

# A Drinking Water Strategy for Nova Scotia

A COMPREHENSIVE APPROACH TO THE MANAGEMENT  
OF DRINKING WATER



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C L E A R



C O O L



F R E S H



# Minister's Message

## A drinking water strategy for Nova Scotia

Ask any Nova Scotian what the single most important environmental issue is in the province today, and chances are they'll say it's having clean, safe drinking water.

This *Drinking Water Strategy for Nova Scotia* is just one in a series of steps we have taken to assure this resource is managed wisely. Strengthened regulations, new expertise, and better technology are some of the other steps that complement and strengthen this strategy and its associated multi-year action plan.



This strategy is both the culmination of years of progress and a starting point for future progress. It is a living, breathing document that will provide focus to our activities, while being flexible enough to respond to emerging challenges and opportunities. This strategy is the first step of a comprehensive approach to effectively manage all water resources in Nova Scotia.

The success of this strategy – and ultimately of our ability to effectively manage our drinking water – rests on our ability to work together. Protecting water resources from the source to the tap is a responsibility that requires the participation of all stakeholders – government, business, and private well owners alike.

We can no longer afford to take water for granted. This department is proud to take the lead in developing and implementing policies, regulations, and activities for protecting Nova Scotia's drinking water.

Sincerely,

David Morse



**Managing Nova Scotia's water resources for present and future users requires participation from all levels of government, business, and the public.**

P R O T E C T I O N



C O N S E R V A T I O N



C O O P E R A T I O N



# Executive Summary

A constant supply of clean drinking water is essential to every community. This Drinking Water Strategy outlines a dynamic plan for the protection and conservation of our water supplies for all Nova Scotians, for years to come.

The vast majority of Nova Scotians already enjoy high-quality, safe drinking water. However, even the most remote, and seemingly pristine, source may contain some impurities. The best assurance for clean, safe drinking water is what we refer to as the Multiple-barrier Approach. By that we mean, first of all, keeping clean water clean. Secondly, making it safe to drink. And thirdly, proving it's safe to drink. This strategy outlines a multiple-barrier approach to meeting the challenges of drinking water management for the 21<sup>st</sup> century.

This strategy is based upon the principles of sustainability and integrated management, and the premise that all persons are responsible for maintaining and protecting the environment. It further strengthens our water protection framework in a way that is practical and affordable. The strategy builds on current legislation, the multiple-barrier concept, and the philosophy of continuous improvement.

The key elements of this strategy are to clarify roles and responsibilities for all stakeholders, to enhance our multiple-barrier approach to water management, and to create an Inter-Departmental Drinking Water Management Committee to manage and implement the strategy.

The committee will regularly review and update the strategy as issues are addressed. The committee will also assess the need to adjust its actions to ensure that milestones are being met.

The strategy identifies four main challenges the province currently faces in managing our water resources. The multi-year action plan outlines activities that address source protection, water treatment and system operation, and water monitoring and testing.

This strategy will result in a sustainable water management system for generations to come. It will foster partnerships, allowing us to make the wisest use of limited resources. And it will ensure that all Nova Scotians know and understand the role they play in conserving and managing our most valuable resource – water.



# Introduction



In Nova Scotia we are lucky to have some of the best water in the world. Our province is made up of over 6,700 lakes, 100 rivers, and abundant supplies of groundwater. However, water is a resource that we sometimes take for granted.

**“This educational program will be of great benefit to our members and their clients. It will provide our members with the latest information on wells and well water, such as how to conserve and protect their water supply, that they can pass on to new home buyers.”**

**Arnold G. Jones**

*Executive Officer of the Nova Scotia Association of Realtors, about a credit course on well water management prepared for its 1,150 members by the Department of Environment and Labour.*

We also face some challenges when it comes to protecting our water resources. Contamination exists naturally, and can also occur as a result of carelessness, forgetfulness, and even ignorance. Fortunately, we have the tools to address this issue. We have the skills and the desire to develop sensible solutions to our water resource issues.

This Drinking Water Strategy reiterates our commitment to making the protection of our province’s water our number one priority.

We already have numerous initiatives in place to protect and manage our water. We have a solid regulatory framework around water protection. We have developed a water-data system to track information on all municipal water supplies in the province. We have hired new water experts who support provincial activities and who work with municipal and public water supply operators. We have developed many education sessions and guides to help people learn more about drinking water and understand our regulations. We have banned the export of bulk water, and we have strengthened the standards for well construction and drinking water quality.

Complementing the work done by the province is the work done by municipalities, community groups, industries, and individual well owners. Over the past few years municipalities have made water treatment a priority – upgrading plants and training operators. Their efforts have resulted in a steady decrease in the incidences of high trihalomethane levels (or THMs) in water, and have led to better protection of the watersheds that feed municipal supplies. Likewise, there are numerous examples where communities and individuals have stepped forward to proactively address water concerns, such as the Nova Scotia Association of Realtors requesting education sessions, or Rawdon Technologies of Sydney who have been working with the Department of Environment and Labour to develop and implement innovative water treatment systems.

# PROVINCIAL



E D U C A T I O N



P R O T E C T I O N



C O N S E R V A T I O N

**Recent provincial drinking water related activities since October 2000 include:**

- introduced new regulations requiring regular testing of all public drinking water supplies including schools, restaurants, motels, campgrounds, etc.
- adopted health-based Canadian drinking water quality guidelines as regulation
- established a boil water advisory tracking system
- instituted a policy for the accreditation of all drinking water testing laboratories in Nova Scotia
- conducted three audits of all municipal water systems
- supported 18 municipalities with the implementation of new or upgraded water treatment facilities
- assisted five municipalities with new or updated protected water area designations
- established new funding program to assist in the development of municipal planning strategies that protect drinking water supply areas
- incorporated source protection measures in recent highway designs
- initiated a drinking water monitoring program for provincially operated sites with on-site water supplies
- hired additional staff with water expertise including four hydrogeologists, four inspectors, two watershed planners, one drinking water supervisor, one water monitoring technician, one water treatment facilities specialist, and one geographic information system (GIS) specialist
- improved water database and information management system
- established a new Clean Water Watch website with information and educational material on drinking water
- developed education sessions on private well water supplies in partnership with the Women's Institute of Nova Scotia and the Nova Scotia Association of Realtors
- committed to the development of an Atlantic Canada Standards and Guidelines Manual for water treatment systems in partnership with the Atlantic Canada Water Works Association
- established special well-water advisory group to oversee testing for naturally occurring radionuclides in public well water



# Our Vision



Our province has plenty of **clean**, clear water. It's everywhere. It bubbles in the many brooks, rivers, and streams that cut through our land; it lies in the countless lakes around us and lies buried in the ground beneath us.

## PROTECT

So, why does Nova Scotia need a drinking water strategy?

Although water is everywhere, there is no such thing as naturally pure water. In nature, all water contains some impurities.<sup>\*</sup> Some of these substances, such as minerals, may be harmless. In fact, some people prefer mineral water precisely because minerals can give water an appealing taste. However, at certain levels, minerals, just like man-made chemicals, are considered contaminants that can make water look or taste bad, or even make it unsafe to drink.

Because a constant supply of clean drinking water is essential to every community, the purpose of this document is to outline our strategy to conserve and protect our water supplies for all Nova Scotians for years to come.

<sup>\*</sup> Underline denotes words that are defined in the glossary (p.36)

## VISION . . .

To conserve and protect Nova Scotia's drinking water supplies for the environmental, health, economic, and social benefits of current and future generations.

## Green Money

Nova Scotia's municipal water treatment and wastewater facilities were the recipients of over \$75 million in Green money in the 2001/2002 fiscal year, through the Canada/Nova Scotia Infrastructure Program.

The Green infrastructure projects promote safe drinking water and effective wastewater management, while protecting the environment and benefitting businesses, families, and tourism in the province.

To date, 61 Green projects have been approved, worth more than \$94 million.

# Values and Principles

THIS STRATEGY IS BASED ON THE FOLLOWING PRINCIPLES:

**“To establish a sustainable balance in water management it will be important to ensure that healthy, natural ecosystems are maintained, natural water systems are disturbed as little as possible, and pollutants are reduced.”**

*Sustainable Development Strategy for Nova Scotia, Feb., 1992*

## Clear Roles and Responsibilities

All levels of government, business, and the public are responsible to maintain and protect the environment.

## Sustainable Development

Sustainable development means balancing our economic desires with due consideration for the environment. In the case of water, this means carefully controlling how much we use for domestic and industrial purposes, and for protecting natural ecosystems.

Sustainable development of water resources means using only what we need today so we do not compromise the ability of future generations to satisfy their own needs.

## Partnership

Consistent with other government initiatives, the province will foster partnerships among individuals, organizations, governments, communities, and businesses for the purpose of developing water management programs.

Partnerships enhance communications and support, and will make the strategy more effective and more affordable.

## Stewardship

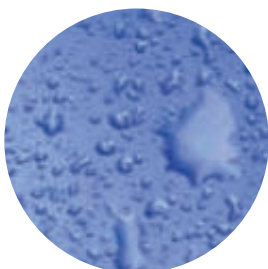
Water stewardship means conserving and protecting water. Nova Scotians must be aware of, and assume responsibility for, the effects our current water management and land use practices will have on this and future generations.

As today's water stewards, we have a responsibility to conserve and protect our water supplies so that our children, grandchildren, and great-grandchildren can achieve a quality of life equal to or greater than our own.

## Value of Water

Because it is essential for our health and wealth, water – like any other natural resource – must be treated as a resource to be valued, conserved, and carefully managed.

While we have a lot of good water sources across the province, we must commit to their conservation and treat our drinking water not as a luxury to be squandered, but as a privilege to be protected. Recognizing water's inherent value supports the notion that it must be protected.

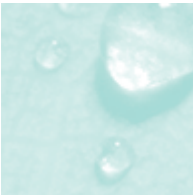


# PARTNERSHIP

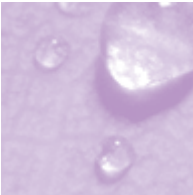


**“It is very important for the Province of Nova Scotia to have a clear commitment to a provincial water strategy.”**

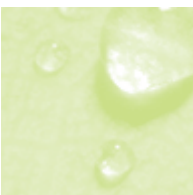
P R O T E C T I O N



R E S P O N S I B L E



R E G U L A T I O N



# History of Water Management



**“It is very important for the Province of Nova Scotia to have a clear commitment to a provincial water strategy. In agriculture, we are committed to ensuring long-term sustainable management of our water resources. We recognize that we as a community must work together to develop grass-roots solutions to ensure our future water supplies.”**

**Richard Melvin**

*Chair, Growers  
Water Group and operator of  
Melvin Farms Ltd., Pereau*

In recent years, Nova Scotians have recognized the need for a change in attitude towards water. This was reflected in the Minister’s 1991 *Clean Water Task Force* report and the 1992 *Sustainable Development Strategy for Nova Scotia*. Recommendations made in these reports are now contained in the *Environment Act*.

The new *Environment Act* passed in 1995 strengthened Nova Scotia’s drinking water management framework by:

- designating the Department of Environment and Labour as the lead agency responsible for managing Nova Scotia’s drinking water supplies
- requiring all municipal water systems to be classified according to industry-accepted standards
- requiring all water treatment plant and water distribution system operators to be certified based on education, experience, and standardized professional examinations
- establishing new standards for well construction and ensuring all water well drillers, diggers, and pump installers are certified

To safeguard public health, the province strengthened its *Water and Wastewater Facility Regulations* in 2000 and adopted the health-based parameters in the *Guidelines for Canadian Drinking Water Quality* as regulation. The new regulation requires:

- enhanced monitoring of municipal water systems and [small public water systems](#)
- that all drinking water quality testing be done only by [certified laboratories](#) (see Appendix C)
- immediate, person-to-person communication of potentially unsafe drinking water to the Department of Environment and Labour

Other provisions of regulations made under the *Environment Act* (the *Activities Designation Regulations*, *Approvals Procedure Regulations*, *On-Site Sewage Disposal Systems Regulations*, and *Well Construction Regulations*) deal with the protection of the resource and identify responsibilities for the province, municipalities, businesses, and property owners.

Each of the activities included in the *Activities Designation Regulations* requires departmental approval. Terms and conditions of the approval are designed to ensure that the manner in which the activity is carried out complies with current environmental standards and best practices. Such stipulations may, for instance, focus on acceptable watercourse alterations, discharge limits to protect water quality, or acceptable levels of water withdrawal to protect nearby well owners or downstream habitat.

# FRAMEWORK

**“We recognize that water quality is essential for Nova Scotia to continue to grow and we at Stora Enso are committed to playing our part in improving water quality and reducing consumption. This includes our mill and woodlands operations.”**

**Tor Suther**

*President and General Manager, Stora Enso Port Hawkesbury Ltd.*

Approvals related to on-site sewage disposal systems require safe, minimum separation distances from wells, watercourses, and other features. The protection of water is a key stipulation for all approvals including landfills, composting facilities, construction and demolition debris disposal sites, and industrial operations.

Some legislation, regulations, and policies administered by other government departments also address activities that can have a profound effect on the management of water. For example, the management of wetlands – from the standpoint of biodiversity and wildlife management – falls under the Department of Natural Resources. The Department of Agriculture and Fisheries administers separate legislation pertaining to farm practices and aquaculture.

Nova Scotia’s water regulations are among the most stringent in Canada. In fact, many have been referenced as models for other jurisdictions.

In our review of Ontario’s *Walkerton Inquiry Report*, it is clear Nova Scotia already has a strong regulatory framework in place to protect our drinking water supplies. For example:

- Source protection programs have always been a priority for the province. Of Nova Scotia’s 82 municipal water supplies, 24 are designated as Protected Water Areas or have a comprehensive water supply protection strategy in place.
- Nova Scotia has adopted the health-based *Guidelines for Canadian Drinking Water Quality* as regulation.

**“Nova Scotia industry sees the need for quality drinking water; we took the challenge and are proud to have developed a homegrown water treatment solution that will help communities provide high-quality drinking water and at the same time secure our future in this business.”**

**Barry Kennedy**

*Project Manager, Rawdon Technologies, Sydney*

FRIENDLY

## Environmentally Friendly Farming

The Nova Scotia Eastern Habitat Joint Venture is bringing benefits to farmers across the province through a riparian zone management program that helps fence off wetlands and waterways, and helps develop alternative watering systems on their properties. Restricting livestock access to areas bordering on wetlands, waterways, and ponds creates wildlife habitat, improves water quality, and provides for healthier livestock. To date, the project has provided financial assistance to over 60 participants and protected approximately 1,800 acres throughout Nova Scotia.

The Joint Venture is a partnership of government and non-government organizations including the Nova Scotia Department of Natural Resources, the Canadian Wildlife Service, Wildlife Habitat Canada, Ducks Unlimited Canada, and the Nature Conservancy of Canada. The project is coordinated through the Nova Scotia Department of Natural Resources and is supported by the Nova Scotia Department of Agriculture and Fisheries and private landowners.

“In 1990, we developed a new groundwater supply to replace wells that were abandoned due to contamination by a dry cleaning solvent. As our new water source was located on land used for forestry and agricultural purposes, we quickly realized that a multi-stakeholder committee was needed to effectively protect our drinking water supply. The committee developed regulations to protect the area and allow forestry and agricultural activities to continue. J.D. Irving Woodlands brings people in from around the world to show them how we have cooperated to ensure a long-term supply of safe drinking water, while also permitting reasonable forest management activity. The North Tyndal Wellfield Advisory Committee continues to be an important component in our multi-barrier approach to ensuring safe drinking water for our residents.”

Ron Patterson, P. Eng.  
Town Engineer, Town of Amherst

LEADERSHIP



CHALLENGE



FRAMEWORK



- In the past five years, with the cooperation of all levels of government, 18 water treatment plants in Nova Scotia have been upgraded. The upgrades ranged from brand new state-of-the-art facilities to improved sources of water. In addition, 14 existing facilities are in the process of being upgraded. Some of these are under construction while others are still in the design stage.
- The Walkerton Inquiry recommended that leadership from one lead agency was critical to coordinate government efforts in enforcing and implementing effective drinking water policy. Nova Scotia took the lead in this regard – having assigned responsibility to the Department of Environment and Labour in 1995.

Many of the recommendations of the Walkerton Inquiry focus on activities that Nova Scotia has been involved with for some time because we have embraced a philosophy of continuous improvement. As a result, Nova Scotia is well positioned to implement and manage further change as we continue our leadership role in the provision of clean, safe, and affordable drinking water.

Our challenge is to build on the existing management and regulatory framework to ensure that water resources are adequately protected for present and future users, and to provide sustained economic and social benefits.

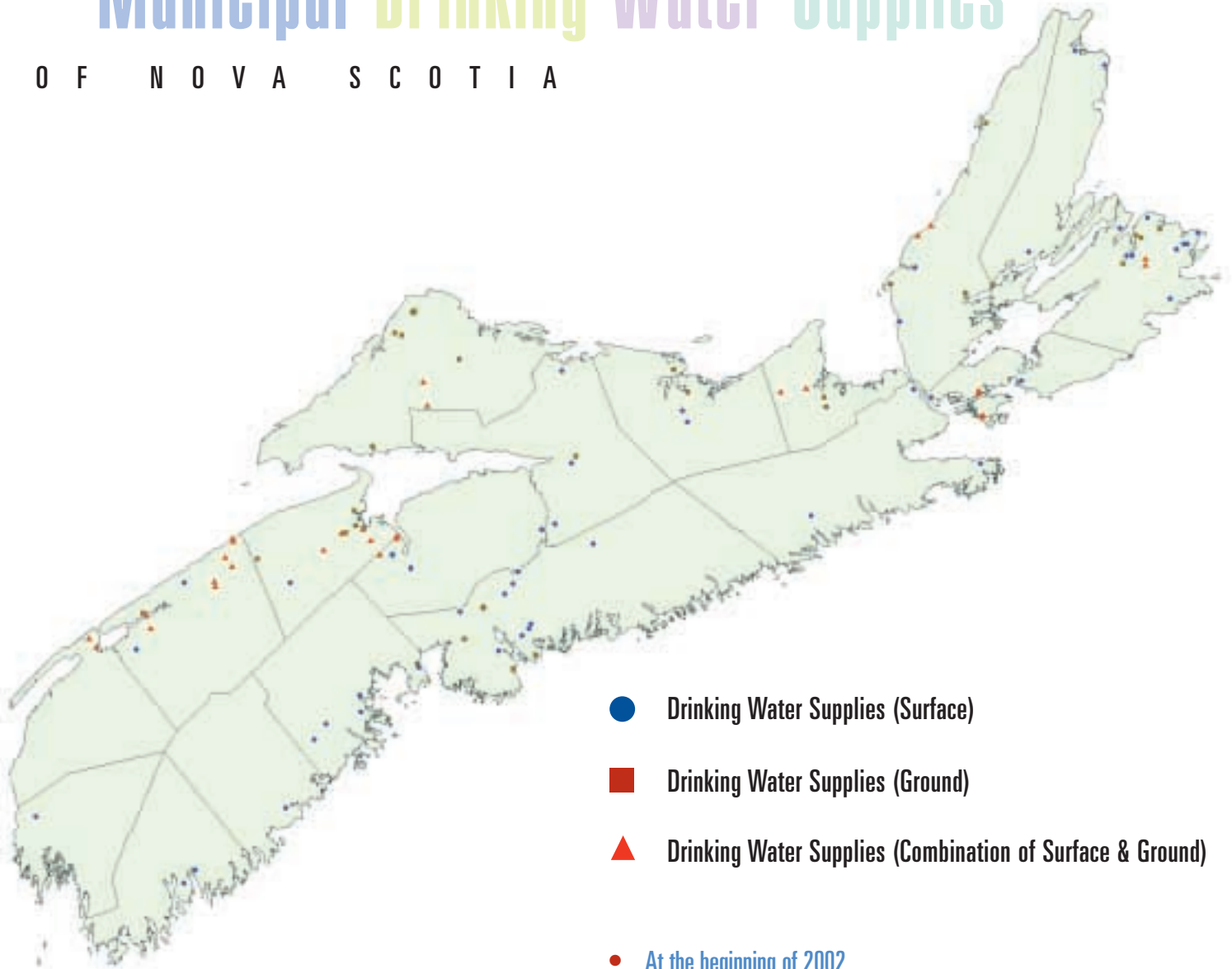
This Drinking Water Strategy is designed to encourage a shift from self-motivated, single-purpose management decisions to an integrated framework for drinking water management on a broad, watershed basis. This will require clarification of roles and responsibilities, for governments and individuals alike, along with a more collaborative and proactive management structure. This strategy is also based on the important principle that all persons – all levels of government, business, and the public – are responsible for maintaining and protecting the environment.

This strategy is aimed at instilling the knowledge and skills necessary to achieve excellence in water quality – be it for a municipal or private supply – and to develop the next generation of water leaders in Nova Scotia. This will ensure that we continue to improve and that our strategy remains accurate and effective. Our strategy is designed to be a “living process” that will evolve to address new and emerging challenges as they arise.

LIVING PROCESS

# Municipal Drinking Water Supplies

O F N O V A S C O T I A



- Drinking Water Supplies (Surface)
- Drinking Water Supplies (Ground)
- ▲ Drinking Water Supplies (Combination of Surface & Ground)

- Fifty-four per cent of Nova Scotians receive treated drinking water from central groundwater or surface supplies operated by municipal water utilities.
- Forty-six per cent of Nova Scotians rely on groundwater from dug or drilled wells for their private water supplies.
- At the beginning of 2002 there were 24 Protected Water Areas designated under the Environment Act at the request of municipal water utility operators. Several more requests are being processed as part of comprehensive management strategies.
- Between October 2000 and August 2002 more than 1,300 schools, restaurants, campgrounds, and other types of public drinking water systems were registered and are being tested under new provincial regulations.

# Today's Water Management Challenges

**Studies show it can be 40 times more expensive to remove impurities from groundwater than the initial investment in time and money it would have taken to protect the source in the first place.**

The province's recent economic growth has attracted workers from across Canada and around the world. And while they may come for the money-making opportunities, they stay for the lifestyle – a unique lifestyle that blends business with beauty.

As Nova Scotia's economy continues to grow and more and more people come here to visit, work, and live, additional demands will be placed on Nova Scotia's drinking water supplies.

The time has come for Nova Scotia to build on the initiatives to create economic prosperity with a plan to manage the water upon which the province relies greatly for its health and wealth.

## **Challenge No. 1 Continue to protect our drinking water sources**

Of the more than 940,000 persons who call Nova Scotia home, about 54 per cent draw their drinking water from municipal water systems. The remaining 46 per cent of the population, mostly in rural communities, obtain their water for cooking, cleaning, and consuming from private well water supplies. The map on page 12 highlights the location of municipal drinking water supplies in Nova Scotia.

As Nova Scotia continues to grow and prosper, more pressures will be placed on our water resources. It is important that we all do our part to ensure that finding quality source water does not become more difficult for our municipalities and private homeowners. The most cost-effective means of ensuring a safe supply

is preventing drinking water problems from developing in the first place. This is best achieved when an effective source protection program is in place. Source protection, however, can be a difficult, multi-stakeholder, long-term process.

The main concern is that the lands required to protect the water supply are often not owned by the user of the water supply. This inherent conflict reinforces the need to put aside the purely regulatory approach and enter into partnerships with the watershed community to carry out mutually beneficial, locally developed and administered, source protection programs.

The development of a source protection program is a consensus-based, community-level process involving various stakeholders. The protection of source water is a continuous process that requires a long-term commitment and is essential in an overall program of drinking water protection. Source protection requires a strong commitment at the local level, a combination of strategies, and cooperation of all stakeholders.

The components of a source protection plan include four essential steps. First, there should be an appropriate inventory and characterization of the water source. Second, there should be development of an up-to-date inventory of all sources of pollution affecting the water source. Third, the type of pollutants discharged into each watershed must be quantified. Fourth, there should be development of goals and implementation of strategies for protecting, monitoring, and evaluating each watershed.

ACT ON

*Information to protect drinking water drawn from household wells is provided in Appendix B.*





Getting Rid of THMs  
THMs readily evaporate into the air and most are thought to be released as the water bubbles out of taps and when it sits in open containers for a few hours. THMs can be reduced or eliminated from drinking water in any one of several ways...

Aerate tap water in a blender

Store water in the fridge for 24 hours

Use water treatment devices containing activated carbon

## Challenge No. 2 Ensure adequate treatment

Of the 82 municipal water systems in Nova Scotia, approximately 34 per cent obtain their water from groundwater sources, 54 per cent use surface water, and 12 per cent use both groundwater and surface water. The level of treatment ranges from small systems with disinfection, such as chlorination or ultraviolet light to kill bacteria, to large, state-of-the-art treatment plants using the latest technology to purify water.

All water system owners should determine what impurities are present in their water supply and install adequate treatment methods to remove them. This will ensure that all water system owners deliver to the consumer an adequate supply of drinking water that meets or exceeds all drinking water standards. This objective is achieved most economically and effectively when the source water is taken from the highest quality source available and it is protected to maintain its quality (see Challenge No. 1).

## Challenge No. 3 Small Systems

Most municipal water systems in Nova Scotia serve small communities. The challenge for many of these small towns and villages is to afford the equipment and qualified operators needed to conform to the province's drinking water standards. It is important to recognize this and other challenges unique to small communities.

Providing safe drinking water to small communities has three elements, each equally important:

- providing affordable water treatment technologies
- creating the institutional structure necessary to ensure the financial stability of water systems
- improving programs to train small system operators in all aspects of water system maintenance and management

## The Threat from Chemicals

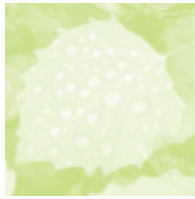
Between 1985 and 1988, a comprehensive study tested all the major municipal water supplies in Nova Scotia for more than 150 chemicals. The results showed that all water supplies met the health-based Canadian drinking water quality guidelines, with one exception – the trihalomethanes guidelines.

Trihalomethanes (THMs) are chemical compounds formed when chlorine reacts with organic material in raw water supplies. Long-term consumption of drinking water with high THMs has been linked with a small increased risk of bladder cancer. While there is cause for concern, health experts state there is greater risk from failure to disinfect than there is from exposure to THMs.

The number of water supplies with elevated THMs has dropped from 18 to 10 since September 1999. The number of supplies with elevated THMs will continue to drop as more upgrades and changes to treatment facilities are completed by municipalities in the next few years.

Actions taken by municipalities to reduce THM levels include optimizing existing plant operations, installing new or upgraded water treatment facilities, or locating alternate water supply sources. Many have already taken such action or they are currently underway.

LEADERSHIP



CHALLENGE



FRAMEWORK



All water systems need the right mix of technical, financial, and managerial resources to provide high-quality, safe drinking water. While achieving this mix can be a challenge for small communities, it can be made easier through partnerships and the sharing of resources. As well, focusing on source protection makes subsequent treatment easier and cheaper.

**Challenge No. 4**  
**Balancing economic and social interests**

Municipal and small public water systems in Nova Scotia have recognized that having clean, safe water not only protects the public's health, but also is good for business.

The costs necessary to develop the technical, financial, managerial, and operational expertise of water utilities should be included in the cost of service.

All water system owners should develop a long-term financial plan for the maintenance, upgrade, and replacement of infrastructure. Fundamental to the success of long-term planning is a record of accurate, up-to-date information on the physical assets of each individual water system.

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SOCIAL INTEREST

The choice of specific financial tools is a matter of public policy and must be reviewed at the local level in order to adopt the most appropriate approach to water-cost recovery. Local water service providers are most in touch with their customers, the issues facing the community, patterns of usage, economic matters, and other relevant considerations.

Judique Water Treatment Facility  
The Judique Water Treatment Facility originally consisted of pressure filters and chlorination. Due to high THMs in the treated water, the facility is installing a new made-in-Nova-Scotia process to improve drinking water quality.

**Evaluating Technologies for Small Systems**

Before looking to complex technological solutions to water quality problems, smaller water systems should assess other available alternatives.

One option is to find a higher quality source such as by switching from surface water to groundwater or relocating a well to a cleaner aquifer. Groundwater sources are generally a better choice for smaller systems because they can be less turbid and have lower concentrations of microbiological contaminants and organic matter than

surface water. Examples of communities that have or are implementing this option include Amherst, Sydney, Oxford, Kentville, and Dingwall.

A second non-technical option is to purchase treated water from a nearby utility. This option is often more cost-effective than attempting to treat a poor quality source water. This solution has been applied in the Windsor area: the Town of Windsor supplies drinking water to Three Mile Plains.

**“With the demand for ever-increasing accountability and an ever-changing environment, well registration and regular testing is the only safe way to protect your customers and your business.”**

**Mr. Glenn Musgrave,**  
*Campground Owners  
Association of Nova Scotia*

The costs of sourcing, treating, and delivering safe drinking water should be included in the cost to the user. The cost of water service should be recovered by user fees and other applicable charges, such as infrastructure charges, local improvement charges, and special assessments that reflect cost recovery on a benefits-received basis. Subsidies should not be used to offset the true costs of providing water service, nor should any excess revenue be directed to other projects.

Today’s drinking water systems must both protect public health and conserve the resource. This goal gets harder to reach as treatment technologies and environmental conditions become more complex. Long-term planning is critical to ensuring the future sustainability of the system. Comprehensive water assessment plans are necessary to identify and plan for issues like training and capital improvements.

Each community is responsible for the safety of its drinking water and for raising sufficient revenue to assure its quality without relying on financial assistance from other levels of government. Water systems must be self-sustaining and have the financial, technical, managerial, and operational capacity to reliably meet all present and future requirements for the continued delivery of safe drinking water.



**Despite how vital it is to our health, the cost of water remains artificially low.**

**The cost of municipal water delivered to your home can range from \$14.30 to \$37.46 per month – less than \$1.25 per day.**

**Compare this to...  
A cup of coffee: \$1.25  
Telephone: \$1.75/day**

# OPPORTUNITY

## **New Business Opportunities for Environmental Companies**

Made up of over 430 companies, environmental industries are one of the fastest growing business sectors in Nova Scotia. A renewed focus on water issues means more opportunities for Nova Scotia’s environmental companies, which are proving their expertise by providing sensible solutions to water issues right here at home.

Take for example the Birch Grove Water Treatment Facility that opened in 2001 in the Cape Breton Regional Municipality. The plant is unique because it was designed and manufactured entirely in Nova Scotia. Its speciality process is just one of the many valuable innovations Nova Scotia companies are exporting around the world.

# Drinking Water Strategy: Key Elements

## 1. Clear Roles & Responsibilities

The Drinking Water Strategy will provide all levels of government, community groups, operators, and individuals with a clear idea of what is expected of them to manage and maintain Nova Scotia's drinking water supplies.

It is important that all parties play their part in this strategy:

- Private well owners are responsible for ensuring that their wells are constructed to provincial standards and for testing their water regularly to confirm it is free of any natural or man-made impurities (see Appendix B).
- Municipal and small public systems are responsible for the delivery of water in accordance with provincial standards and for meeting their requirements for due diligence – making sure the water they deliver is properly managed and protected.

- Provincial government is responsible for setting standards, approving the designation of protected water areas, issuing terms and conditions for the construction and operation of water treatment and distribution facilities, and auditing compliance with provincial standards. The provincial government is also responsible for developing drinking water policy, collecting and compiling water quality and quantity data and other relevant information, analysing trends, developing education programs, and providing advice and assistance to municipalities on technical and financial issues.

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Municipalities retain much of the regulatory authority over land use under the *Municipal Government Act*. Municipal drinking water supply areas (mostly lakes and in a few cases community wells) require particular management attention because of the potential health risks. Accordingly, the province has adopted a *Statement of Provincial Interest Regarding Drinking Water* to encourage and guide municipalities in the protection of our watersheds. In addition, a total of 24 water supply areas have been designated under the authority of the *Environment Act* as Protected Water Areas, which assigns regulatory responsibility for their upkeep to the water utility.

**“We understand the importance of municipal leadership in protecting water quality, in particular well water.”**

**Gerald Sampson**

*Warden, Inverness County,  
Cape Breton*

## Community Groups Can Make a Difference

In 1991, the Atlantic Coastal Action Program (ACAP) was created to mobilize local communities to address their environmental challenges. Bluenose ACAP, based in Lunenburg, is one of 14 sites across Atlantic Canada. Bluenose ACAP has successfully tackled issues like the restoration of the Mushamush River, the modification of

the dam at the lower end of Ernst Brook, and the monitoring of water quality in the area. All of these projects were made possible through community partnerships and through the tireless efforts of local volunteers.

STRATEGY



PRIORITY



EDUCATION



**“The Halifax Regional Water Commission is recognized as one of the best water providers in Canada. We are proud of our source water protection program, state-of-the-art treatment facilities, and excellent monitoring programs. We are very pleased to see the government of Nova Scotia implementing a program that will complement what we have done.”**

**Carl Yates, P.Eng.,**

*General Manager, Halifax Regional Water Commission*

All Nova Scotians have a responsibility for protecting the environment. It is much easier and more cost-effective to manage a resource if businesses, communities, and individuals all work toward common goals.

## 2. Multiple-barrier Management

Nova Scotia is committed to drinking water safety, and has been for years. The province has been successfully following a process of continuous improvement in the management of drinking water long before the Walkerton tragedy brought the issue to national attention.

This Drinking Water Strategy strengthens the province’s multiple-barrier water treatment and management system. The multiple-barrier system combines management and engineering strategies to enhance public health protection in Nova Scotia. Management strategies include such things as education, training, and certification, while engineering strategies include construction standards and new treatment systems.

The multiple-barrier approach is universally recognized as the most comprehensive method for protecting drinking water quality. It calls for a series of safeguards along the water supply route to prevent or reduce contaminants from making it through the drinking water system. Redundancies, or multiple barriers, are put in place so that if one barrier fails, there are back-up systems and processes to block the flow of any harmful impurities.

This concept recognizes that multiple risks require multiple barriers. The illustration on page 19 shows examples of:

1. surface and groundwater sources of drinking water (in blue)
2. potential threats or risks to those drinking water sources (in red)
3. the multiple barriers that together protect our sources and our health (in green)

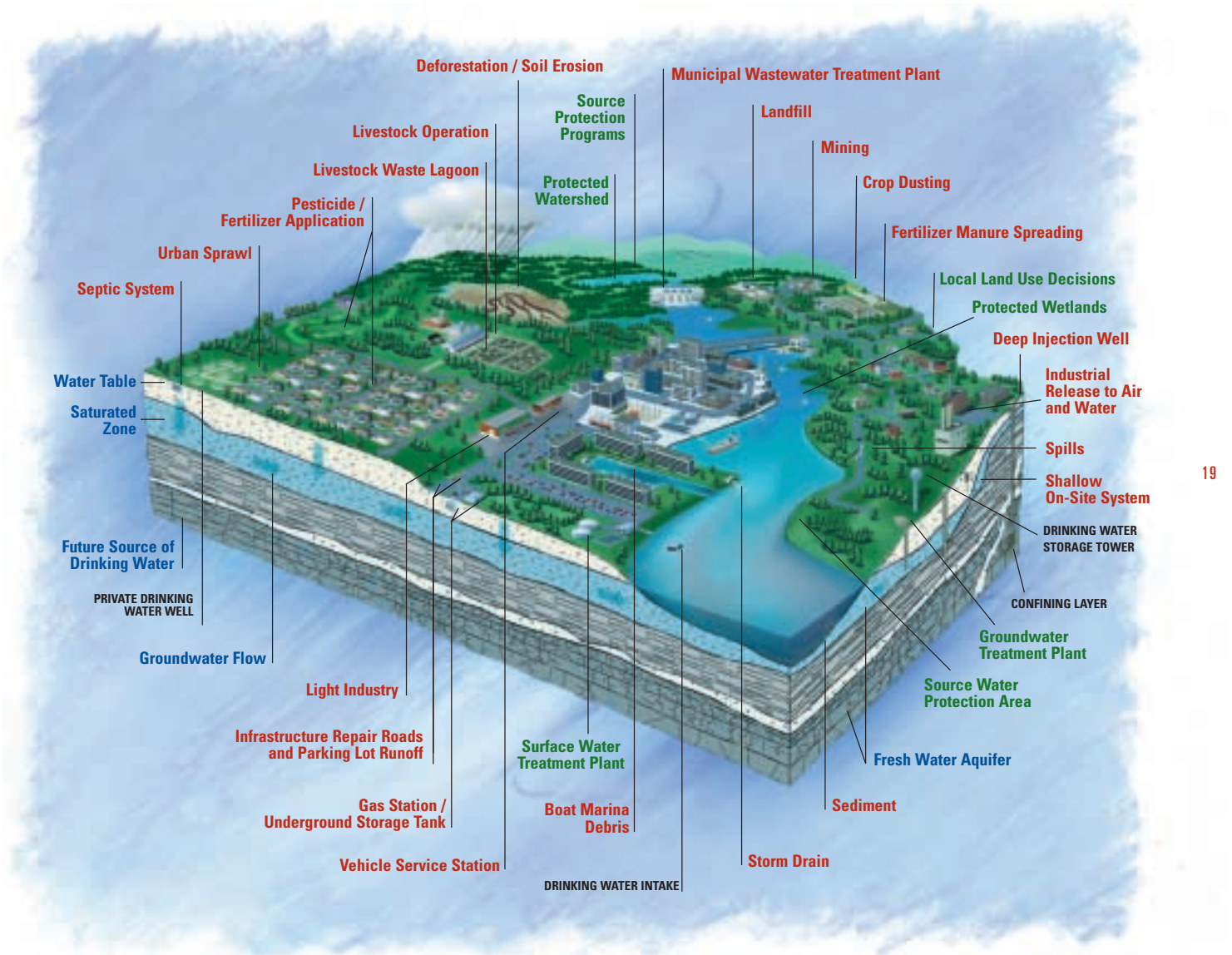
Nova Scotia’s multiple-barrier water management system is comprised of three main lines of defence. Some of the methods used in this barrier defence system strengthen measures that have been in place for a while, whereas others are being introduced for the first time.

The first barrier is **“Keeping Clean Water Clean.”** Simply put, this involves various programs to prevent contaminants from entering drinking water sources in the first place. This is achieved by selecting the purest sources of water and protecting these sources to prevent their contamination.

The next main line of defence – **“Making it Safe”** – involves various steps to remove natural or man-made impurities. This is achieved by determining what impurities are present in the water supply, installing adequate treatment methods to remove the impurities, including disinfection to inactivate micro-organisms, and effective operation of the treatment facility and distribution system.

# Multiple-Barrier Approach

## TO DRINKING WATER PROTECTION



Source: U.S. Environmental Protection Agency

Safe drinking water is essential to the health and wealth of Nova Scotians. However, drinking water is vulnerable to contamination from many potential threats. There are programs and activities that, when operated effectively, form a protective web

of multiple barriers to protect the safety of our drinking water. The success of these barriers relies on the involvement and vigilance of all stakeholders — government, business, public interest groups, and individual citizens.

**BLUE** surface and groundwater sources of drinking water

**RED** potential threats or risks to those drinking water sources

**GREEN** the multiple barriers that together protect our sources and our health



**“The Town of Bridgewater saw the need for leadership to provide safe, clean drinking water to its residents and moved quickly ahead in the building of a new \$8 million, state-of-the-art water treatment plant. As a result, Bridgewater can now boast some of the best water in Canada — a proud accomplishment for our Town. Good water is a must for all. We look forward to working in partnership with the province to ensure the highest water quality.”**

**Ernie Bolivar**

*Mayor, Bridgewater*

The final step in an effective multiple-barrier drinking water protection strategy is **“Proving it’s Safe.”**

This entails developing stronger monitoring programs and taking swift, corrective action when deficiencies are identified.

The multiple-barrier approach has always been the hallmark of the Halifax Regional Water Commission. The Lake Major and Pockwock Lake watersheds are designated as Protected Areas under the *Environment Act*. The Lake Major water treatment plant is a new facility with coagulation, sedimentation, filtration, and disinfection, whereas the Pockwock water treatment plant is a direct filtration plant without the sedimentation process.

The Town of Bridgewater also uses the multiple-barrier approach. Their watersheds (Hebb, Leipsigate, and Minamkeak Lakes) are designated as Protected Water Areas under the *Environment Act*. The new water treatment plant is a state-of-the-art facility.

New Glasgow is another proud user of the multiple-barrier approach. The watershed (Forbes Lake) is in the process of being designated as a Protected Water Area under the *Environment Act*. The new water treatment plant is a model facility that uses coagulation, dissolved air flotation, filtration, and disinfection processes.

Water treatment plants (see “Cleaning Water” illustration – page 23) remove impurities from source water, inactivate and remove bacteria, viruses, and protozoa, and other organics to improve colour, taste, and odour. Plant operators are certified in conformance with the requirements of the Nova Scotia Department of Environment and Labour.

Water testing is carried out as an integral part of the treatment process and throughout the distribution systems. Tests are carried out by independent laboratories (listed in Appendix C) with results sent to both the Nova Scotia Department of Environment and Labour and the owner to ensure compliance with regulatory requirements.

While we can be proud of the success of the multiple-barrier program in Nova Scotia, continued care and management of our water resources will require the participation from all levels of government, business and the public for all barriers in the system to be “water tight.”

### 3. Inter-Departmental Drinking Water Management Committee

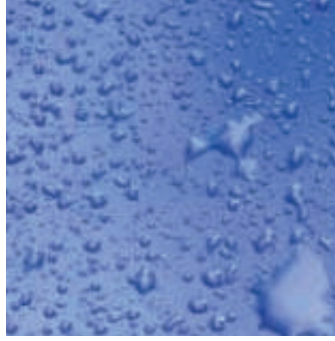
This strategy will be managed and implemented through a senior level **Inter-Departmental Drinking Water Management Committee**. The Department of Environment and Labour will be the lead agency, with participation from other provincial departments.

#### The committee will:

- regularly review and update the strategy as issues are addressed and resources are made available for new and expanded initiatives
- assess the need to adjust actions to ensure that objectives are being met
- identify and work to address the next steps required to effectively manage all water resources in Nova Scotia, such as water availability issues for the agricultural sector and water resource stewardship programs

*The Terms of Reference for the committee are provided in Appendix D.*

# Action Plan



This section of the strategy outlines a three-year plan to address the challenges we face in managing our drinking water from source to tap. Our action plan complements and builds upon the extensive programs, policies, and strategies that already exist. The plan also complements and supports the roles and responsibilities of other partners, especially municipalities and private well owners.

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This action plan will result in a sustainable water management system for generations to come. It will foster partnerships, allowing us to make the wisest use of limited resources. And it will ensure that all Nova Scotians know and understand the role they play in conserving and managing our most valuable resource – water.

The following action plan highlights some of the main components in each of the three stages of our multiple-barrier water strategy. The plan will be implemented by the Department of Environment and Labour through the new Inter-Departmental Drinking Water Management Committee.



## “Keeping Clean Water Clean” Source Protection

The Department of Environment and Labour, working in concert with other departments that make up the Inter-Departmental Drinking Water Management Committee, will:

- continue to work with municipalities to develop or strengthen their drinking water protection plans. Such plans may include establishing watershed management plans, municipal planning strategies and land use by-laws, and designations for Protected Water Areas
- endorse farmers’ efforts to develop nutrient management plans (the storage and spreading of chemical and natural fertilizers) to protect watersheds
- educate home realtors and private well owners about the province’s well construction standards and how poorly operating septic systems degrade well water quality

## “Making Water Safe to Drink” Water Treatment and System Operation

The committee will partner as required with outside parties to develop and deliver public education programs to encourage private well owners and public water system owners to:

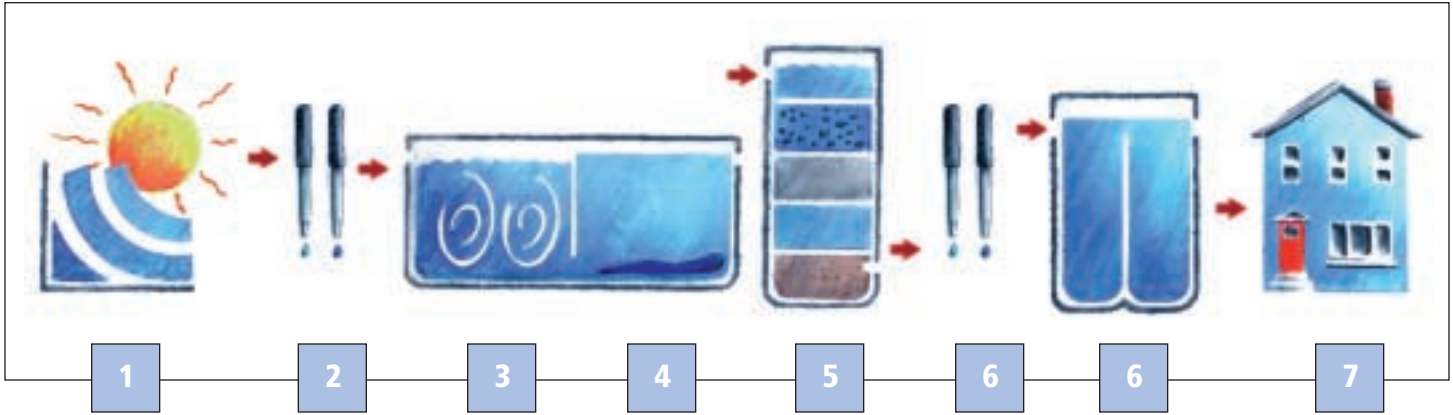
- implement treatment methods based on an assessment of the quality and unique characteristics of the source water (i.e. to assess the quality of the water before treatment methods are prescribed)
- devise customized water testing and monitoring plans that address the unique quality of their source water and their water treatment facility

- optimize their facilities to make the best use of existing resources
- upgrade their facilities where water quality standards are not being met
- recognize the value of clean, safe drinking water; to encourage a shift in attitudes from the commonly held opinion that safe drinking water is an inherent right, to water as a valuable, limited resource

### **In addition, the Department of Environment and Labour will:**

- continue to participate in the development of provincial and national drinking water guidelines and standards
- renew and standardize all municipal water system approvals to verify that each system is technically capable of achieving current environmental standards
- require water treatment plant and water distribution system operators to attain specific education requirements and establish a renewal process for certification
- prepare additional information materials on well construction and maintenance for private well owners
- develop a public information campaign to inform Nova Scotians about their roles and responsibilities to conserve and protect drinking water

# Cleaning Water



Source: Ontario Clean Water Agency

**1 Water Intake**

For surface water supplies, the water intake pipe extends into the lake or river supplying water to the facility. Groundwater facilities have water pumped directly from a well.

**2 Chemical Storage and Feeding**

Chlorine can be added to the incoming water to kill micro-organisms. For many groundwater supplies, this is the extent of the treatment. A coagulant, such as alum, may be added to concentrate suspended particles such as silt to aid their removal. Lime may be added to change the pH level if required. These chemicals are mechanically mixed into the water before moving on to the flocculating basin.

**3 Flocculating Basin**

The flocculating basin stirs the water to concentrate suspended particles. The clumps of particulate that form are known as “floc.”

**4 Clarification Basin**

Some facilities use sedimentation basins. Heavy flocs drop out of the water in the settling tank and collect along the bottom. The cleanest water is left at the surface to be drawn off through spillways, which lead to filtering basins. Other plants use dissolved air flotation. In this case, lighter flocs are floated to the surface and skimmed off the surface of the water.

**5 Filtration**

The water is already quite clear by the time it reaches the filters. The most common type of filter is the dual media rapid sand filter. These filters consist of stacked layers of fine sand, gravel, and rocks that remove fine bits of floc, algae, and silt. Some facilities also use greensand filters to

remove iron and manganese. Other filtration options include membranes, cartridge filters, and pressure filters.

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**6 Disinfection and Storage**

After filtration, safe levels of chlorine are added to control the growth of algae and micro-organisms. The treated water may go into holding basins before distribution. Lime may also be added to control the pH level of the water. This protects the metal components of the distribution system from corrosion.

**7 Distribution**

The treated water is tested regularly to ensure quality. Large holding tanks may store the water until it is needed in peoples’ homes.

**“Proving it’s Safe”  
Water Monitoring and Testing**

The Department of Environment and Labour will:

- monitor compliance by public drinking water supply owners with the testing requirements
- develop and implement standard enforcement and reporting protocols
- undertake audits of municipal and small public drinking water systems
- increase enforcement of all approval conditions that protect water supplies
- educate well owners on the importance of regular water quality testing for their personal supply

# Action Plan

## ACTION PLAN FOR THE DRINKING WATER STRATEGY

2002 2003 2004 2005

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 <p>S P R I N G</p>		<p>Prioritize municipal drinking water supply areas requiring protection plans.</p> <p>Identify operator training needs.</p> <p>Work with municipalities to have System Assessment Reports submitted by April 2004.</p>	<p>Work with municipalities and industry to research and develop municipal land use controls and best management practices (BMPs) for land uses of concern to protect water supply areas.</p> <p>Receive System Assessment Reports from municipal water systems.</p>	<p>Work with municipalities to have comprehensive water supply protection strategies in progress for all water supply areas.</p> <p>Work with municipalities to have comprehensive treatment and operational strategies in place for all municipal water supplies.</p>
 <p>S U M M E R</p>		<p>Work with municipalities to begin updating/developing new protection plans for priority water supply areas.</p>	<p>Conduct review of the voluntary optimization program for water treatment facilities to improve treatment plant operation and performance.</p>	

# 2002 2003 2004 2005



F A L L

Roll-out Drinking Water Strategy to municipalities and other stakeholders.

Initiate assessment of all municipal drinking water supply area protection plans.

Initiate a review of facility classification requirements for all water treatment facilities.

Complete the registration process for small public water systems.

Advise municipalities of Approvals Renewal initiative.

Develop a program for compliance monitoring of public drinking water systems.

Facilitate necessary operator training.

Implement a program for compliance monitoring of public drinking water systems.

Ensure that certification and qualification of water treatment facility operators is in place to meet regulatory requirements.



W I N T E R

Initiate a voluntary process optimization program for water treatment facilities to improve treatment plant operation and performance.

Develop a handbook and orientation program for municipal councillors and public utilities who oversee the management of the water utility, including operators.

Develop and implement standard enforcement and reporting protocols.

Develop additional public outreach information and materials for private well owners.

Develop additional public outreach information for municipal and small public water systems.

Develop additional public outreach information and materials for private well owners.



**And since water is everyone's concern,  
we all have a part to play in conserving and  
protecting this precious resource.**

A C T I O N



C O M M U N I T Y

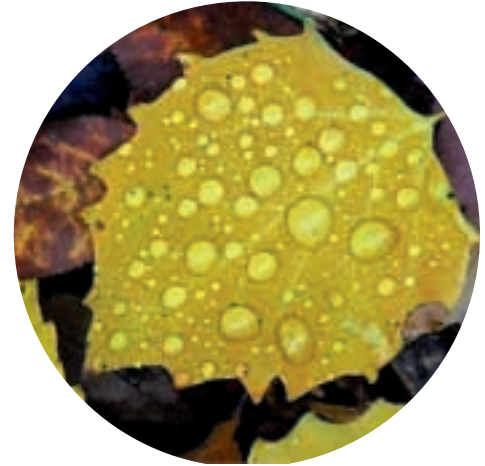


C O N C E R N



# Concluding Remarks

This strategy summarizes our plan to conserve and protect drinking water in Nova Scotia. The main elements of our strategy are the barriers that have been discussed: Keeping Clean Water Clean, Making it Safe, and Proving it's Safe. These elements are supported by the clear assignment of roles and responsibilities, effective regulation, and strict enforcement.



Some actions can be initiated quickly while others require more time. Our three year action plan – as outlined in this document – allows the province to bring greater focus and consistency to its dealings with water issues.

And since water is everyone's concern, we all have a part to play in conserving and protecting this valuable resource. **We look forward to working with you!**

**For more information about this strategy contact**

Nova Scotia Department of Environment and Labour  
Water and Wastewater Branch  
5151 Terminal Road  
PO Box 697, Halifax, Nova Scotia B3J 2T8  
Phone: 902-424-5300

For more information about drinking water, visit our Clean Water Watch website at [www.gov.ns.ca/enla/rmep/h2o.htm](http://www.gov.ns.ca/enla/rmep/h2o.htm)

# Appendix A

## Current Government Initiatives Relevant to the Drinking Water Strategy

INITIATIVES	COMMENTS
<p><b>Source Water Protection</b></p>	<ul style="list-style-type: none"> <li>• <i>Statement of Provincial Interest Regarding Drinking Water</i> – requires municipalities to restrict inappropriate development in municipal water supply watershed that may threaten drinking water quality.</li> <li>• <i>Designing Strategies for Water Supply Watershed Management in Nova Scotia</i> – this document provides guidance to municipalities to develop comprehensive water supply protection strategies.</li> <li>• Prepared a model municipal planning strategy and land use by-law for municipal drinking water areas.</li> <li>• Designation of a Protected Water Area – designation is one possible component of a watershed management strategy. Once the designation has been approved by the Minister of Environment and Labour, the water utility is responsible for posting signs and protecting the water supply area.</li> </ul>
<p><b>Water Treatment Plants and Water Distribution Systems</b></p>	<ul style="list-style-type: none"> <li>• Mandatory classification of facilities and certification of operators</li> <li>• Extensive plant upgrades in last five years and ongoing</li> <li>• Training needs assessment for operations and certification</li> <li>• Operations monitoring programs, including standard operating procedures and contingency plans</li> <li>• Facility self-assessment programs</li> </ul>
<p><b>Rural Well Water Quality Awareness</b></p>	<ul style="list-style-type: none"> <li>• Encourage residents to sample their water supplies, maintain their wells to reduce the risk of contamination, and contact the Department of Environment and Labour for assistance.</li> <li>• <i>Before You Construct a Water Well: Facts a Homeowner Should Know</i> – first published in 1968; sixth revision released 2001; seventh revision in progress.</li> </ul>

INITIATIVES	COMMENTS
<p><b>Laboratories Conducting Water Quality Testing</b></p>	<ul style="list-style-type: none"> <li>• Must be certified to conduct water quality testing</li> <li>• Must sign a Memorandum of Understanding with the Department of Environment and Labour to confirm their commitment to provide services consistent with national and international performance standards, and to immediately notify the department of any positive results in accordance with the <i>Guidelines for Monitoring Public Drinking Supplies</i>.</li> </ul>
<p><b>Audits</b></p>	<p>All municipal water systems:</p> <ul style="list-style-type: none"> <li>• June 2001</li> <li>• November 2001</li> <li>• July 2002</li> </ul>
<p><b>Experts Hired</b></p>	<ul style="list-style-type: none"> <li>• Supervisor, Drinking Water Program (May 2002)</li> <li>• Watershed Planners (2 – June 2002)</li> <li>• Water Treatment Facility Specialist (April 2002)</li> <li>• GIS/Database Management Specialist (December 2001)</li> <li>• Water Monitoring Technician (January 2002)</li> <li>• Hydrogeologists (2 – March 2002, 2 - in progress)</li> <li>• Inspectors (4 – Fall 2001)</li> </ul>
<p><b>Standards</b></p>	<ul style="list-style-type: none"> <li>• <i>Guidelines for Canadian Drinking Water Quality</i> adopted as regulation.</li> <li>• Ongoing participation on the Federal/Provincial/Territorial committee to develop water quality standards</li> <li>• Minimum treatment standards for surface water, groundwater, and groundwater under the direct influence of surface water</li> </ul>
<p><b>Technology</b></p>	<ul style="list-style-type: none"> <li>• Facilitate the development of made-in-Nova-Scotia, cost-effective drinking water systems.</li> </ul>
<p><b>Financial Commitment</b></p>	<ul style="list-style-type: none"> <li>• Financial assistance for capital improvement projects under Provincial Capital Assistance Program and Canada/Nova Scotia Infrastructure Program.</li> <li>• Municipal drinking water supply areas – Planning Assistance Program.</li> </ul>



# Appendix B

## A Guideline for the Private Well Owner

### When Constructing, Modifying, or Abandoning a Well

- Hire a certified contractor for any new well construction or existing well modification.
- Slope the area around the well to drain surface runoff away from the well.
- When abandoning a well, hire a certified well contractor to fill or seal the well in a manner approved by the Department of Environment and Labour.

### Preventing Problems

- Install an approved vermin-proof cap to prevent entry of undesirable materials into the well.
- Do not mix or use pesticides, fertilizers, herbicides, degreasers, fuels, and other pollutants near the well.
- Never dispose of wastes in abandoned wells.
- Pump and inspect septic systems as often as recommended by the Department of Environment and Labour.
- Never dispose of hazardous materials in a septic system.
- Take care in working or mowing around your well.

### Maintaining Your Well

- Each month check visible parts of your system for problems such as:
  - cracking or corrosion
  - broken or missing well cap
  - settling and cracking of surface seals
- Have your well water quality tested regularly.
- Keep accurate records in a safe place, including:
  - construction contract
  - well and pump installation records
  - maintenance records, such as disinfection, sediment removal, and pump repair or replacement
  - any use of chemicals in the well
  - water quality test results

### Testing Your Well Water

- Test the bacteriological quality of your well water every six months.
- Test the chemical quality of your well water every one to two years, or earlier if you notice any changes in clarity, colour, taste, or odour.
- Sample your well water when the probability of contamination is greatest – after heavy rainfalls, spring floods, or lengthy periods of non-use.
- Carefully follow all instructions for taking a sample and use an accredited laboratory to have the sample analysed.

## What Do the Results Mean?

The laboratory will report the presence or absence of total coliform bacteria and E. coli. If the test indicates total coliform and/or E. coli are present, resample the well in case the sample was contaminated during collection.

While waiting for the results of the second sample, use bottled water or another alternative for any activity involving human consumption, including washing fruits and vegetables and brushing teeth.

If the results of the second sample still indicate bacteria present, continue to use an alternative source for human consumption and investigate the cause.

The chemical quality of water reflects the type of material in the ground and how long the water has been in contact with the material.

The following parameters are recommended for a complete chemical analysis:

- **Basic Chemical Parameters...**sodium, potassium, calcium, magnesium, hardness, alkalinity, sulfate, chloride, silica, orthophosphate, nitrate plus nitrate-nitrogen, ammonia-nitrogen, iron, manganese, copper, zinc, colour, turbidity, specific conductance, pH, dissolved organic carbon
- **Additional Recommended Parameters...**arsenic, uranium, lead, fluoride
- **Specialized Parameters...**To test for natural radioactivity, the following parameters are recommended: Total Uranium, Radium-226, Lead-210.

Many additional tests are available. Such tests may require special containers and sampling procedures. If you have a specific concern, you should discuss it first with the Department of Environment and Labour, the laboratory, or a trained professional.

Most laboratories offer various package prices that include most of the basic parameters and/or metals; the packages may be cheaper than individual tests and will usually provide more information. Currently, the cost for total coliform bacteria and E.coli testing is approximately \$20 per test. The cost for chemical analysis testing can range from \$150 to \$300.

## After a Flood – Concerns and Advisories

- Stay away from the well pump while flooded to avoid electric shock.
- Do not drink or wash from the flooded well.
- Get assistance from a well or pump contractor to clean and turn on the pump.
- After the pump is turned back on, pump the well until the water runs clear to rid the well of flood water.
- Disinfect the well and test for bacteriological quality after the disinfectant has been flushed out of the system.
- If the water does not run clear, or disinfection is not effective, get advice from the Nova Scotia Department of Environment and Labour.

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## For more information

- Get a copy of our guide entitled *Before You Construct a Water Well: Facts a Homeowner Should Know* from our website <http://www.gov.ns.ca/enla/rmep/h2o.htm> or your local office of the Department of Environment and Labour.

Fall 2002



# Appendix C

## Water Testing Labs in Nova Scotia

Region	Name/Address of Lab	Phone/Fax	Microbiological	Chemical
Northern	<b>Colchester Regional Hospital</b> 207 Willow Street Truro, Nova Scotia B2N 5A1	PHONE (902) 893-5517 FAX (902) 893-5527	YES	NO
	<b>BioScan Analytical Services</b> 571 Prince Street Truro, Nova Scotia B2N 1G2	PHONE (902) 893-2265 FAX (902) 893-2265	YES	YES
	<b>Nova Scotia Department of Agriculture &amp; Fisheries</b> Harlow Institute, College Road Bible Hill, Nova Scotia B2N 5E3	PHONE (902) 893-6600 FAX (902) 893-4193	YES	YES
	<b>Highland View Hospital</b> 110 Pleasant Street, East Amherst, Nova Scotia B4H 1N6	PHONE (902) 667-5400 EXT. 6139 FAX (902) 667-6304	YES	NO
	<b>Aberdeen Hospital</b> 835 East River Road New Glasgow, Nova Scotia B2G 3S6	PHONE (902) 752-7600 EXT. 2860/ 2810 FAX (902) 752-1931	YES	NO
Central	<b>Environmental Services Lab</b> QE II Health Sciences Centre 5788 University Avenue Halifax, Nova Scotia B3H 1V8	PHONE (902) 473-8466 FAX (902) 473-4418	YES	YES
	<b>Philip Analytical Services Inc.</b> 200 Bluewater Road Bedford, Nova Scotia B4B 1G9	PHONE (902) 420-0203 FAX (902) 420-8612	YES	YES

Region	Name/Address of Lab	Phone/Fax	Microbiological	Chemical
Eastern	<b>Environmental Services Laboratory Inc.</b> P.O. Box 897 Sydney, Nova Scotia B1P 6J1 <i>(located on the Sydney/Glace Bay highway, on the Marconi Campus behind the UCCB)</i>	PHONE (902) 567-1255 1-888-535-7770 FAX (902) 539-6504	YES	YES
	<b>Cape Breton Health Care Complex</b> 1482 George Street Sydney, Nova Scotia B1P 1P3	PHONE (902) 567-8000 FAX (902) 567-7947	YES	NO
	<b>St. Martha's Hospital</b> 25 Bay Street Antigonish, Nova Scotia B2G 2G5	PHONE (902) 863-2830 FAX (902) 863-3708	YES	NO

Western	<b>South Shore Regional Hospital</b> 90 Glen Allan Drive Bridgewater, Nova Scotia B4V 3S6	PHONE (902) 543-4603 EXT. 2285 FAX (902) 543-1562	YES	NO
	<b>Nova West Laboratory Ltd.</b> 40 Schoolhouse Road Grosses Coques, Digby County Mailing address: PO Box 39 Saulnierville, Nova Scotia B0W 2Z0	PHONE (902) 837-5143 FAX (902) 837-7456	YES	NO
	<b>Valley Regional Hospital</b> 150 Exhibition Street Kentville, Nova Scotia B4N 5E3	PHONE (902) 678-7381 EXT. 1085 FAX (902) 679-1765	YES	NO
	<b>Yarmouth Regional Hospital</b> 50 Vancouver Street Yarmouth, Nova Scotia B5A 2P5	PHONE (902) 742-3541 FAX (902) 749-1576	YES	NO

# Appendix D

## Draft Terms of Reference – Inter-Departmental Drinking Water Management Committee

### Approach

The Drinking Water Strategy is based on the recognition that individual Nova Scotians, as well as all levels of government, have responsibilities in drinking water management. This view is carried forward in these proposals for implementation, both in terms of organization and reporting, and in terms of the design and participation in the individual components of the strategy. Specific actions and timelines are included (see Action Plan, page 24). While the Department of Environment and Labour (DEL) retains primary responsibility for the successful completion of the strategy, individual outcomes may be the responsibility of others.

### Organization

1. An Inter-Departmental Drinking Water Management Committee, at the senior management level, will be established to oversee implementation of the strategy. Proposed membership by department is attached.
2. The strategy will be coordinated by DEL staff. Progress on implementation will be managed by the Inter-Departmental Committee, and direction and support requested.
3. The Inter-Departmental Committee will ensure that critical paths for the priority subject areas are maintained.

4. At the end of the third year, the Inter-Departmental Committee will review results achieved and recommend future action required to the departments responsible.
5. The committee will appoint coordinators to complete specific tasks, as well as work related to data collection, compiling, analysis, etc.

### Coordinators

1. Coordinators are accountable for all project management activities related to implementing their priority subject area within the strategy consistent with the actions and timelines given.
2. Leadership on individual components of these activities may devolve to other provincial departmental staff and other DEL staff, but the coordinator will be held accountable for results. The coordinator is accountable for the overall integration of the various actions in their priority subject area and in communicating the results desired by the Inter-Departmental Committee to the individuals concerned.
3. The coordinator will maintain and update a critical path for their component of the strategy and will report on this to the Inter-Departmental Committee.

H E A L T H



S A F E T Y



S E C U R I T Y



**Inter-Departmental Drinking Water Management Committee**  
**Chair – Deputy Minister, Department of Environment and Labour**

**Departmental Involvement/Membership:**

1. Health
2. Service Nova Scotia & Municipal Relations
3. Natural Resources
4. Agriculture and Fisheries
5. Environment and Labour
6. Transportation and Public Works
7. Tourism and Culture

Secretariat: Manager, Water  
and Wastewater Branch, DEL



COMMITMENT

# Glossary

**Certified Laboratories** – Facilities accredited by the Standards Council of Canada or equivalent. Certified laboratories are required to maintain an acceptable standard in a proficiency testing program conducted by the Canadian Association for Environmental Analytical Laboratories or equivalent.

**Impurities** – Chemical, physical and/or bacteriological substances in water that may occur because of human activity or by natural means, and have been determined to be at a concentration level which requires treatment or other measures to remove or reduce the substance to an acceptable concentration. For example, impurities such as iron (chemical), particulate matter like sand (physical) and/or E.coli (bacteriological) must all be reduced or removed prior to reaching a consumer.

**Riparian Zone** – A transitional zone bordering the edge of lakes, rivers, streams, ponds, and wetlands where water-tolerant vegetation changes to upland species. Depending on the type of stream or wetland and the nature of the surrounding land, the riparian zone may vary from an abrupt edge to a wider, more structured, zone of vegetation. Riparian zones are an integral part of healthy streams and wetlands throughout Nova Scotia.

**Small Public Water Systems** – Publicly or privately owned systems that have at least 15 service connections or the capacity to serve 25 or more individuals per day at least 60 days of the year. Examples include systems serving rural schools, day cares, nursing homes, restaurants, campgrounds, trailer parks, etc.

**Source Water** – Water which is a source of supply for various uses, including drinking water. Water supply sources include surface water (those naturally open to the atmosphere such as rivers, lakes, reservoirs, impoundments, streams, etc.) and also groundwater (water found beneath the surface supplying wells). The different sources have different characteristics and qualities, and require different treatments to make them safe and appealing for human consumption.

**Walkerton Inquiry** – An investigative commission established by the government of Ontario on June 13, 2000 to determine the circumstances surrounding the water-related illnesses and deaths in Walkerton, Ontario. The inquiry also determined causes and made findings and recommendations to ensure the future safety of Ontario's drinking water.

**Watershed Community** – People who own land, live, work, and play near a water supply area. By virtue of their location, members of a watershed community are stewards of the water supply and have a vested interest in protecting the local environment and the water source that serves them and the community at large.



Nova Scotia  
**Environment and Labour**

**Environmental Monitoring & Compliance Division**

**Northern Region – Truro**

P.O. Box 824  
Truro, Nova Scotia B2N 5G6  
44 Inglis Place, 2nd floor, Suite 3  
Truro, Nova Scotia B2N 4B4  
PHONE (902) 893-5880 FAX (902) 893-0282

**Northern District – Amherst**

32 Church Street  
Amherst, Nova Scotia B4H 3A8  
PHONE (902) 667-6205 FAX (902) 667-6214

**Northern District – Antigonish**

Kirk Place  
219 Main Street, Suite 205  
Antigonish, Nova Scotia B2G 2C1  
PHONE (902) 863-7389 FAX (902) 863-7411

**Northern District – Pictou**

P.O. Box 675 (Middle River Pump Station)  
New Glasgow, Nova Scotia B2H 5E7  
PHONE (902) 396-4194 FAX (902) 396-4765

**Central Region – Bedford**

1595 Bedford Highway, Suite 224  
Bedford, Nova Scotia B4A 3Y4  
PHONE (902) 424-7773 FAX (902) 424-0597

**Central District – Sheet Harbour**

P.O. Box 35  
Fire Hall, 22835 Highway #7  
Sheet Harbour, Nova Scotia B0J 3B0  
PHONE (902) 885-2462 FAX (902) 885-2743

**Eastern Region – Sydney**

P.O. Box 714  
295 Charlotte Street  
Sydney, Nova Scotia B1P 6H7  
PHONE (902) 563-2100 FAX (902) 563-2387

**Eastern District – Port Hawkesbury**

400 Reeves Street  
Unit 126  
Port Hawkesbury, Nova Scotia B9A 2R5  
PHONE (902) 625-0791 FAX (902) 625-3722

**Western Region – Kentville**

136 Exhibition Street  
Kentville, Nova Scotia B4N 4E5  
PHONE (902) 679-6088 FAX (902) 679-6186

**Western District – Bridgewater**

60 Logan Road  
Bridgewater, Nova Scotia B4V 3J8  
PHONE (902) 543-4685 FAX (902) 527-5480

**Western District – Middleton**

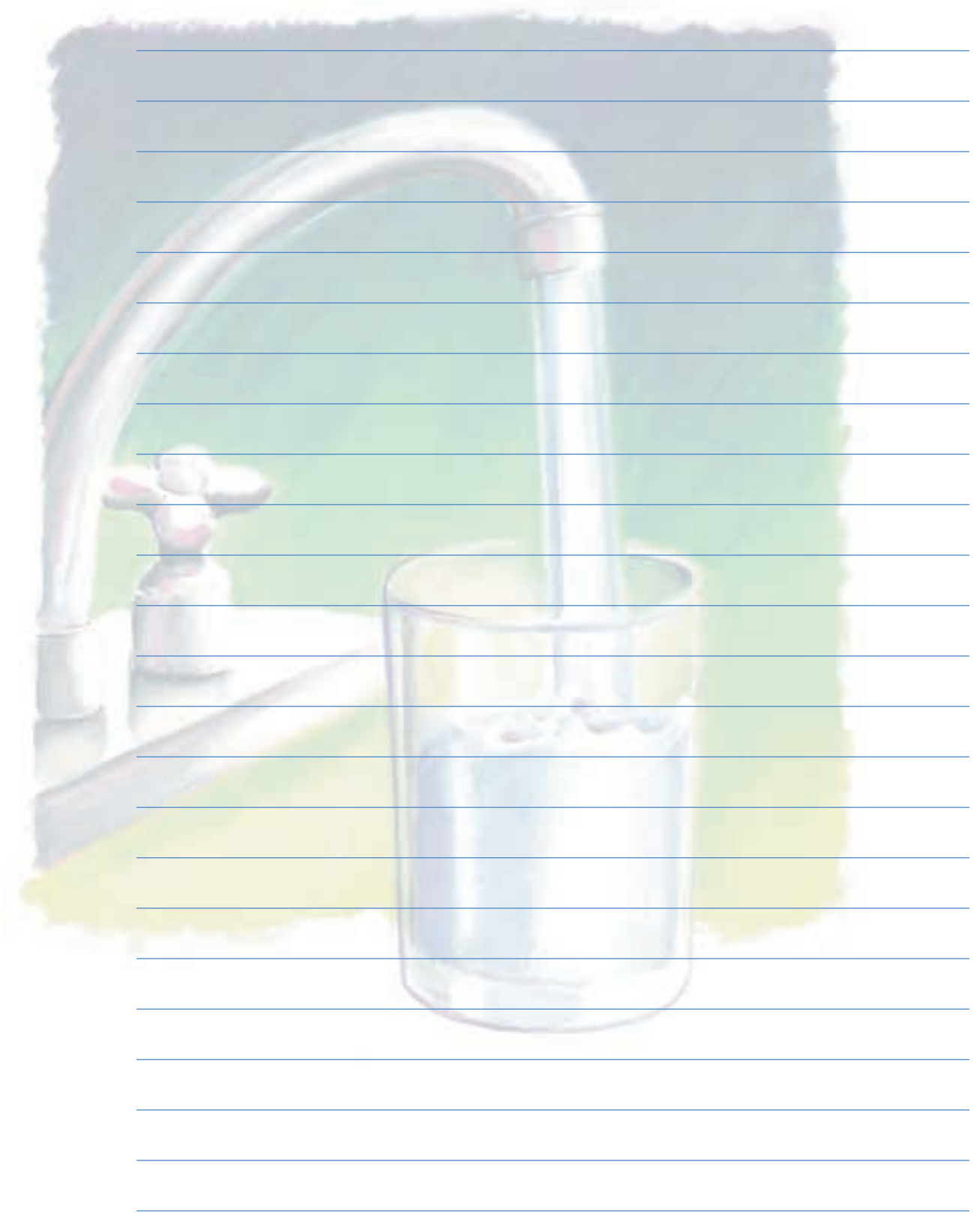
142 Commercial Street  
P.O. Box 1240  
Middleton, Nova Scotia B0S 1P0  
PHONE (902) 825-2123 FAX (902) 825-4471

**Western District – Yarmouth**

13 First Street  
Yarmouth, Nova Scotia B5A 2S9  
PHONE (902) 742-8985 FAX (902) 742-7796



# Notes





**Environment and Labour**

**Nova Scotia Department  
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