m for every 2% increase in slope up to a maximum of 60 m. On streams smaller than 50 cm, harvesting may occur up to the edge of the water provided that: no vehicles are within 5 m of the water, regeneration is protected, and no sediment enters the water.

Alberta

The *Timber Harvest Planning and Operating Ground Rules* (OGR) govern protection of water bodies on all public lands. The OGRs have a classification system for watercourses and associated classification-specific ground rules. Regardless of whether the watercourse is a drinking water source or not, the standards and guidelines for operating beside watercourses (see Appendix A) apply (AEP 1994).

Ontario

The current guidelines include the Timber Management Guideline for the Protection of Fish Habitat Code of Practice for Timber Management Operations in Riparian Areas and the Timber Management Guideline for the Protection of Fish Habitat. The latter is currently under review as it felt that often the protection in lake situations exceeds what is necessary, while smaller, more sensitive headwater streams may require additional protection (Polhill 2002). Rob Steedman of the Centre for Northern Forest Ecosystem Research is responsible for the research that is contributing to the review of these guidelines.

The current guidelines provide protection to the water body via a 30-90 m reserve based on slope, soil, season of operation, equipment and other site conditions (OMNR 1998). Partial harvesting may be allowed within the protection area depending on site conditions.

Quebec

In Quebec, 20 m buffers are to be left on water bodies. Harvesting is permitted in the buffer zone provided that the slope is less than 40%. Harvesting in buffers must retain at least 500 stems per hectare with a diameter of at least 10 cm (Quebec 2002).

APPENDIX B

Policy for Land and Water Related Developments in Protected Public Water Supply Areas

POLICY DIRECTIVE

Division:	Water Resources Management	P.D.	W.R. 95-01	
Prepared By:	Haseen Khan, P.Eng.	Issue Date:	April 7, 1995	
Approved By:	Wasi Ullah	Director	Revised Date:	March 10, 1999
Approved By:	David Jeans	ADM	Review Date:	
Authorized By:	John M. Fleming	DM	Superseded:	
	Kevin Aylward	Minister	Cancelled:	

Subject:

Policy guidelines for land and water related developments in protected public water supply areas.

1.0 OBJECTIVES

The policy will establish a mechanism for issuing a certificate of environmental approval under Section 10 of the *Environment Act, SN 1995, c E-13.1* for all development activities in a designated water supply area. The implementation of the policy guidelines will ensure sustainable development of natural resources without adversely affecting water quality.

2.0 LEGISLATION

Environment Act, SN 1995, c E-13.1, Section 10

3.0 POLICY

The existing and proposed development activities in protected water supply areas will be subject to the following policy guidelines established under Section 10 of the *Act*.

4.0 DEFINITIONS

"*Act*" means the *Environment Act, SN 1995, c E-13.1*.

"Development" means the carrying out of an activity or operation on, over, or under land or water for social or economic benefits, or the making of any change in the use of the intensity of use of any land, water, building or premises.

All other definitions appearing in the *Act* shall equally apply to this policy when employed herein.

5.0 APPLICATION OF THE POLICY

5.1 This policy shall apply to public water supply areas designated under Section 10 of the *Act*.

5.2 Existing resource development and other activities will be allowed to continue unless it is established that these are impairing water quality or have potential to impair water quality.

5.3 If it is established that a particular activity is a source of pollution, then appropriate measures as outlined in Sections 11, 12 and 13 of this policy directive will apply.

5.4 The Minister may require proponents of existing activities, which have potential to impair water quality, to obtain his/her approval.

5.5 No development shall be carried out in a designated area except in accordance with this policy.

5.6 No person shall carry out any development in a designated area without obtaining prior approval in writing from the Minister.

6.0 ACTIVITIES NOT PERMITTED IN A DESIGNATED AREA

6.1 Placing, depositing or discharging or permitting the placing, depositing or discharging into a body of water any sewage, refuse, chemicals, municipal and industrial wastes or any other material which impairs or has potential to impair water quality.

6.2 Using an intake pond, lake or specified buffer zones for any activity detrimental to water quality and not permitted in the *Act*.

6.3 Using ice covered water body for transporting logs, riding skidoos/motor vehicles/all-terrain vehicles, leading of animals, or any other activity which impairs or has potential to impair water quality.

6.4 Using or operating existing facilities in such a manner which impairs or has potential to impair water quality.

6.5 Residential development (a sub-division of four or more lots), vehicle maintenance facilities, warehouses, service stations, industries, and chemicals and salt storage depots.

6.6 Storage and disposal of pesticides and manure, application of manure and chemicals in specified buffer zones, extensive land clearing, and peat land drainage without adequate treatment.

6.7 Clear cutting of forest in sensitive areas, establishment of camps and camp facilities, storage of chemicals, application of pesticides, drainage of peat land for afforestation, and application of toxic fire retardants.

6.8 Resorts, hotels/motels, and golf courses.

6.9 Activities, operations or facilities associated with aggregate extraction and mineral exploration such as work camps, vehicle parking and maintenance facilities, washing of

aggregates, asphalt plants, discharge or deposit of waste material into a body of water, and significant disturbance to land for mineral exploration purposes.

6.10 Application of herbicides in the right-of-way, and use of chemically treated utility poles and other related structures.

6.11 Aquaculture development and associated activities having potential to impair water quality.

6.12 Processing and manufacturing plants having potential to impair water quality.

6.13 Cemetery, waste disposal facilities, and any other storage or disposal facilities that the Minister considers environmentally unacceptable.

7.0 ACTIVITIES REGULATED IN A DESIGNATED AREA

In a designated area, no person shall undertake any of the following activities without obtaining prior written approval from the Minister:

7.1 Expansion and upgrading of the existing activities, operations or facilities.

7.2 Construction of residential, commercial, industrial and institutional facilities or any other related activity including land clearing or drainage, construction of access roads, servicing of lands for subsequent use, or extension and upgrading of existing buildings or facilities.

7.3 Development of farm lands for crop production, forage production, vegetable production, and blueberry and other fruit production.

7.4 Forest logging, resource road construction and use, stream crossing for controlled access, preparation of skid trails and landing areas, silvicultural activities, tree farming, and other environmentally acceptable forestry operations.

7.5 Recreational activities or facilities including cottage development, fishing, swimming, boating, hiking, camp grounds, or canoe routes, vacation or other camps, or recreational facilities.

7.6 Mineral exploration related activities and aggregate extraction, or any other construction activity incidental to mining and quarrying including access roads, stream crossings, land drainage with adequate treatment, land clearing and excavation.

7.7 Installation of storm or sanitary sewer pipelines, pipelines for transmission of water for hydroelectric generation, agriculture uses, or any other purposes.

7.8 Construction of roads, bridges, culverts, and other stream crossings, and installation of power and telecommunication transmission lines.

7.9 Modification to intake structures, pumphouse, reservoir, etc. will require approval under Section 11 of *Act*.

7.10 Any other development or activity which, in the opinion of the Minister, has caused impairment or has potential to impair water quality.

8.0 APPROVAL PROCESS

- 8.1 The proponent shall submit a detailed development plan along with maps, drawings and specifications and other information as required by the Minister for approval.
- 8.2 The Minister may, on the recommendation of his/her officials, issue a certificate of approval for the proposed development on such terms and conditions as the Minister considers necessary to protect water quality.
- 8.3 The proponent shall obtain separate approvals from the Minister under Section 11 of the *Act*, for all permanent or temporary stream crossings or for alteration to bodies of water that may be necessary to carry out the approved development.
- 8.4 The proponent shall also obtain licences, permits or approvals under other acts and regulations as required prior to commencing the approved work.
- 8.5 The proponent of the approved development shall notify the municipal authority or the person responsible for the operation and maintenance of the waterworks by providing a copy of the approval issued under this policy before commencing the work.
- 8.6 The proponent shall maintain adequate liaison and consultation with the person or authority responsible for the operation and maintenance of the waterworks during the implementation and operation of the approved work.
- 8.7 The Minister may require the inspection of the approved development from time to time by his/her officials to ensure that the development is carried out in an environmentally acceptable manner and the proponent is complying with the terms and conditions of the approval.
- 8.8 The Minister may require a proponent to monitor water quality according to a monitoring program approved by the Minister in order to evaluate the impact of the approved development on public water supply.
- 8.9 The Minister encourages the departments and agencies responsible for resource management and affected by this policy to develop environmental protection guidelines for resource utilization in protected water supply areas, for compliance by proponents or developers.

9.0 BUFFER ZONES

9.1 The proponents shall provide the following widths of buffer zones along and around water bodies from the high water mark in a designated area:

<u>Water Body</u>	<u>Width of Buffer Zones</u>
Intake pond or lake	a minimum of 150 metres
River intake	a minimum of 150 metres for a distance of one km upstream and 100 m downstream
Main river channel	a minimum of 75 metres
Major tributaries, lakes or ponds	a minimum of 50 metres
Other water bodies	a minimum of 30 metres

9.2 No development activity shall be permitted in buffer zones except those which are intended to promote vegetation.

10.0 RESPONSIBILITIES OF MUNICIPAL AUTHORITY

The municipal authority or person responsible for the operation and maintenance of a waterworks shall:

10.1 Ensure that no development activities are undertaken in a designated area without approval from the Minister.

10.2 Ensure that approved development activities are undertaken in strict compliance with the terms and conditions of the approval.

10.3 Where an approval or this policy is violated, serve a stopping order on the violator after obtaining prior approval from the Minister for stopping any work or operation either permanently or temporarily which is not carried out according to the terms and conditions of the approval and has impaired or has potential to impair water quality.

10.4 Request the Minister for the appointment of a Watershed Monitoring Committee and the development of a watershed management plan, if the designated area is under increasing pressure for multiple development activities.

11.0 CORRECTION OF HARMFUL CONDITIONS

If the quality of water has been impaired by any activity, practice, or action taken deliberately, negligently or accidentally, the Minister may order the proponent

(a) to provide alternate water supply for the affected community for as long as is necessary to restore the existing water supply system;

(b) to restore the water quality to its original condition; or

(c) to take necessary measures including the removal of facilities, undertakings, cabins, etc. and to rehabilitate the affected area at his/her expense in order to rectify the water pollution related problems.

12.0 CERTAIN POWERS OF THE MINISTER

(A) Cancellation of Approval

The Minister may revoke an approval:

12.1 For failure of the proponent of any development or activity to comply with the terms and conditions stipulated in the approval.

12.2 Where the approval was issued in error on the basis of incorrect or incomplete information.

12.3 Where the approved activities or operations are causing or have potential to cause impairment of water quality for reasons not anticipated at the time the approval was issued.

(B) Changing Boundaries

The Minister may change the boundaries of a designated area either to enlarge or reduce its size.

13.0 OFFENCE

A person who undertakes any development or activity in a designated area without prior written approval from the Minister is guilty of an offence under the *Act*.

APPENDIX C

Cover Letter

Attention Town Clerks:

Who we are:

The Western Newfoundland Model Forest (WNMF) is a unique partnership of industry, government, academia and local groups that uses consensus as its key decision-making mechanism. We are based in Corner Brook on the Sir Wilfred Grenfell College campus of Memorial University of Newfoundland. We are part of Canada's Model Forest Network and have just signed a contribution agreement for our third phase of operation from 2002 – 2007.

Background:

Due in part to controversy that is often associated with disturbances in protected water supply areas (i.e., road construction, forest harvesting, recreational activities, etc.), our partners have identified a need to work more closely with interested municipalities to examine this issue. As a result, we have put together a project proposal that involves: exploring other province's approaches to this issue; exploring how this issue is typically handled in Newfoundland and Labrador; and developing a guide for use by municipalities to help them with decisions about activities in their watersheds.

Objectives:

- To develop a guide for use by municipalities to aid them in making informed decisions regarding forest harvesting in their water supply areas.
- To provide municipalities and our partners with the most current information available relating to the issue of forest harvesting and water quality.

Your Potential Role:

Attached to this package is a short questionnaire. These questions will serve to identify the variety of situations that currently exist in Newfoundland and Labrador. If your municipality would like to contribute to this project, please answer the questions and return them to the address below. Upon receipt of the questionnaires, I will choose a representative sample of municipalities from whom I will gather more detail with respect to the processes used to determine whether harvesting is allowed in their respective water supply areas.

If you have any questions or comments regarding this project, feel free to contact me.

Survey

**FOREST HARVESTING IN MUNICIPAL PROTECTED
WATER SUPPLIES IN NEWFOUNDLAND AND LABRADOR –
QUESTIONNAIRE – NOVEMBER 2002**

Name of Municipality:

Preferred Contact for Municipality:

Name:

Address:

Phone:

Fax:

e-mail:

1. Are you interested in receiving information on how to ensure that your protected water supply is being managed effectively?

yes no

2. Is forest harvesting currently permitted in your protected water supply?

Domestic: (subsistence for firewood etc.) yes no

Commercial: yes no

3. Has forest harvesting ever been permitted in your protected water supply?

Domestic: (subsistence for firewood etc.) yes (if yes, when?)
 no

Commercial: yes (if yes, when?
) no

4. Briefly describe the process (if one exists) used by your municipality to determine whether forest harvesting should be allowed in your protected water supply area.

5. Is forest harvesting currently a cause for concern in your protected water supply?

Domestic: (subsistence for firewood etc.) **yes** **no**

Commercial: **yes** **no**

6. If the service were provided, would your municipality be interested in having a professional forester assess your protected water supply to determine the potential for timber harvest (domestic and/or commercial) while ensuring maintenance of water quality?

yes **no**

Thank you very much for your time. Please return completed questionnaires to:

**Karen Saunders, HBScF, MES
Forest Centre, University Drive
Suite 324, BOX 68
Corner Brook, NL
A2H 6C3**

**e-mail: ksaunders@wnmf.com
Phone: (709) 637-7308
Fax: (709) 634-0255**

APPENDIX D

Survey Respondents

Anchor Point	Fortune	Ming's Bight
Appleton	Gallants	Musgrave Harbour
Arnold's Cove	Gander	Musgravetown
Baie de Verde	Garnish	Nain
Bay Roberts	Gaskers - Point La Haye	New-Wes-Valley
Baytona	Glenwood	Norman's Cove - Long Cove
Bellburns	Glovertown	North West River
Belleoram	Goose Cove East	Northern Arm
Bide Arm	Grand Bank	Old Perlican
Birchy Bay	Grand Falls-Windsor -	Pasadena
Bonavista	Bishop's Falls	Petty Harbour - Madox Cove
Botwood - Peterview	Greenspond	Pilley's Island
Brighton	Hampden	Placentia
Brigus - Cupids	Hant's Harbour	Point Leamington
Bryants Cove	Happy Valley-Goose Bay	Port au Choix
Buchans	Harbour Grace	Port au Port West - Agathuna
Burgeo	Harbour Main - Chapel's	- Felix Cove
Burin	Cove - Lakeview	Port Blandford
Burlington	Hare Bay - Dover	Port Hope Simpson
Burnt Islands	Hawke's Bay	Port Saunders
Campbellton	Heart's Content	Port Union - 'Little Catalina -
Cape St. George	Heart's Delight - Islington	Melrose
Carmanville	Howley	Portugal Cove South
Cartwright	Indian Bay	Portugal Cove - St. Phillips
Change Islands	Irishtown - Summerside	Pouch Cove
Channel-Port-Aux-Basques	Kippens	Ramea
Clareville	La Scie	Red Bay
Clarke's Beach	Labrador City	Reidville
Cormack	Lamaline	Rigolet
Corner Brook- Massey Drive -	Leading Ticks	Riverhead (St. Mary's Bay)
Mount Moriah	Lewin's Cove	Robert's Arm
Cow Head	Lewisporte	Rocky Harbour
Daniel's Harbour	Long Harbour - Mount	Rose Blanche - Harbour Le
Deer Lake	Arlington Heights	Coup
Eastport	Lourdes - West Bay	Seal Cove (White Bay)
Elliston	Lumsden	Small Point - Broad Cove -
Englee	Lushes Bight - Beaumont -	Blackhead - Adam's Cove
Fleur de Lys	Beaumont North	South River
Flower's Cove	Mary's Harbour	Southern Harbour
Fogo	Marystown	Spaniard's Bay - Upper Island
Fogo Island Region	Milltown - Head of Bay	Cove
Forteau	d'Espoir	Springdale

St. Anthony	Stephenville Crossing	Twillingate
St. George's	Summerford - Cottlesville	Victoria - Salmon Cove
St. John's - Conception Bay	Sunnyside	Wabush
South - Mount Pearl - Paradise	Terrenceville	West St. Modeste
St. Lawrence	Torbay	Whitbourne
St. Lunaire - Griquet	Trepassey	Whiteway - Cavendish
St. Mary's	Trinity	Woody Point
Steady Brook	Triton - Jim's Cove - Card's Harbour	
Stephenville	Trout River	

APPENDIX E

Forest Watershed Forum – January 24, 2002

Welcome / Workshop Purpose	L. Moores, Department of Forest Resources and Agrifoods
Science in a Protected Watershed	J. Jacobs, (Keynote Speaker) Memorial University of Newfoundland
Aquatic Ecosystems Considerations	D. Scruton, Department of Fisheries and Oceans
Forest Nutrient Considerations	B. Roberts, Canadian Forest Service
Approval Process - DOE	R. Wight, Department of Environment
Forestry Activities and Protection Measures	B. Carter and L. Moores, Department of Forest Resources and Agrifoods
A Case Study - Gander	C. Matchim, Engineering Department – Town of Gander

Copies of presentations from the Forum are available from the Department of Forest Resources and Agrifoods office in Gander.

Department of Forest Resources & Agrifoods

P. O. Box 2222

Gander, NL

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Tel. (709) 256-1450

Fax (709) 256-1459

APPENDIX F

Elements of Nova Scotia's Approach (from the Local Government Resource Handbook, Part V – Planning and Development, Statement of Provincial Interest, Guideline1 – Drinking Water)

- Planning documents must identify all municipal water supply watersheds within the planning area. The natural drainage area boundary is used to identify the extent of the watershed.
- Planning documents must also identify the boundaries of a Protected Water Supply Area (PWA) if one exists.
- Planning documents must specify the location of the water supply intake.
- Planning documents require information about: source (ground vs. surface), soil, topography, vegetation cover, property ownership, existing development (extent and type)
- Planning documents should list and include background information on possible land uses that could affect water quality.
- Planning documents must consider cumulative impacts.

Elements of Alberta's Approach

- Water management planning is most effective at the watershed level.
- Local or regional planning priorities must be developed in consultation with the public. Provincial priorities will consider regional and local input.
- Water management plans may be developed in conjunction with other plans.
- A water management plan must include:
 - Identification of issues (and prioritization)
 - Development of terms of reference including: overview of current conditions, geographic description of planning area, objectives of planning process, roles and responsibilities, proposed public consultation process, work plan, information requirements, proposed schedule for planning process
 - Public consultation including: objective, description of previous consultation outcomes, list of key individuals and groups, description of how public involvement fits into the planning process, and a communication strategy
 - Planning area description.

- Collection of information (could include: water quantity, water quality, demands, flow regime, aquatic and plant species, current and proposed land uses, policies and legislation)
- Recommendations for addressing the issues.
- Performance monitoring including: indicators to assess the success of the plan, target values for indicators, monitoring required, agencies responsible for monitoring, mechanisms for reporting of results

Elements of British Columbia's Approach

There are seven steps to community watershed planning in B. C.

1. Forming a round table comprised of appropriate agencies, licensees and resource specialists.
2. Defining the operable forest including sites that will be excluded from the forest land base or that require special management. This step includes mapping sensitive sites and mapping existing land use.
3. Conducting a Watershed Assessment Procedure (WAP) to assess past impacts and establish broad development guidelines. The WAP has three levels:
 - i. Collecting information on 15 environmental indicators including total area logged, height of second growth, length of roads and numbers of landslides. The indicators are translated into hazard ratings.
 - ii. An overview assessment of channel stability or survey of sediment source if the watershed shows high impact in level i.
 - iii. A detailed field investigation by a watershed specialist on streams that are highly impacted.
4. Determining watershed restoration requirements such as: relocating inappropriate recreational activity, re-establishing riparian forests, road deactivation, etc.
5. Completing the long-term development plan for forestry operations. Generally, the public is asked to review and comment on operational plans. Terrain mapping must be included for any area with proposed road construction.
6. Monitoring that includes: selected water quality parameters and target conditions.
7. Contingency planning

Elements of Quebec's Approach

As mentioned in Part 2, Quebec released their Protection Policy for Lakeshores, Riverbanks, Littoral Zones and Floodplains in 1996. Accompanying the Protection Policy is a 170-page best practices guide. The guide is intended for use by municipalities who are responsible for elaborating on existing guidelines, urban plans and municipal regulations, as well as seeing to their application (Goupil 2002). The guide can be used as an aid in water management planning, and consists of the following sections:

Chapter 1: The Importance of Lakeshores, Riverbanks, Littoral Zones and Floodplains – Includes biodiversity, water cycle, sedimentation, buffer zone vegetation, erosion, temperature changes, water absorption, wind breaks, spring melt, point and non-point source pollution, wetlands as filters, floodplains, and human uses/hazards.

Chapter 2: The Legal Framework in Brief – Essentially, the municipalities have the power to devise their own regulations. This general policy allows municipalities to maintain control over their watersheds. Municipalities must – at a minimum – meet the requirements outlined in applicable legislation and the Policy.

Chapter 3: The Protection Policy – Step by Step – See below.

Chapter 4: The Demarcation of the High Water Line

Chapter 5: Measuring Shores

Chapter 6: Quays, Boat Shelters and Bridges

Chapter 7: Shoreline Stabilization

The Protection Policy

Section 5 of the Protection Policy is the Management Plan. The management plan is designed to allow municipalities to formulate site-specific protection measures for their water resources that balance the requirements of a variety of stakeholders (Goupil 2002). The following are general suggestions for plan components:

- The plan should cover a large territory (as opposed to individual sites) and must take into consideration other jurisdictions that potentially influence the water resources.
- The plan should address the concerns of all management interests in the area, including: urban development, agriculture, forestry, and recreation.
- The plan should incorporate the perspectives of a variety of government representatives.
- The plan must be specific enough to be able to replace the Protection Policy while ensuring protection of water resources.

The following are plan requirements as outlined in the Protection Policy (1996):

- Identification of territory of application, including lakes and other water bodies.
- Reasons for development of a management plan (plan objectives).
- Characterisation of the area covered by the plan including physical, hydrological, and ecological characteristics such as: topography, vegetative cover, soils, shore slopes, principal tributaries, hydrological regime, flood risk, general drainage, wet areas, flora and fauna, forested and non-forested areas, land use (historical and present), potential impacts of land uses, etc.
- Water body characteristics including: water quality, turbidity, chemistry, delineation of the high water mark, water levels, importance of streamside vegetation (herbs, shrubs and trees), degree of artificialisation of banks, soil quality, erosion potential, etc.
- A description of stakeholders with a potential to impact flora and fauna in proximity to water resources.
- Identification of recreation and tourism uses of water resources including: beaches, docks, boardwalks, bike trails, etc.
- Prioritization of required restoration, conservation and recreation-related infrastructure activities, including a detailed description of activities, an assessment of potential impacts, mitigation and protection measures, guidelines to be applied, etc.

In addition to the above components, municipalities must ensure that their planning recognizes and is consistent with existing forestry legislation.

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