Submissions to the 2008 water strategy public consultation process

NOVA SCOTIA

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Introduction

In 2007, the *Environmental Goals and Sustainable Prosperity Act* (EGSPA) was passed unanimously by all political parties in the Nova Scotia Legislature. EGSPA s
on a course to be a world leader by having one of the cleanest and most su
environments by 2020. It brings together key government objectives to improve air, land and water quality and to address climate change. The development of a comprehensive water resource management strategy by 2010 is one of those targets.

In early 2008, Nova Scotia Environment released a discussion paper called *Towards a Water Resource Management Strategy for Nova Scotia* which formed the basis for 14 public consultation sessions around the province regarding the content of the Water Resource Management Strategy. The results of these public consultation sessions were compiled in a summary document called *What We Heard: A Public Feedback Report*. This report contains the original, verbatim comments submitted by members of the public during these public consultations. Codes are provided to identify submissions from Individuals, Associations or Organizations, Businesses, Professionals, Municipalities, and Others.

CODES I = Individual A/O = Association or Organization B = Business P = Professional M = Municipal O = Other

Code	Name	Comments
A/O	Atlantic Salmon Conservation Organization	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Good water quality and temperatures to protect native species of salmon and trout. Safe reliable drinking supplies Proper sewage disposal to protect people and the environment *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Protect watersheds to allow for maximum water storage. Reduce or eliminate development along lakes and water courses. Strict enforcement of safe water quality regulations. Have a Nova Scotia First policy for water use, i.e. no selling of water until NS needs are met. Protect more lake areas *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Try living on a dug well during the dry part of the summer. I do and it means no car washing, no lawn watering, use of water efficient appliances and bathroom fixtures. These are things my family and I do now. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Money has to come from the tax base. Also, large users of water should pay more. Those who make efforts to reduce their water use should be rewarded with a lower fee rate. Maybe make a several tiered water use system with higher rates as you use more water. Money should go to develop and encourage wise use of water resources, recycling of water, protection of watersheds and watercourses.
A/O	Aylesford and Loon Lake Property Owners Association: Chairman	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Water quality in our lakes and protection of our watersheds. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?*

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		Encourage conservation through public education, starting at the grade school level. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Always open to new ideas and technologies *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* General taxes. Possibly user fees. Look to more volunteer groups to provide stewardship. Involve people to generate interest. Look at private business to take guardianship of wilderness areas. This would give them good PR and solve some money issues. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* Presentation enclosed: Kings County Council should be commended for the Volunteer Lake Monitoring Programme. The province should provide funding to establish similar initiatives throughout the province. NSE must take a more forceful leadership role and become pro-active and not re-active. Policies and guidelines should always be based on the public's environmental welfare and not on political expedience or how much money the Province stands to make or lose. Province must protect more fresh water lake shorelines under their mandate to achieve 12% ownership of our land mass by 2015. The set-off distances that are presently in effect for clear cutting near water bodies and water courses must also be increased substantially to prevent the risk of run-off from rotting logging debris and chemical sprays that are presently sanctioned by our DOE. More stringent controls on waterfront development are required. We need to develop with wisdom and fore-thought. Water quality concerns must always trump development. Our past follies have shown us time and again that once something is lost it is seldom regained. NSE must monitor facilities such as hydro-generating industry with more diligence and evolve their operations and methodology from 20th century philosophy to 21st century necessity. Lip service will not suffice. Province must start an educational program of awareness aimed at the general public with emphasis at grade school level. **Presentation to a Public Forum o water quality: (Kentville Fire Hall 17 Apr 2008)** KINGS County Council should be commended for the excellent leadership and stewardship that they have undertaken

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		through their Volunteer Lake Monitoring Programme. I personally have been a volunteer member of this programme for the past 11 years. The province should provide funding to establish similar initiatives throughout the Province. Provincial funding should also be considered for Kings County so they may refine and expand their programme. The general public feeling in my are is that the Department of Environment must take a more forceful leadership role and become pro-active and not re-active. Policies and guidelines emanating from the department should always be based on the public's environmental welfare and not on political expedience or how much money the Province stands to make or lose. The Environment Department is our first and last defender and protector of the environment. The tax paying public should expect nothing less; the department must provide nothing less. The Province must protect more fresh water lake shore lines under their mandate to achieve 12% ownership of our land mass by 2015. Fancy cove on Ayelsford Lake in Kings County is a prime contender with near old growth forests and fine examples of Acadian forest composition. These protective measures are necessary so as to maintain an acceptable balance in fresh water quality, the lake environment and the lake eco-system. The set-off distances that are presently in effect for clear cutting near water bodies and water courses must also be increased substantially to prevent the risk of run-off from rotting logging debris and chemical sprays that are presently sanctioned by our Environment Department. More stringent controls on water front development are required. This means more follow-up will also be required to ensure adherence. I am not advocating reducing development, because I live in a lake and it is my feeling that every Nova Scotian should have a similar opportunity to do so. But if we are to guarantee that opportunity to future generations we need development our shore lands with wisdom and fore-thought within the framework of the aspirations of the present generation. I must however emphasize, that at the end of the day, water quality concerns must always trump development. Our past follies have shown us time and again that once something is lost it is seldom re-gained. Hydro generation, although readily accepted as a clean form of energy, has pitfalls because of the impact it can have on water quality due to erosions caused by constantly changing water levels. This in turn impacts on the eco-system of the water body. The Environment Department must monitor these facilities with more diligences and evolve

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		their operations and methodology from 20th century philosophy to 21st century necessity. Lip service will not suffice. The Provincial Government must start an educational programme of awareness aimed at the general public with emphasis at the grade school level. This is where you will find a captive audience who will lead and educate the next generation. Sometimes the start of major advances can be as simple as discouraging littering and mentioning that one shower a day is sufficient to maintain cleanliness. Essay contests on water quality would be a way of generating interest as would scholarships to students that are deemed by their peers to have contributed most to the advancement of water quality. This could be achieved through topical presentations by the students during the school year. In closing I would like to thank you for this opportunity to speak to you on this initiative. Forums such as this are an excellent way to generate public interest. Hopefully you will obtain valid and constructive ideas to implement policies that will put Nova Scotian's into the forefront of water quality management.
A/O	Citizen Action to Protect the Environment	**Introduction**: I am writing on behalf of CAPE (Citizen Action to Protect the Environment), a Hants County–based registered society. Many in our group are interested in a comprehensive water strategy for Nova Scotia, but were disappointed that a public consultation meeting on this most important natural resource was not held in Hants County. **Deforestation- Watersheds:** We strongly agree that we need to be proactive in preventing problems. Flooding and landslides were listed in the introduction as 'natural' emergencies. In many cases these can almost be predicted when large areas of forests have been clear-cut. The current Forest Sustainability Regulation incentives have resulted in over 95% of the silviculture carried out in the last five years supporting the clear-cut/ spray/ replant model of forest management. In our part of Hants County this practice has resulted in massive clear cuts that have diminished the forests in our watershed area. The majority of residents in this area depend on dug and drilled wells for their water. At this time there are still many healthy, functioning watersheds across the province. Financially it is to our advantage to find a way to protect these watersheds. As pointed out by Wilson in the GPI Atlantic's Water Quality Report (2000), "If we lose the benefits of natural, functioning ecosystems, not only do we lose habitat and species diversity, we

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		also have to cope with the loss in ecosystem services by investing in expensive waste treatment and water purification plants, and engineering projects to control erosion and flood damage." It is estimated that the cost to replace these services of forested watersheds, along with removing air pollutants, is $2750 per hectare per year. One way to encourage landowners to use forest practices that leave watersheds forested is to direct more of the silviculture incentives toward selection harvesting and uneven-aged forest management. With public money paying the full cost of silviculture programs for small woodlot owners for 2008 and 2009, this 'transition' money should be used for the type of forestry the public supports, and not clear cutting. We also may want to consider watershed incentives for agriculture and ecological forestry. New York State has a model that seems to be working well. As mentioned in the overview on water, we need to be cognisant of chemical contaminants, and limit our exposure to them. This is another reason that clearcuts that rely on the use of herbicide spray, such as Vision, should not be allowed, and certainly not supported with public money through incentives. Due to the lengthy process to formalize regulations, too often the regulations and guidelines that are followed are based on data that are 10 to 15 years old. We are all aware of situations where levels of certain substances were considered safe. Then, with advances in scientific information and testing it later became apparent that acceptable limits weren't stringent enough (e.g. levels of tritium in drinking water in Ont.) If we want to be confident that our water is safe for consumption, we need to be adamant in ensuring that effluent from mining is not allowed in our waterways. To demonstrate the value that we place on safe, secure water, companies that are interested in mining should be required to deposit sufficient funds prior to any activity, to adequately restore the water system, with inflationary costs included. Many in this area believe gypsum quarrying has already seriously damaged water quantity/quality. The risks or possible consequences of certain activities can be so devastating to our water supply and security that they should not be permitted. To realize that mining and milling of uranium would result in irreparable damage to our watershed area, one only has to look to the Serpent River Basin in Ontario. Residents in our area are calling for a legislated ban on uranium exploration and mining.

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A/O	CLC Sydney Wellfield since 1994. A victim of the Sydney Wellfield 1996/1997	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* The lack of protection for rural groundwater users against corporate or municipal users. To quote one municipal official: 'We can impact every well in the area as long as we give them a replacement.' There is no mention of well owner satisfaction. The department must establish a numerical ceiling for impacts in a given wellfield zone, beyond which no further increases or modifications will be tolerated. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* A diligent effort at waste reduction, much stricter regulation of bulk users; more stringent qualifications for those who would be groundwater experts"; an upgrading of the types of research necessary to establish new wellfields, i.e. use data loggers rather than weekly sampling of monitor well. All monitor wells should have periodic draw down/recovery tests submitted to DOE. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Before the Sydney Wellfield I had very high quality water from my 100' well. Sydney drained that supply. I now have a 150' replacement well and submersible pump. I am plagues by iron and manganese and now need an inline fitter. If I don't use water the iron level increases, so I periodically discharge water (into the garden in season) through a hose that bypasses the filter. That is not my fault. It is Sydney's. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* As a private well owner I would be willing to pay an annual $25 well license provided the province would guarantee that a fiasco like the Sydney Wellfield never happens again. The fact that the aquifer is up to 1/2 mile deep is no consolation to a well owner who draws from 200' or less, while the municipality draws from 350'. Some of the money should be used for research into the varying geologies and effects on ground water distribution.

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		Some hydrogeologists can't seem to grasp the concept of recharge rate. And some of the "Authorities" are not. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* In my opinion, the department has been lax in its responsibilities for monitoring and enforcement of municipal and corporate interests. They seem incapable of grasping the idea that rural residents have few alternatives for water supply, while the city of Sydney abandoned a good three lake and reservoir system that had never had proper filtration, and served the city adequately when its population was 30% larger and had numerous small commercial users. The flaws in the science supporting the wellfield became evident within a month of startup, but it developed that DOE was not monitoring during that time. It was some months before they upgraded the reporting to monthly. By then the damage was far along, and investment too heavy to back down. Too many people suffered stress and a few still have unsatisfactory replacement.
A/O	Clean Annapolis River Project	**Integration of Decision Making** The necessary structures must be put in place to ensure that watershed-scale decisions concerning water are made in an integrated manner. This would require that ground water, surface water and coastal waters (e.g. estuaries) are consider as interconnected systems. Water-related regulatory decisions within a level of government (e.g. between various departments) and across multiple levels of government (e.g. federal, provincial, municipal and First Nations) must be made in a coordinated and integrated manner. **Adoption a Watershed-Scale, Community-Based Approach** There is ample evidence to suggest that water resources are best managed at the scale of the watershed. Across the province of Nova Scotia, there are more than 40 community groups active at various levels in water monitoring, conservation and stewardship. These groups represent a tremendous potential resource that, if harnessed, could greatly extend the breadth and extent government water management efforts. In order for this to occur, a community-based, rather than top-down approach must be adopted. The residents and users of a watershed must be given the opportunity to have a voice in the establishment of priorities for that watershed and a hand in the actions to achieve these. Community based approaches have been shown to be a very cost-effective and efficient method for delivery government

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		initiatives. The adoption of such an approach would thus greatly extend government resources directed to watershed management. **Multi-stakeholder Governance Model** Multi-stakeholder fora have been shown to be very effective in dealing with complex environmental challenges, such as water. Watershed-scale governance structures incorporating a multi-stakeholder approach should be adopted, at a minimum, for Nova Scotia's major drainage basins. These bodies should be empowered with the mandate, resources, financial support and capacity to assess, monitor and manage individual watersheds. **Provincial-Scale Coordination Framework** In order to support the community-based approach, described above, the following actions at a provincial scale would be very beneficial: • Support the activities of provincial network of these groups, such as the Community-Based Environmental Monitoring Network • Provide a mentoring program for the establishment of new community groups, with advice on protocols, study design and information management • Support the incorporation of quality control/quality assurance procedures into monitoring programs • Develop and promote the adoption of scientifically robust, peer-reviewed protocols for water quality monitoring. • Develop data management structures to allow groups to better manage data internally and share data between groups and agencies. • Provide opportunities for these groups to have meaningful input into water-related decisions within their watershed. **Protection of Core Ecosystem Services** The provincial water strategy should incorporate the ecological integrity and protection of core ecosystem services provided by aquatic systems (e.g. flood mitigation, temperature regulation, dilution & dispersion of waste) as an essential requirement in the management of water resources. Allocation of water resources for other human uses should only be considered after these core ecosystem services are satisfied.

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		Demand Management and Soft Water Paths The provincial water strategy should place considerable emphasis on demand management and concepts such as Soft Water Paths, with these applied to both urban and rural water management issues. This framework emphasizes water conservation as the most important "new source" of water. The provincial water strategy should also promote the matching of water quality to a particle use. **Protection and Maintenance of Riparian Buffers** The protection and maintenance of functional riparian buffers is one activity could support many of the above recommendations, with benefits flowing to many water users. Buffers of at least 20 m in width should be required along all watercourses and water bodies. Regulatory tools should be put in place (e.g. land use planning – Provincial Statement of Interest) to ensure that existing buffers are maintained and degraded buffers are rehabilitated.
A/O	CUPE	I) **What are your biggest concerns when it comer to water in Nova Scotia?** **(Value: Water is a human right):** Nova Scotia must urge the federal government to recognize the right to water at the United Nations, reversing our country's shameful position on this crucial issue. Access to safe, clean, drinking water is a fundamental right. The right to safe water is also an issue in Canada, particularly for First Nations communities. **(Anti-Privatization):** Nova Scotia must stop promoting water privatization through public private partnerships. The federal government's Building Canada plan pushes municipalities into P3s for water and sewage services, while delivering almost no new money to cash-strapped communities. P3s are bad public policy, an unwise use of tax dollars and lack accountability and transparency. Instead, cities and towns need increased federal funding to maintain and expand public water and wastewater systems. **(Ban bulk water export):** Nova Scotia must ban bulk water exports and urge the federal government to withdraw water from trade deals. Canada has a voluntary provincial ban on bulk exports, but any province could break it any time. In recent years, British Columbia, Ontario, Quebec and Newfoundland and Labrador have all considered exports, and trade deals such as NAFTA and the Security and Prosperity Partnership have put water back on the table.

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		(Make national policy): Additionally, Nova Scotia needs to urge the federal government to develop a national policy that protects Canadian water from commodification, diversion, bulk exports and privatization. This policy would outlaw bulk exports, set national drinking water standards and increase federal funding to maintain and expand water systems. A comprehensive policy will address pollution and scarcity, both of which threaten our water systems and supplies. Canadian drinking water standards should also be applied to bottled water. 2) **How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide these same services in the future?** **(Need public say):** Democracy is not just about holding elections. Democracy means that average citizens can raise concerns and, if they are persuasive, make changes. When it comes to the environment, citizen activists around the world have changed the way governments do things. Whether it is damming rivers to create power or operating sewage and water treatment facilities - all citizens should have a say. Private companies do not have the same requirements for openness and transparency. Once public assets are turned over to private interests, we often are unable to get important information about things like environmental risks or damage or environmental assessment of projects. These become subject to "commercial confidentiality" to protect the business. Our communities need that information so they can make decisions about the environment, public services and health and safety. Local governments traditionally contract the design and construction of projects like water and sewage treatment to private companies. P3s are different. They involve contracts that are decades long including things like private financing and private operation. Some governments argue that privatizing public services reduces costs and risk to taxpayers. But experience shows us corporations charge a hefty premium to take on risk. HRM cancelled a half-billion dollar sewage treatment contract because the corporate partner was not willing to accept the risk and costs if it failed to meet environment standards. Once private operators get involved in environmental projects they become subject to trade deals. Metro

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		Vancouver stopped a proposed P3 for water treatment when it realized the project would be subject to the North American Free Trade Agreement and would be almost impossible to return to public operation. When our local governments run environmental services they have two priorities: our citizens and the environment. Adding private corporations to the mix means government must accommodate the corporate goal of maximizing profits - which can lead to cutting comers on services and safety. This is a serious concern for areas like sewage, water treatment and small hydroelectric projects that affect our health and our environment. Government's also seek cooperation within and across public sector institutions -to improve service, introduce innovation and maximize resources. This is made much more difficult when we introduce a competitive corporate model that must take proprietary interests into consideration. British Columbians are becoming more conscious *of the* need for a healthy environment and governments are following our lead. An important part of this is to say loud and clear that we want our governments, not corporations, to maintain control *of* important services like water and sewage treatment, parks and hydroelectric power 3) **Where should this money come from? How do you think the money should be distributed and used?** **(Maintain within the public sector)** The vast majority of water and wastewater systems in Canada are owned, operated and maintained within the public sector. Essential to our public health system, municipal water systems were one of the first major services to be publicly delivered in Canada. The reason why water infrastructure is overwhelmingly public is because the private sector could not be relied upon to deliver a quality service at a price that all residents could afford. It's therefore ironic that water corporations from rich countries like our own are now trying to persuade developing countries not to develop water resources publicly but to experiment with the private sector instead. What's more, the belief that the private sector can manage our public water resources is now gaining ground in Canadian government and policy circles. The commercialization of water is creeping forward through the private treatment and delivery of drinking water, through proposals for bulk water exports to the U.S. and through the bottling of municipally treated water for resale by

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		private companies. Not surprisingly, private interests increasingly view water as a source of profit. A May, 2000 edition of Fortune magazine foretold that water would be to the Twenty-first Century what oil was to the Twentieth. Instead of "black gold," we will have "blue gold." At the same time, our water infrastructure is aging, with estimates of Canada's public water infrastructure deficit in the $50-billion range. Investment is required, and difficult choices have to be made by all levels of government on how best to manage Canada's freshwater resources. For First Nations communities, the issues are even more urgent. CBC News' in-depth feature, "Slow Boil," reported that drinking water in two thirds of First Nations communities is at risk. Seventy-six First Nations communities are currently under boil-water advisories, and 62 per cent of water operators aren't properly certified. Given this context, privatization is presented to municipal and First Nations governments in a pretty package, with proponents eager to capitalize on difficult budget binds and the need for technical expertise. The citizens of Hamilton, Ontario, suffered through one of Canada's most infamous examples of the disastrous consequences of privatized water and wastewater treatment. In 1994, the city awarded an untendered contract to Philips Utilities Management Corporation in return for promises of local economic development, new jobs and cost savings. What the community got instead was a workforce slashed in half within eighteen months, a spill of 180 million liters of raw sewage into the harbour, the flooding of 200 homes and businesses, and major additional costs. In the ten years that followed, the contract shifted four times - with two companies now bankrupt, one of them a subsidiary of Enron! The P3 contract came up for renewal in 2004, with the city eventually opting to bring water and wastewater treatment back into the public sector. Hamilton's decision is instructive. The council initially chose to try the private option again and instructed managers to issue an RFP. The proposed new contract addressed some of the problems of the previous agreement, including public liability in the case of another spill, liability insurance carried by the operator, and the private operator's requirement to pay for system maintenance and upkeep. American Water, the only proponent to submit a final bid, presented a price of $39 million - three times the cost of providing the service. The price essentially included a 200-percent 'risk premium." As with many P3s, the public was unable to assess the validity of the American Water proposal in the areas liability and risk, since all such information is deemed "commercially confidential."

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		P3 proponents often try to promote the idea that transfer of "risk" to the private sector justifies the higher cost of P3 contracts compared to public operation. The Hamilton experience belies this myth of risk transfer and shines light on the lack of accountability that is a feature of almost all P3s. And, with the analysis just in on the first year of public operation, the Hamilton Spectator reported on April 24 that the in-house operation saved the city at least $1 -2 million in its first contract year. Public ownership and operation has improved the quality of wastewater effluent in Hamilton. In a recent report to city council, Jim Hamum, senior director of water and wastewater for the city, announced that good progress was being made on cleaning up the harbour. Levels of phosphorus in the plant effluent were down 75 per cent from 2004 levels, and levels for other factors were also down. This means the city's public works department has almost met the objectives of the Hamilton Harbour Remedial Action Plan (RAP) in less time that predicted. “Without naming American Water, which ran the city water and sewage treatment plants for ten years, Hamum said the contractor lacked an incentive to spend more on treatment chemicals and energy to improve effluent quality." Several Canadian communities have rejected water privatization in recent years, especially in the face of community resistance and informed opposition. In 2001, for example, a large campaign by unions, environmentalists and other community activists resulted in keeping Canada's largest water-filtration system public. The most persuasive argument for building Seymour Water Filtration as a public project was owing to the "investor-state" provisions of NAFTA. The City of Halifax awarded a contract for harbour clean-up and sewage treatment to French multinational Suez in 2002, but backed out of the contract in the face of community apposition and the company's refusal to take responsibility for meeting environmental standards. The Mayor admitted that canceling the P3 would save millions of dollars on the project. As they run into concerted opposition in Canada's cities, water companies like Terasen and EPCOR are increasingly targeting small rural and First Nations communities. These communities are more vulnerable, as they seek to meet provincial water-quality and certification standards. Privatization is sold as an easy answer.

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		Faith groups like KAIROS and Development and Peace have joined with the Canadian Union of Public Employees (CUPE), the Sierra Club, the Council of Canadians and others to resist a variety of privatization proposals. In November, 2005, Ipsos Reid research commissioned by CUPE found that almost nine in ten (88 per cent) British Columbians agreed with the statement that 'water is a basic public service and should always remain in public hands." The sentiment was even stronger on Vancouver Island, where a whopping 92 per cent of Islanders agreed. The experience on Vancouver Island shows that, when Canadians learn about water privatization activities, they are willing to organize to defend public water. **4) Additional Comments** **(Canada needs a national water policy):** Canada has needed a comprehensive national water policy for some time, but it does not bode well that the new Harper Conservative government appears to have an interest in the issue. The Liberal government promoted P3s. but did not insist upon them. Environment Minister Rona Ambrose says that the Conservative government will develop a new national water strategy. It is not clear what this means. In a related move, Indian Affairs Minister Jim Prentice announced new water-certification and training standards for First Nations communities and released a list of First Nations communities with the most severe water difficulties. No new money was announced, as Prentice is relying on the $1.6 billion over five years that the Liberals had allocated, starting in 2003. It's not surprising, then, that private water companies are moving in. Terasen Utilities is the major sponsor of two "Safe Water for First Nations conferences in Toronto (April) and Vancouver (May). One of the featured speakers at the conferences is Jarney Burr, who has the intriguing file of "director, public private partnerships" for Indian and Northern Affairs Canada. Canada needs a national water policy, but not one promoting privatization. CUPE has put forward proposals that could form the backbone of a progressive national plan, including pan-Canadian standards for drinking water and water-operator certification and training; controlling water "takings" by water-bottling companies and other industries; banning large-scale water exports outright through strong federal legislation; reducing and eliminating industrial and landfill contamination of watercourses; and preserving wetlands. On the financing side, we've proposed ideas to complement

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		tried-and-true public borrowing, including use of real return infrastructure bonds, pooling of municipal debt by establishing municipal financing authorities where they don't yet exist, and establishing Crown corporations to channel public investments in infrastructure. We must work to ensure that big water companies do not influence the Conservatives into making disastrous water-policy choices that will harm the public. Likewise, local and First Nations governments must be supported in making choices in their best interests. True innovation comes when local communities exercise their financial and political potential. A myriad of options are available to governments with the political will to retain ownership and control over the cost and quality of public water.
A/O	Eastern Shore Musquodoboit Community Health Board	**Water for Life: towards a water resources management strategy for Nova Scotia** **SUMMARY** The purpose of the discussion paper is to generate ideas and input from Nova Scotians to assist in developing a strategy that addresses the many and complex concerns regarding water resources management in Nova Scotia. The *Environmental Goals and Sustainable Prosperity Act* of June 2007 commits government to developing a comprehensive water resources strategy by 2010. This discussion paper is part of the strategy development. Four key issues are identified for discussion: human health, economic prosperity, ecosystem integrity, emergency and hazards preparedness. There have been periodic problems with the supply and the quality of water in the province. **Human health**: 60% of Nova Scotians rely on a municipal water system for drinking water with the other 40% using a dug or drilled well or surface water source. The use of municipal water divides into 59% for residential use, 25% for commercial, industrial and agricultural use and 16% for system leakage. Since the approval of the province's Drinking Water Strategy in 2002, over 1,600 public drinking water supplies have been registered with Nova Scotia Environment and Labour. Like the municipalities, they must complete regular testing and take any necessary corrective action. All municipal public drinking water supplies must meet the province's treatment standards by 2008. By 2017 there must be at least primary treatment of all wastewater discharges. Halifax's Harbour Solution will

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		reduce the untreated sewage discharge in the province by 20%. At this time 45% of waste water management is through home systems, 25% is through central treatment facilities with 30% of sewage discharge being untreated. Nova Scotia launched the Environmental Home Assessment Program in 2006 to educate the public about maintaining septic systems, private wells and oil tanks, while providing grants to low-income homeowners to repair malfunctioning septic systems. **Sustainable economic prosperity:** Access to a safe and abundant supply of clean, safe water gives businesses and industry confidence to make long term investments and attracts new investors. Many businesses are finding ways to innovate and implement new technologies. Industrial and commercial activities can negatively affect water resources at times, for example by water withdrawal. Aquatic ecosystems may be negatively affected as well as the aesthetic and recreational enjoyment of lakes and streams. Pesticides, fertilizers and manure can seep or run off into water systems. **Ecosystem integrity:** All living things depend on the quality of water in the ecosystem. Watersheds are areas of land that drain down to the lowest point. Activities in the upper parts of a watershed can be felt downstream. Protected areas are essential for maintaining natural ecosystems as well as providing safe and clean water and water-related recreation. 8% of Nova Scotia has been designated as wilderness areas. Wetlands are considered to be some of the most productive ecosystems in the world, providing homes for wildlife and plants while filtering out pollutants; they can also control flooding by providing water retention capacity. 17% of Nova Scotia's fresh water wetlands and 62% of salt water wetlands may have disappeared since colonization through urban and agricultural development. The *Environmental Goals and Sustainable Prosperity Act* seeks to establish a policy to prevent net loss of wetlands by 2009. **Emergency and hazards preparedness:** There are natural emergencies and human-caused emergencies, some of which are spontaneous and random, while others are reoccurring and symptomatic of a larger trend. Impacts of climate change include a reduction in water tables and stream flows which may lead to water

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		shortages, changes to spring and winter run off patterns leading to changes in the rates of groundwater replenishment, increased storm surges and flooding which may contaminate freshwater aquifers with salt water. It is important to gather information about water resources and make this information accessible. People using private wells pay for drilling or digging, pumping, testing and maintenance while those on municipal systems pay a quarterly bill. Natural ecosystems provide invaluable natural services at no cost to human beings. It will require significant costs to replicate these services if these systems are lost. Canadians use more water per person than most other countries in the world, about 680 to 1,360 litres of water per day per household, 35% of which is used for showers and baths and 30% of which is flushed down the toilet. There are many ways to conserve water at a household level. Water is a shared resource, and while government has a mandate to protect our environment, we must all accept responsibility for the water we use and for making decisions that will affect future generations. Stewardship can take place at many levels and includes individual action and joint effort. Other strategies that connect to water: Climate change action plan/ energy strategy (Energy) Coastal management framework (Fisheries and Aquaculture) Natural resources strategy (Natural Resources/ Voluntary Planning) information from www.gov.ns.ca **Water for Life: towards a water resources management strategy for Nova Scotia** **RESPONSE** In 2004, an Ipsos-Reid poll indicated that 94% of Canadians agreed with the statement "Canada should adopt a comprehensive national water policy that recognizes clean drinking water as a basic human right." This powerful endorsement illuminates the weakness of *Water for* Life which reads as an 'all is well in Nova Scotia' advertisement. **Human health:**

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		There are currently (April 28, 2008) 59 boiled water orders across the province, 4 of which are in the area covered by the Eastern Shore Musquodoboit Community Health Board. Nova Scotia is to be complimented on supplying a weekly boil water advisory list. An indication of the need for changes in water policy and future planning is the recent federal announcement legislating municipal sewage (Municipal Wastewater Effluent Strategy) through systems which must have at least secondary treatment. The massive Halifax Harbour Solution provides only enhanced primary treatment and a further $100,000,000 minimum will be needed to meet the new guidelines; as a new system this must be upgraded immediately. In addition, over a dozen municipal systems are out of compliance with the provincial standard of 100pIL for THMs (trihalomethanes, disinfection by-products). Because water legislation is a patchwork of provincial and federal laws, there are inconsistencies and gaps in important areas of responsibility and oversight. Canada is one of the few developed counties not to have legally enforceable federal water quality standards. The federal government sets guidelines for water quality which only a few provinces follow in their entirety. In October 2000, the Nova Scotia government adopted the health-related guidelines for Canadian Drinking Water Quality as legally binding standards for public drinking water supplies and recommends these for private well owners. Municipalities in Nova Scotia must meet clear standards for water treatment and operator certification by 2008. Nova Scotia's Drinking Water Strategy was developed in 2002 following the tragedies of Walkerton (7 deaths and 2,500 hospitalizations due to E. ***Coli 0157:H7)*** and North Battleford (5,800 residents had gastrointestinal illness caused by *Cryptospiridium pawum* in drinking water). **Sustainable economic prosperity:** It is shocking that the only use of 'sustainable', in the document *Water for Life,* is in regard to economic prosperity. Surely we need to include sustainability in all aspects of planning for our water future? Ecological governance of water should begin with reductions in water demand, and move towards a form of

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		water governance that focuses on sustainability, breaking the link between increasing water consumption and economic growth. New legislation must consider ecosystem integrity, source protection, user participation, efficiency, conservation, precautionary management and legal rights for the environment. While water provides substantial economic benefits to Canadians, Environment Canada reported that between 1994 and 1999 one in four Canadian municipalities experienced water shortages due to increased consumption, drought or infrastructure constraints. To improve current water use management, we can refine current systems or use a 'soft path' concept which relies on a large number of small-scale and renewable resources of supply coupled with efficient ways of meeting end-use demands. Nova Scotia has a Water Resources Protection Act which prohibits water diversion and exports. A debate that has not moved to the national stage is whether water is a commons or a commodity. Historically, Canadians see water as an inheritance, an asset or a resource and water resources have not been commodified. However, the situation is changing as some water allocation decisions are being decided directly by markets and market forces. Principles that support the goal of water sustainability include: *Investment and financing* - infrastructure renewal plus polluter pay and user pay principles. In 1996 it was estimated that Canada's water infrastructure deficit was between $28 and $49 billion. In 1998 Canada had the lowest municipal water prices of all OECD countries, averaging 31c per cubic metre compared, for example, with Germany where the average price per cubic metre was $2.16. *(Water for Life* reports that Middleton charges homeowners 58c per cubic metre of drinking water while Bridgewater and the Cape Breton Regional Municipality charge 83c per cubic metre in 2008.) Pricing systems must support water services costs. With appropriate pricing, efficient allotment is encouraged, water quality is improved and innovation and conservation are encouraged. Fair water prices result in financially sound and efficient management which is environmentally sustainable and equitable. *Science and information* - full data monitoring and the enhancement of scientific capacity.

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		Approaches to management - the use of the precautionary principle, watershed planning, pollution prevention, conservation and the use of soft path methods. *Role of civil society* - the right to know is paramount along with public participation in decision making. **Ecosystem integrity:** Groundwater is a relatively unregulated and neglected resource; some experts believe that the depletion of underground water resources poses a greater threat to the future than does the depletion of oil reserves. Groundwater is the source of drinking water for one-third of all Canadians (40% in Nova Scotia) and 80% of rural residents. Groundwater stress can lead to water shortages, harm to wetlands or saltwater intrusion. Provinces have primary jurisdiction over groundwater. Nova Scotia requires actual use reporting as a licensing condition for water-taking permits, and there is a public database of pennit information on an environmental registry through the Environment Act (section 10). In the United States and the United Kingdom, large and well-funded environmental protection agencies fulfill key roles such as enforcement and monitoring, while in Canada, these key tasks often fall to independent, often under-resourced non-governmental organizations. Nova Scotia is fortunate to have the Annapolis River Guardians who have been collecting water quality data since 1992, with the aim of building a long-term record which may provide an early warning system for environmental problems. There are only two Heritage Rivers in Nova Scotia (the Margaree and the Shelburne) and the application of the principles of Heritage Rivers to other water bodies would be a big step forward for Nova Scotia. When examining threats to ecosystem integrity, especially related to drinking water, environment Canada has identified thirteen key areas: nutrients, acidification, endocrine disrupting substances, genetically modified organisms, pathogens, algal toxins, pesticides, long-range atmospherically transmitted pollutants, municipal wastewater effluents, industrial wastewater discharges, urban runoff, solid waste management practices and water quantity changes. **Emergency and hazards preparedness:**

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		Climate change threatens Canada's freshwater resources as shown by the loss of between 25% to 74% of the mass of 1,300 glaciers in the past 150 years. Threats posed by climate change remind us that water quality and water quantity are interconnected and must be managed as such. **Areas not covered in Water *for* Life:** While many newspapers and magazines report that Canada has 20% of the world's fresh water, the appropriate statistics to use are those of the global annual renewable water supply. Using these calculations, Canada has 6.5% of the global annual water supply, 60% of which flows north to arctic or subarctic regions, leaving only 2.6% of the world supply for use in the southern part of Canada where most people live, work and farm. We must take firm hold of these numbers before making new policy decisions or there will be serious ecological, economic and political consequences. The use of water storage tanks, collected from roofs, a long time Nova Scotian practice is not mentioned. Nor is the use of grey water. Implementation of these two areas of water conservation could result in significant water conservation. First Nations rights in relation to water are not discussed. These rights are significant and while they are still being interpreted and defined in negotiations and through the courts, note should be made of this. Because the general public is not well informed about the general topic of water, the report needs to give more information to ensure a lively and informed discussion process. This response has sought to include easily accessible information which will give the general public a better understanding of the topic (Information from the Nova Scotia Environment and Labour web page and Eau Canada: the future of Canada's water, Karen Bakker, ed., UBC Press, 2007).
A/O	Ecology Action Centre	**The Ecology Action Centre's Top Priorities for Water Management in Nova Scotia** ***Take Action on Existing Programs & Regulations*** • EAC believes it is important to complete and implement a water management strategy for Nova Scotia, but that it is equally important to not wait for the strategy to be completed before acting to improve water quality and ecosystem integrity. Advancing the goals and implementing the programs detailed in Part 10 of the *Environment*

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		Act and enforcing existing regulations related to water resources will go a long way toward solving many water issues in the province. *Show Leadership* • EAC expects the provincial government to take a leadership role in implementing a provincial water strategy. It is government's responsibility to make decisions for the broader public good, including developing and implementing new legislation, regulations, and user fees as appropriate to ensure the protection of Nova Scotia's water resources. *Prepare for Climate Change* • Nova Scotia can expect increased water insecurity due to climate change. Some climate change impacts, such as increased intensity of precipitation and storm events, more frequent and extensive coastal and inland flooding, sedimentation of watercourses, and accelerated erosion, will have an impact on water quality, quantity and ecosystem health. The Water Strategy should reduce the impacts of climate change on Nova Scotia's water resources by mapping available groundwater resources, protecting drinking water supplies from sedimentation and contamination, and preventing further loss of provincial wetlands. *Manage Resources by Watershed* • Watersheds are the appropriate size and scale for many water resources management decisions. Nova Scotia's watersheds include coastal and marine waters directly affected by land-based activities on our coasts and uplands Watershed management can best be done through land use planning and linking community-based and government efforts. *Incorporate Land Use Planning Best Practices into Policies/Regulations* • Land use planning is a key determinant of water quality and ecosystem integrity. Baseline land use regulations, such as requirements for vegetated buffer zones and setbacks should be required next to all water bodies. More specific land-use guidelines based on critical thresholds identified for various land-use mixes and aquatic ecosystem types also should be implemented.

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		Assess Ecosystem Integrity not just Water Quality • Water quality data alone is not sufficient to make informed decisions about ecosystem integrity. Ecosystem integrity must be assessed through monitoring programs that include biological, chemical and contaminants, and physical measurements to provide a baseline assessment of current ecological conditions in all of the province's freshwater and coastal ecosystems. *Set and Enforce Regulations* • Setting and enforcing strict regulations based on water quality, aquatic life and human health guidelines should be the starting point for assessing industrial, agricultural, pharmaceutical and household contaminants in our waters. This will protect aquatic life and the health of Nova Scotians. *Link Government Efforts with Community-Based Efforts* • Community-based organizations play an important role in protecting and managing water resources in Nova Scotia. This role, the relationship of these organizations to government-led initiatives, and the level of government support should be articulated in the Water Strategy. *Develop Monitoring Protocols & Link with Community Involvement* • Regular ongoing monitoring is essential to understand trends and ensure compliance with regulations. Developing monitoring protocols will make it easier for regional authorities, community-based groups, and other levels of government to gather accurate data that is comparable across time periods and jurisdictions. It also will encourage broader participation in water monitoring and reduce demands on the province to collect data. *Conduct/Facilitate More Research to Close Knowledge Gaps* • Research is essential to filling knowledge gaps, such as the extent and location of groundwater resources and river discharges around the province, more precise estimates of wetland cover and the linkages between the various freshwater and coastal resource pools (e.g., flows from groundwater aquifers to wetlands and streams). The Water Strategy should articulate research goals and priorities and an action plan to achieve these. *Develop a Self-Contained Provincial Wetlands Policy*

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		• A self-contained provincial wetland policy combining all the various pieces of wetland legislation, regulation and implementing guidelines into a single document will send a strong message about government commitment to wetland conservation; as well as reduce current confusion and inconsistency in implementation. We believe our best option is to not allow wetland development, alternation, or infilling and to work with landowners to find alternatives. **Answers to questions asked in Water for Life document** 1. *The province of Nova Scotia is committed to sustainable development. What are your ideas about how we can ensure that development is undertaken in a way that does not put strain on the water available for the area or the surrounding natural environment?* Ecosystem integrity is cited as one of the four key issues in the draft strategy document yet watershed integrity is not specifically mentioned. Maintaining integrity of our freshwater ecosystems should certainly be a top priority, but watershed integrity should be given at least equal emphasis. One of the primary sources of degradation in freshwater ecosystems is poorly planned land use and excessive and inappropriate development in watersheds. Since the linkages among streams, wetlands, estuaries and coastal habitats within a watershed are often crucial to overall system health, there needs to be an explicit effort to understand and maintain these linkages across the landscape from headwaters to the coast. There is a great deal of empirical research that can be used to provide guidelines about land use mixes that will support healthy freshwater and coastal ecosystems in various types of watersheds. We know that improper forestry operations (e.g., excessive clearcutting, cutting on fragile soils, inadequate setback from watercourses, poor sitting of access roads), agricultural practices (e.g., heavy pesticide, herbicide and fertilizer use, farming steep slopes, overgrazing, inadequate buffers, removal of vegetation along the waters' edge, filling or draining wetlands, livestock in streams, excessive irrigation) and urban and industrial development (e.g., excessive density, excessive area of impervious surfaces for roads and parking lots, contamination from effluents, destruction of natural habitats) can lead to degradation of aquatic ecosystems. Degradation can be reflected by a variety of factors including, increased speed at which streams fill with rainwater and are subsequently drained, erosion, sedimentation, bacterial contamination, warming water temperatures,

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		toxicity from pollutants, and loss of water quality. These factors can lead to reduced biodiversity, loss of ecological integrity, increased health risks associated with human consumption and irrigation uses, and loss of potential economic benefits from other societal services that these ecosystems normally would provide. Nova Scotia's Drinking Water Strategy promotes the protection of watershed areas as the first step in a "multiple barrier approach to protecting drinking water". We agree that watershed protection is a key first step in maintaining watershed integrity, and it is vital that our province's watersheds are formally protected. It is equally important that provincial land use planners and managers develop and implement regulations around land use (setbacks, buffer zones, protection for groundwater recharge areas, wetland protection) within a watershed. Ultimately, we believe that the watershed scale is the most appropriate unit for water resources management. We recommend developing a watershed management approach throughout the province. Management through watershed-based planning committees is an option that has proven to be effective in other parts of North America, particularly when the committees are representative of all watershed stakeholders and have a mandate to enforce their decisions. There are numerous community-based watershed groups throughout the province that should be utilized when developing the province's overall watershed monitoring and protection strategy. This will require an explicit commitment by government to this sort of collaborative model as well as sustained funding for these groups. We believe carefully designed monitoring programs will have to be implemented to provide a baseline assessment of current ecological conditions in all of the province's freshwater and coastal ecosystem types (lakes, ponds, wetlands, rivers, estuaries) and that follow-up surveys will be needed on a regular basis (every 5 years or so) to provide an assessment of trends in the health and integrity of these ecosystems. Basing these assessments on biological and ecological measures (rather than simply water quality) will be crucial for providing a way to identify particular ecosystems and ecosystem types that are being degraded over time and help prioritize those ecosystems and watersheds that are in need of restoration and identify where current land use and development practices are not sustainable. We believe it is critical to understand not just water quality but also biological and ecological integrity. Knowing that our freshwater and coastal ecosystems are supporting a healthy community of organisms and are functioning

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		effectively does not necessarily follow from measurements of water quality alone. The Canadian Council of Ministers of the Environment (CCME) has already recognized the advantages of using biological criteria to complement water quality monitoring when assessing environmental quality and ecosystem integrity. The ecological condition of the resident biological community in freshwater ecosystems reflects the combined effects of many factors, including water and sediment chemistry, physical habitat, hydrology, nutrients and the surrounding landscape. In 2003, the National Round Table on the Environment and the Economy (NRTEE) undertook the Environment and Sustainable Development Indicators Initiative (ESDI) to develop a small suite of mostly new national-level indicators that account for those assets that are necessary to sustain a healthy economy, society and environment for Canadians. The proposed National Indicator of Freshwater Quality is currently based on the CCME Water Quality Index, (WQI), but it is expected that "in the long term, development of the indicator will move toward coverage of more substances, other media such as sediments and biota, and groundwater." So, the importance of a biotic component for assessing the condition of freshwaters has been recognized at the national level even though it is not currently included in the Freshwater Quality Indicator. We think Nova Scotia should also include this sort of bioassessment as part of its overall strategy to assess the ecological integrity of its water resources. *2. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, and to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* The first step is changing our attitude about water. It is obviously not an unlimited resource, and it should not be treated as simply an input for agriculture or industry. It is part of the ecosystem, inherently important through all stages of the water cycle (not just when humans are using it), and is important to other species and the integrity and healthy functioning of all ecosystems. The emerging concept of water soft paths as described by Manitoba Water Stewardship is about changing the way we use water. A water soft path approach involves envisioning a future state of water sustainability and designing a feasible policy pathway to achieve that state. The water soft path is characterized by wide use of diverse, often

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		decentralized systems. Water soft pathways emphasize working with natural water systems to provide water for a variety of human uses while making the maintenance of ecosystem integrity a priority. For example, current patterns of development lead to most precipitation running off pavement (rooftops, parking lots), becoming contaminated by organic and inorganic compounds and running off into ocean through sewer systems. Water soft pathways would prioritize and maximize natural infiltration through green spaces, settling basins, permeable pavement, reducing runoff, protecting water quality, and work with nature to solve water resource problems while maintaining ecosystem integrity. A water soft pathway would conserve water by recycling gray water for flushing toilets rather than using clean, freshwater for every flush. In addition to understanding the condition and maintaining the integrity of our freshwater ecosystems as discussed in the response to the first question, it will also be critical to quantify how much water is contained in each of the various storage pools (groundwater, wetlands, lakes, rivers) around the province and what their typical replenishment rates are to inform decisions about withdrawal allocations for various user groups. If we don't know how much we have, it is impossible to estimate what sustainable use might be. There is presently limited information available on the extent and location of groundwater resources and river discharges around the province and imprecise estimates of wetland cover and the linkages between the various freshwater resource pools (e.g., flows from groundwater aquifers to wetlands and streams). The monitoring plans currently in place will need to be expanded to fill in these knowledge gaps to improve decision making capabilities. Decisions about withdrawal allowances from any surface or groundwater source should consider potential ecological as well as socioeconomic effects that may result under different scenarios. However, quantity is not the only factor related to sustainable use. We discussed a number of issues related to land use practices and maintaining ecological integrity and healthy water quality in our response to Question 1 above, but we did not comment on relevance to drinking water. In the section of the document on clean drinking water nothing is mentioned about contamination from pharmaceuticals/prescription drugs, chemotherapy drugs, caffeine, birth control pill metabolites, cosmetics and other household contaminants like cleaning products. It will be critical to quantify levels of these contaminants in provincial freshwaters to determine if and where we have problems and what appropriate

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		remediation actions might be necessary. These sorts of chemicals have been found to be far more prevalent in surface and groundwater supplies elsewhere in North America than previously thought possible. Since there does not appear to be any coordinated effort around the province to quantify the levels of contaminants entering our freshwater ecosystems, careful monitoring programs designed to detect the presence and concentrations of the many industrial, agricultural and household contaminants now entering our freshwaters will need to be implemented. Understanding ecological and health risks and finding solutions will only be possible once we know the extent of the problem. Adopting, implementing and enforcing a strict set of water quality, aquatic life and human health guidelines should be a minimum starting point. Setting and enforcing regulations related to these guidelines will be essential to protect aquatic life and the health of Nova Scotians. Assuming certain contaminants are found to be at unacceptable levels. Effluents to freshwater and coastal ecosystems need to be reduced. The province should adopt a strategy for completely eliminating certain highly toxic and persistent pollutants, like mercury, PCBs and dioxins, through a zero discharge policy similar to the one that has been implemented for the Great Lakes. We will also need to be sure regulations are sufficient to protect these resources and we need to provide sufficient enforcement so that the public can be sure all polluters are complying with the standards. For example, we need to demand and enforce federal Pulp and Paper Effluent Regulations, under the Fisheries Act, for all pulp and paper mills to ensure fish, wildlife and their habitats and humans are protected from pollution and health risks associated with waters affected by effluents. Nova Scotia is now required to meet standards for wastewater effluents that are at least as high as those included in the Municipal Wastewater Effluent Strategy released by the Canadian Council of Ministers for the Environment. Consideration should be given to ability to pay; accordingly the program should include loan and grant opportunities for low-income neighborhoods and communities. Vital natural and water resources should be monitored - both for negative and positive results - to better coordinate limited financial resources and evaluate innovative strategies. Another factor related to sustainable use of our freshwaters is conservation. The Water for Life document cites a figure of 16% loss to leakage as a province-wide rate. This seems unacceptably high based on a median water loss due

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		to leakage for other large municipalities in North America of around 10%. This suggests the need for infrastructure repair as part of a general water conservation program. For large water authorities, a 16% loss to leakage is a substantial economic cost and suggests repair or replacement is needed to promote sustainability. Given that 59% of provincial water use is residential, it makes sense to concentrate on water conservation in homes as well. Technical alternatives such as, dual flush toilets, grey water systems, and rainwater collection should be promoted. In addition, financial incentives such as increasing the price of water to reflect its true cost could be used to discourage wastefulness. Typical water use per day in North American households is considered to be about 100 gallons per person per day with four people per home [see "Recommended Standards for Water Works" (water treatment) and "Recommended Standards for Wastewater Facilities". For a four person household, that amounts to about 1500 litres per day. This is only a bit more than 5% of the 23,000 liter threshold and is therefore most applicable to larger industry and food processing facilities. The fact that Nova Scotia only requires individuals/businesses that use more than 23,000 litres of water per day from groundwater or surface water sources to apply for a water approval makes it difficult to fine tune control of water use in any area. Setting a lower threshold requirement for approval would provide greater flexibility in limiting water use in times of low supply without resulting in unreasonable restrictions on home use. 3. *What are your ideas about how we can provide landowners with the ability to develop their land while ensuring the conservation or restoration of wetlands and their natural functions?* **The province lacks an understanding of the extent of inland wetland loss in Nova Scotia, although we do know loss rates were as high as 75% for Bay of Fundy salt marshes. Without knowing more precisely what has been lost and where, it is difficult to know what wetland functions have been impaired around the province in order to guide possible restoration efforts.** We think the first priority in any development situation should be to avoid alteration or damage to wetlands. Currently, wetlands are relatively easy for landowners/developers to degrade, fill or drain because municipalities and the province have not been effective in enforcing rules about development around these sensitive habitats. There are

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		presently no setback requirements for development adjacent to wetlands, streams or lakes prescribed at the provincial level other than those required for commercial forestry operations, which require a 20 m buffer As a result, cutting of trees right to the waters' edge is commonplace. Kidston Pond is a recent example within HRM. Many hectares of forest were bulldozed for an adjacent housing development very near the edge of the pond and a large wet meadow area at one end of the pond was completely filled in with gravel. We need strong setback/buffer requirements and oversight that prevents filling of these kinds of habitats. There is a wealth of good science to inform setting a requirement. Based on many studies in the peer-reviewed literature, 50 or 100 m buffer zones are easily justified based on ecological/biodiversity impacts that have been observed. The detrimental effects of development on or near wetlands are well known and legislated against in many other parts of North America, but Nova Scotia has continued to lose wetland habitat. A comprehensive provincial wetland policy document that combines all the various pieces of wetland legislation, regulation and guidance into one document would send a clear message about government commitment to wetland protection and help to lower confusion surrounding wetland issues. Fully enforcing existing legislation would be an easy and effective first step at providing better protection. Current enforcement and oversight has not adequately protected wetlands against harmful development. The lack of oversight must change not only for inland and coastal wetlands, but also for development along the riparian zones of rivers and shorelines of lakes. Many jurisdictions have developed criteria to identify wetlands of provincial significance, and put in place legislation to prohibit further loss of in these systems. Such criteria are frequently based on rarity, cumulative damage, and ecological sensitivity of the systems. The EAC supports changes in the Municipal Government Act and provincial wetland policy to require buffers for all development near wetlands. We also recommend a registry of trained wetland delineators who will locate and map wetland boundaries for the purpose of enforcing wetland legislation. An internationally recognized standard for wetland delineation must be adopted by Nova Scotia based on defensible science and a clear, consistent process that provides clarity for all stakeholders and minimizes potential conflict of interest.

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		We believe our best option is to restrict wetland development and work with landowners to find alternatives. In some cases the best option may be for the government or conservation groups to purchase the land from developers and legally protect it. However, for those wetlands that landowners are permitted to alter or destroy, a well-thought out no-net-loss policy is important. It will be important to have a well thought o "no net-loss policy". What has often happened in other parts of the country when wetland compensation has been required is that relatively simple "duck-pond" type wetlands have been dug as replacement wetlands regardless of the type of wetland that was destroyed and with no thought to position in the watershed, ecological function or services that were lost. If mitigation is to be of any real benefit, it will be important to require developers to replace the lost wetland with a wetland of at least an equal area, but also to replace the wetland in such a ways that minimizes the loss of ecological function. We need to recognize that wetlands created by humans will rarely act as true replacements for the ones that are destroyed and in many cases will be entirely inadequate. However, when wetland development has been approved, developers should be required to construct replacement wetlands in a manner that replaces as much of the lost wetland's function as possible. Environment Canada recently developed national guidelines for assessing ecological functionality of different types of wetlands which should be adopted by Nova Scotia. 4. *Emergencies disrupt our lives and change what people, businesses and communities require to continue with their daily routines. During an emergency, such as a drought, who or what should have priority access to water?* The water strategy's first priority for emergencies should be planning to reduce our vulnerability and reduce the costs, property damage, and health risks associated with emergency situations. Emergency preparedness should be the next priority. Allocation decisions about who should have access to water are not the purview of the water strategy. Climate change impacts will increase Nova Scotia's vulnerability with regards to water and water resources. Changes in frequency and intensity of precipitation and storm events will cause more frequent and extensive flooding, as well as more sedimentation of waterways as a result of accelerated erosion. Certain parts of the province may experience more frequent drought or water shortages. Rising temperatures may also increase risk of water bourne diseases.

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		Restricting development in floodplains, and low-lying coastal areas will reduce the risk of loss of live and property damage. Some existing infrastructure may need to be relocated or not rebuilt. Vegetated buffers near rivers can provide green spaces and walking trails and serve as flood protection as necessary. New developments should have storm water management plans that incorporate use of natural ponds and wetlands. Ensuring tree cover near watercourses will help stabilize water temperatures. Removing tidal barriers that restrict natural tidal movement into salt marshes may control population of disease carrying insects. 5. *People need information about water resources to increase their knowledge and make informed decisions. What kind of information about water do you want or need?* A variety of information needs have been discussed throughout our responses to other questions, but it is worthwhile reiterating a few of these needs. We think assessment of the biological and ecological integrity of all of our freshwater ecosystems as well as the integrity of the watersheds and estuaries associated with these ecosystems should be a top priority. Assessment at regular intervals across all ecosystem types in the province to provide some measure of status (e.g., excellent, good, poor integrity) and trends (e.g., getting better, getting worse) associated with different types (wetlands lakes, rivers) and classes (e.g., inland marshes, peatlands, coastal wetlands; headwater streams, large rivers; drainage lakes, seepage lakes, estuaries) of ecosystems would help to identify ecosystems and watersheds that are most threatened.. A classification system appropriate for our various freshwater and coastal ecosystems will need to be developed so that a statistically valid sampling stratification scheme can be devised that that will allow extrapolation about status and trends of various ecosystem types. Gathering additional data related to the location and extent of ground water resources, variation in the discharge of important rivers and streams and the extent and distribution of various wetland and lake types would be helpful in boosting our ability to make informed decisions about water removal requests as well as provide a much needed increase in the general understanding of the size, location and relative significance of these resources in various parts of the province.

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		It will be important to educate the public (individuals, businesses, municipalities) about practical approaches to water conservation, the need for water conservation and maintaining good water quality, the meaning of biological and ecological integrity, what watersheds are and the importance of maintaining good land use practices in our watersheds. 6. *We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* The *Nova Scotia Environment Act* can be utilized more fully than it currently is to obtain funding for water management through user pay principles. The Legislative Review Committee stated that NSDEL has the authority to collect fees for water approvals and they should not hesitate to do so; these fees could then be applied to develop water resource management and water stewardship strategies (Legislative Review Committee 2000). Water should be properly valued and the fee structure should reflect the true value of water by charging the full cost of water and charging more as usage increases. Currently the cost of water goes down as more water is used, this should be altered in order to reward industries and households that conserve and save water. The province should explore the possibility of obtaining user fees from County residents for local-level water management to support regional watershed groups that could run education, conservation, monitoring, and research programs. The province could better utilize existing community and watershed groups already doing education/research/monitoring. If they had the money and mandate to carry out this work at sites around the province then NSDE will have not have to implement full scale costly monitoring/education programs and they could concentrate on enforcement or other tasks. To support water management, the province of Nova Scotia should encourage the federal government to reevaluate their funding criteria to community groups, so as to not just fund physical projects (i.e. planting trees) but broaden and include administrative support, so community groups/watershed groups could carry out their work. The government should offer more incentives to encourage good water management. For example, property

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		owners are required to report malfunctioning on-site septic systems to NSDE, and then required to fix them to today's standards. However, most people do not report malfunctioning septic systems because they cannot afford the cost to upgrade. An expanded Environmental Home Assessment Program could provide subsidies to help cover the replacement of systems. Similarly, agricultural communities often need a financial incentive to adopt best management practices such as vegetated buffer zones next to watercourses. 7. *Everyone (individuals, communities, businesses) can contribute to the conservation and protection of water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Individual actions are important for protecting water resources, but individual efforts must be accompanied by firm government commitment to developing and implementing a water strategy and enforcing its own regulations. The Minister of Environment already possesses strong power to regulate and manage water resources within the current Environment Act, which are not being used. There needs to be a strong will to protect water resources backed by government investment in water resource management. It is the role of government to show leadership in water management and conservation. A comprehensive education strategy about the value of water and water conservation will certainly contribute to more individual and industry efforts to preserve water. The province should also foster more partnerships between municipal, provincial, and federal government to meet certain priorities, such as new national wastewater guidelines for Nova Scotia. The Ecology Action Centre underwent a full scale eco-renovation of its office space over the last couple years which included a variety of water conservation measures. We installed a six litre toilet downstairs (most toilets are 13L) and a dual flush (3L/6L) upstairs. We also installed a waterless urinal which was sold locally by Green Pea. We have low flow taps in the bathroom and kitchen, and will be installing one in the shower. One of the best ways to save water is to ensure that it is not wasted – that taps are not left running, toilet flushing is reduced and watering of plants is done by water collected off the roof instead of from the tap.

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		The building is plumbed so that in the future we can easily install a cistern to store rainwater collected from the roof. This water can then be used in our garden or for flushing toilets. This will reduce the storm water run off from the building, and ultimately be less of a burden on the new Halifax Regional Municipality sewage treatment plant. Our one parking spot is paved with Grass Crete – so that water can permeate back into the ground, and will not simply run into the street and down the storm drains. In order to do our bit to clean up Halifax Harbor, we discourage flushing of any plastic products, such as tampon applicators. We use only biodegradable cleaners and properly dispose of paints and solvents. The office now serves as both a physical and virtual (via the EAC website) demonstration facility where members of the general public can get information about green renovations of all varieties, including for water conservation. One of the primary goals of EAC is to help the public educate themselves about sustainable living and we our office is one key tool we have to assist in this education effort. In addition to answering the questions provided in the discussion paper, the EAC would also like to comment on a few **issues we felt were not adequately discussed in the paper**: • While the process for developing a water strategy is clear, the path that the government plans to take for setting specific goals is not clear from the Discussion Paper. We expect the water strategy will articulate clear policy goals to address issues identified during the public and stakeholder consultation process. • This discussion paper contains very little information about what is currently being done by the province to address various water issues, which makes it more difficult to comment on the adequacy of current programs • The Discussion Paper is organized in a manner that describes water management issues from headwaters to coast, but does not focus on the interconnectedness of inland and coastal ecosystems. Since the linkages among streams, wetlands, estuaries and coastal habitats within a watershed are often crucial to overall system health there needs to be an explicit effort to understand and maintain these linkages across the landscape. • There is no mention of the habitat value of freshwater ecosystems to native flora and fauna. There should be an explicit acknowledgement that our lakes, streams, and wetlands provide critical habitat for many species of fish

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		and wildlife and that these species need healthy functioning ecosystems as much as we do. • There is no mention of how innovation can play a role in water management and protection, for example using constructed wetlands for wastewater treatment, or using parkland areas as stormwater management systems.
A/O	IKANAWTIKET	Thank-you for inviting IKANAWTIKET to participate in the development of some value sets, vision, goals, and context concerning Nova Scotia's water resources, with which the Government can begin to draft a Nova Scotia Water Resources Management Strategy. I am sorry that my submission is past the June 1st deadline; and I hope that you will find my few comments here beneficial to the drafting of a water resources management strategy for Nova Scotia. As a citizen, I have already begun to contribute to the value/priority setting process for our water resources via the Oxford Public Workshop held on April 1st. I wish to stress that during this meeting, I only expressed my own thoughts. The issues, concerns, needs, interests, priorities, and value sets of the Aboriginal Peoples continuing on Traditional Ancestral Homelands throughout Nova Scotia should be sought out through separate sessions set up with the Native Council of Nova Scotia (NCNS). I provide contact information for the NCNS at the end of this letter. As the Regional Facilitator for IKANAWTIKET, our regional Aboriginal environmental organization, serving the Aboriginal Peoples who continue on Traditional Ancestral Homelands throughout the Maritime Provinces, I will focus this correspondence from the viewpoint of IKANAWTIKET and on the more technical topics and questions presented in *'Water for Life: Towards a water resources management strategy for Nova Scotia* '. Aboriginal Peoples recognize that water is a vital resource for all Nova Scotians - it is the blood of the land, the life force of plants and animals, the cleanser of our natural environment, the home for many species, and important transportation routes. Water not only provides for our physical needs, but also our spiritual needs - many works of art, craft, story, and song focus on lakes, rivers, and the rain; a dip in lake on a hot summer day provides relief like no other; people even attach personalities to water with expressions like 'a fierce river' and 'a babbling brook'. Nova Scotia has some of the richest water resources in North America - a richness that conjures envy in dry places, like California, who suffer chronic drought and ground water shortages. It is unfortunate that the Nova Scotia Government has taken this long to create a water resources strategy for the province. It is not too late to begin to

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		address some current issues and strategically plan for a future which will see a dryer North America, changes in water regimes in all areas, and possibly political and civil strife over water resources. Starting to talk about a water resources strategy within the Water and Wastewater Branch of Nova Scotia Department of Environment and through a few facilitated Public Workshops is a beginning step. Water impacts and is impacted by everything we do; therefore, everything we do must consider water impacts. All of Nova Scotia's actions must be thought out strategically to include water. Broadly, the new Water Resources Management Strategy must include five areas, if our water resources management is to have any strategic, forward-looking direction: 1. **Act & Regulation Review** Acts and Regulations related to water use (e.g. Environmental Act, Water Act, Minerals Act, Forestry Regulations, and Wildlife Regulations) must be reviewed and amended in a strategic manner. There is great concern that many activities are done incorrectly for the proper maintenance of water resources, because current Acts and Regulations are too broad based, outdated, or confusing. 2. **Water Resources Inventory and Study** In general, there is poor knowledge about our water resources. Not only is surface water volume, flow, temperature, chemistry, and biological activity important to know, but also ground water characteristics, the interdependent relationships between surrounding terrestrial environments and water, and exactly how Nova Scotians are impacting these resources. 3. **Strategic Environmental Assessments** Piecemeal Environmental Assessments of individual proposed project sites are not adequate to address our need for a strategic plan for Nova Scotia's water resources. We propose that the Nova Scotia Government think about developing Strategic Environmental Assessments for individual watersheds throughout Nova Scotia. In this way, the Minister of Environment has one more tool to work with industry to ensure well thought out and planned development of our industries and resources, while ensuring the protection of our natural environment. 4. **Public Education** There needs to be continued and increased public education on water resources, and especially concerning the changes

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		we may see to those resources over time as global warming, storm severity, early springs/late winters, and sea-levels continue to increase. Our Parliament governs by the will of the People and therefore needs public buy-in to effect needed strategic planning on water resources. Public education is vital given that changes in water resources are happening, but at a pace which is unnoticed by many. 5. **Future Planning** Many dryer regions of North America have standing government commissions to think about the state and future of water, think about increasing demands on water, and to constantly up-date and tweak strategies and policies which affect water resources. In some regions, like California, these commissions have the power to 'Turn-off the Tap'. Though Nova Scotia is not at a water rationing stage, there are many things to think about for the future needs of our environment and ourselves. A Nova Scotia Water Resources Management Strategy can not be a static document. Events far outside Nova Scotia's boarders will undoubtedly have effects on our own water resources. If we do not pay attention and plan accordingly, we may find ourselves in difficult situations, such as contaminated water sources, diminished water sources, and demands by other regions to export our water with little compensation. I now focus on providing a few points to help answer the questions presented in *'Water for Life* '. *"What are your ideas about how we can ensure that development is undertaken in a way that does not put stain on the water available for the area of the surrounding natural environment?"* • The Nova Scotia Environmental Assessment Act needs to be strengthened, with more triggers, more time for public review of environmental assessments, and more opportunity for public involvement at the beginning of the assessment stage. Any development should be questioned, with the onus on the proponent to **prove** that the project will not strain surrounding water resources. Lack of full scientific certainty or adequate information can not be used as justification to proceed with a project. 'Quality of Life' is an important and just argument on any proposed project. Most aspects of Nova Scotia life can not be quantified with a dollar figure. It is a valid and just argument for an opponent to state 'I oppose this project, because I **feel** that it is wrong' without providing any dollar amounts or statistical evidence. *"How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same*

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		services in the future?" • Nova Scotia should now implement some stricter water-use regulations which focus on the large consumers and worst offenders. Water monitoring needs to be more dynamic, not just focused on total withdraw rate or only triggered by a large deleterious event. The Nova Scotia Department of Environment needs more knowledgeable compliance officers, technicians for water testing, and officials to aid industry in developing 'water friendly' processes and practices. • Nova Scotia needs to now also consider clear regulations on the exportation and transportation of water outside of province. • There needs to be continued public education on water conservation, going beyond the household, to inform people of their indirect water impacts (e.g., buying habits, transportation, and leisure activities). Nova Scotia should yearly report to water managers, industry, and the public on water consumption to help monitor and improve the system. *"How can we provide landowners with the ability to develop their land while ensuring the conservation or restoration of wetlands and their natural functions?"* • The Nova Scotia Government should develop new, or enhance existing, Public/landowner education programs focused on wetland identification, wetlands functions and value, rare and endangered species, and types of obvious and subtle/indirect land-uses which may impact wetlands. This strategic education should be conducted in partnership with the Federal Government, municipalities, Environmental Non-Government Organizations and landowners to both address broad issues and identify specific, localized issues which need more attention. • Nova Scotia must make a commitment to strengthen and help communities create community watershed groups and community river/shore/lake groups. These groups provide peer pressure to protect water resources and also support other community members to better manager their lands - taking a lot of demands off of the Department of Environment. • The Provincial Government should help municipalities strengthen and clarify municipal zoning regulations to meet new environmental standards and encourage community members to partake in that process.

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		• Nova Scotia should strengthen and increase the various Land Trust programs. *"During an emergency, such as a drought, who or what should have priority access to water?"* • I believe that the obvious considerations for water distribution during emergency situations would be (in a stepwise fashion): - Hospitals, community centres, shelters, fire services, and emergency power generation; - Multiple community distribution centres for citizens to fill up on. bottled water(free of charge) and communities or homes remote from water distribution centres, when local wells are inoperable; - Vital industry; and finally - Remaining homes, businesses, and industry. ○ The question I ask is, 'Does Nova Scotia have an updated, publicly available, widely known emergency response plan, which includes water distribution? Is Nova Scotia maintaining on-going emergency preparedness education for the public, such as the '72 Hours' education programs promoted by the Federal Government and many US States/Municipalities? ○ Also, is the Government of Nova Scotia confident in its ability to deliver water in the event of an emergency? Do we have an adequate network of well maintained community water distribution centres? Can the Government adequately enforce water rationing? Can the Government fully monitor water use during an emergency? *"What kind of information about water do you want or need?"* • Nova Scotians need more information about water consumption options and individual strategies to help them reduce, reuse, and recycle water resources, both for businesses and homes. We need to see the tangible benefits of using water wisely. Installing a 'low flow faucet' in each Nova Scotian's home may reduce some water use in the Province, but it is Nova Scotians' mental awareness and societal values which will have the greatest impact on water use. • What community groups and government programs exist to help monitor water resources and raise conservation and enforcement issues? How can the average Nova Scotian help the Government of Nova Scotia to implement a water strategy?

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		• Nova Scotian's need testing data on more than municipal and home well water supplies. Groups need testing data on all water bodies (streams, rivers, lakes, ponds, coasts, near shore) to address all manner of environmental issues. Nova Scotians eat food from these waters, play in these waters, and are beneficiaries of water's vital eco-system regulating abilities. *"Where should the money for a water resources management strategy come from and how should it be spent?"* • I think it is obvious that money for this strategy should flow similarly to other resources strategy implementation budgets: tax money and usage charges. • Money should be spent on: - Strengthening and enforcing environmental laws, zoning regulations, and water use regulations (several current laws and regulations are outdated or not harmonized) - Public education and local water enhancement programs (>80% of land is private, 40% of water is obtained privately, and >75% of sewage only receives Class I treatment or no treatment); - Develop and promote emergency response plans (Nova Scotia was completely unprepared for a Category 2 Hurricane); - Conduct a 111 inventory of watersheds, aquifers, rivers, lakes, streams, wetlands, etc., along with detailed analyses of their associated environmental problems. Partner with industry, environmental non-government organizations, community groups, and others to create and implement strategic plans to restore and maintain them. - Acquire and formally protect more lands which are important for water recycling, such as wetlands, lands over aquifers, and setbacks along rivers, lakes, streams, and coasts. Again, thank-you for providing IKANAWTIKET the opportunity to comment on the Nova Scotia Department of Environment *Water for Life: Towards a water resources management strategy for Nova Scotia.* To answer the final question in the booklet: IKANAWTIKET will continue to encourage the Traditional Ancestral Homelands Aboriginal Peoples in Nova Scotia to participate in the development of this strategy and other strategies to respect our natural living environment and our

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		lifeblood - water. Please keep myself and the Native Council of Nova Scotia informed about the development of this strategy, so that we may help the drafters develop a draft strategy which is robust and which addresses the issues, concerns, interests, and needs of the Aboriginal Peoples who continue on Traditional Ancestral Homelands throughout Nova Scotia.
A/O	Lake Cady Water Shed (chairperson)	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* That our water supplies will not exist in years to come *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Make sure the supplies are not abused or allowed to flow needlessly into the ocean. Water supplies can be dammed off to hold our water in greater amounts which will ensure our reservoirs are at maximum capacity for future requirement *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Suggest that we dam off our water supplies making larger reservoirs to maintain greater water resources, because our supply will not meet our demands in a few years time with the current water supply reservoirs *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Presently our gas taxes are not fully being used to repair our road systems (evident by existing poor roads).so whey not put some of this money into a fund to improve our water systems and supply locations. Water is and will be much more important than we think in years to come. We loose millions of gallons of water yearly to the ocean...so reduce this flowage and build larger holding facilities,..save our water today for tomorrow *16. I would like the following question answered.* Someone has opened up the outflow of the brook at Lake Cady. In past two summers the water supply is not being maintained because someone removed the rocks from the mouth of the brook and is letting the water in Lake Cady drop too early in the season. The over flow should be monitored at the brook and the spillage reduced (dammed off) to

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		conserve the water in Lake Cady Annapolis Co. In the past this Lake has traditionally held much more water over the summer months. Attention to this would preserve the Lake water for domestic needs longer in dry summers and act as a reservoir. Why has this not been resolved despite complaints to the authorities of Annapolis County by seasonal cottage owners?
A/O	Lunenburg/ Queens Community Health Boards: The Water Quality Committee	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Well water testing. Promotion of domestic well water testing for bacteria and chemicals. Reduction of financial barriers for the above (particularly chemical testing). A systemic tracking and analysis of test results, with communication of results to the public. We do not know how many private wells are being tested for water quality. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Introduce conservation measures, especially those that are easier to achieve, with greatest potential for impact. Encourage homeowners to conserve, have tax (or other) incentives for purchase of low flow toilets, front-loading washers, low-flow showerheads, etc. These incentives should be well advertised. Also, encourage new technologies available in other countries, but not available here. For example, the low-flow, variable flush toilets available in Europe (2 litre/6 litre flush). Introduce technology to allow recycle of utility water (the equivalent of using wash water to flush the toilet, for example). *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* The Community Health Boards in Queens and Lunenburg Counties have, over the years, provided public education re protecting water from contamination for private well owners. With past re-organization of government departments, this responsibility seems to have fallen between the cracks (somewhere between Public Health and the Dept of Environment). As volunteers, the Community Health Boards are limited in what they can achieve. As individuals, we would be willing to implement conservation measures such as those listed above, if the technology were available and accessible (not too

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		difficult to learn and not over-priced). *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* First, we have to promote a cultural shift to encourage conservation by individuals. This education will cost, and the $$ should come from increased municipal water rates and provincial tax dollars. The federal government should be contributing more - they have more money available!
A/O	The Mining Association of NS	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* The Mining Association of Nova Scotia believes that the current regulatory regime for surface water and ground water in Nova Scotia balances the need for protection of resources from impairment and allows for use by our member companies. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Our member companies routinely employ principles of protection and conservation and are often applauded for their efforts in this area. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* The Mining Association of Nova Scotia believes that the monies generated through the water withdrawal approvals currently in place in Nova Scotia should be used to finance any strategy with regard to water. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* In 1980, a series of Regional Water Resources guides were produced. These were extremely well researched and were a very valuable tool to many in our industry. We believe that these should be updated. We also would encourage the government to produce guides for those regions that were neglected in the first round.
A/O	Workshops (Board of	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest*

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	Director of the Native Council of NS)	*concerns when it comes to water in Nova Scotia?* big industries using too much water commercial waste clear cutting *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Apply a water tax to energy producers and product manufacturers. Stop clear cutting. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* tax all commercial industries at a much higher rate than what they are paying now to conserve water *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* The provincial government general revenues money should be distributed to those who require it. And used to maintain and improve the water resources.
A/O	Nova Scotia Environmental Network	**Introduction** The Government of Nova Scotia is creating a provincial water strategy. It has released a discussion paper for comment entitled *Towards a water resources management strategy for Nova Scotia*. Written submissions based on the discussion paper are due by June 1, 2008. To find out more about the consultation process, please visit the Department of Environment and Labour: Water: www.gov.ns.ca/nse/water/WaterStrategyHow.asp Members of the *Nova Scotia Environmental Network* have compiled key points that should be included in the submissions to the provincial water strategy. NSEN is comprised of environmental groups and individuals with great experience and expertise on water. For more information about NSEN and its members, please go to: www.nsen.ca *KEY POINTS* **Conservation and Pollution Prevention** -Put more emphasis on conservation of water resources and prevention of pollution into water supplies -Distinguish between urban and rural issues (i.e. Stormwater pollution in urban areas, leaking septic beds in rural) -Focus on creating less pollution into waterways (sewage, septic, agriculture runoff, urban runoff œ address these

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		factors) -Create a watershed management board system to implement these solutions **Information and Knowledge** -Research and incorporate best practices from other jurisdictions-Collect more information on existing quantity and quality of surface and ground water resources-and wetlands **Watershed Based** -Water resources should be managed on a watershed basis œ integrated watershed management (takes into account all stakeholders and land uses that affect water quality and quantity) -Watershed advisory boards need to have the mandate, resources, financial support and capacity to work collaboratively with government in assessing, managing and monitoring watersheds. **Ecological Integrity goal** -Adopt ecological integrity of aquatic resources as the overarching goal-not drinking water standards etc. -Freshwater and estuarine ecosystem integrity must be assessed through monitoring programs that include biological (e.g., aquatic biodiversity, and communities), chemical (e.g., water quality and contaminants) and physical (e.g., habitat, hydrology and sediments) measurements to provide a baseline assessment of current ecological conditions in all of the provinces freshwater ecosystem types (lakes, ponds, wetlands, rivers, estuaries). Collecting water quality data alone will not be sufficient to make informed decisions about ecosystem integrity. - Develop clear timelines and frameworks for achieving ecological integrity - Agree with the above goal however goals can be wishful thinking without very clear planning for —getting there“ **Legislation and regulations** -Clarify and legislate roles and responsibilities of all government departments, community groups, and stakeholders - Increase enforcement of existing regulations, especially provision of Section X of the Environment Act -Create Provincial Statement of Interest on the ecological health of watersheds -Identify and address areas where legislation and policies overlap and conflict and gaps in legislation (esp. between

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		Environment Act and MGA) -Work with land use planners to maximize water protection through land use planning - Buffers should be required along all watercourses and water bodies œ This should not be left up to discretion of municipalities. There should be an absolute minimum 20 metres along watercourses, but more extensive buffers may be required depending on proposal land use mix and ecosystem type -Implement more specific land-use guidelines that maintain ecological integrity based on critical thresholds identified for various land-use mixes and freshwater ecosystem types **Financial Resources** -Develop a funding strategy to support the implementation of the water strategy over the long term. Consider a mix of Environmental Trust Fund, user fees from local residents for local level water management programs, etc... -Additional resources for water management for all levels of government and community groups -Increase financial resources for NSDEL so that it can obtain better information on water resources, enforce legislation, organize and update water information, educate and train staff in watershed management, and coordinate provincial water quality monitoring -Better utilize local community groups as participants in water management œ partially by providing them with some financial resources (seed funding, etc...) -Use full cost accounting to value for, and set water use fees -Water conservation initiatives should be developed for households, business and industry **Education** -Increase education for local level decision makers and stakeholders such as developers, municipal planners, councilors on water related issues through water workshops and water days -Educate and create more awareness about the effects of human activities and on water resources and the finite limits and true value of water -Province needs to communicate effectively and educate land use planners about their role in watershed management -Government should have an annual provincial water education campaign around World Water Day in March

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		Other -More leadership from NSDE-Plan for future to reduce vulnerability to emergencies (like climate change)-Look at international best practices for watershed management, water conservation etc...
A/O	Nova Scotia Federation of Agriculture	**The world is incurring a vast water deficit – one that is largely invisible, historically recent, and growing fast. Globally, demand for water has tripled over the last half century... Shrinking water supplies endanger, not only the natural environment, but also food and energy supplies. (Lester Brown, *Draining Our Future: The growing shortage of fresh water)*** **Introduction** Our natural capital in Nova Scotia, and the way we manage it, can provide us with a significant competitive advantage. As users and stewards of a large portion of the provinces natural capital, the farm community is uniquely positioned to lead the way in the preservation and management of our natural resources through building on existing initiatives and developing new strategies to protect, share and conserve our natural capital. The Nova Scotia Federation of Agriculture has long recognized the strategic importance of water, and accorded it a high priority in the industry's *Environmental Management Strategy*. As prominently noted in the Province's consultation document *Water for Life*; "Despite [its] seeming abundance, Nova Scotia is not immune to water related problems. Protecting our water resources takes care and planning and all Nova Scotians have an important role to play." Agriculture, as a major water user has a key role to play; unless there is a commitment to a comprehensive plan to reach and maintain water security in Nova Scotia the province's agricultural sector does not have a secure future. **General Comments** While the consultation document identifies, indirectly, a number of components that will involve the agricultural sector – building knowledge, shared stewardship, valuing water, lowering consumption and supporting a sustainable economy, it falls short with respect to making the connections between food security and water security. For example, the many interesting and salient points made, within the consultation document, to stress the importance of water could include facts such as: "It takes 1000 tons of water to produce a ton of grain"; and, "To produce enough food to satisfy

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		one person's daily dietary needs takes about 3000 litres of water.". These facts emphasize the important link between water and food and allude to another, increasingly, important link; the link between food production and energy production. The current and much maligned debate regarding the connection between the rising cost of food and energy is not about the increasing energy costs of producing food, it is about the fact that the food that farmers produce can also be used to fuel automobiles. The solution lies in building agriculture infrastructure and increasing the capacity of Nova Scotia's industry to enable it to supply both food and fuel. Water management is a key aspect of increasing the capacity of the Province's agriculture. While the consultation document recognizes that the "...impacts of climate change will pose new implications for water users." climate change is actually the 'wild card' when planning for water security, and demands an adaptive approach be taken in the development of a water resource management strategy. An adaptive approach is especially important with respect to agriculture, not only because of the industry's dependence on adequate clean water, but because of the complex relationships between agriculture and climate change in general. These relationships are partially explained by the following exert from the Canadian Federation of Agriculture's *Climate Change Agricultural Awareness Project.* -- Global climate change will mean substantial impacts on the environment, including water resources, fisheries, forests, wildlife and ecosystems. Scientists also predict that the enhanced greenhouse effect could amplify climate variability and increase the incidence of extreme events. For the agriculture industry, changes in temperature or precipitation could affect production on Canadian farms in various ways; it could increase the incidence of pest infestation, drought and flooding, as well as having severe impacts on soil erosion, water quality and water quantity. -- The agriculture industry has a special role to play in the context of global climate change. On one hand, the agriculture sector is bound to be affected by climate variability, whereas on the other hand, it is also a part of the problem, since some of the GHG emissions originate from various production and management related activities.

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		-- The agriculture industry is unique in terms of its methane and nitrous oxide emissions and as well as carbon sequestration opportunities. The nature of the agriculture industry allows for reduction of GHG emissions by encouraging sustainable management practices that are economically viable. The agriculture industry already has some tools, including Best Management Practices (BMP) that [can] reduce GHGs emissions and provide adaptation measures to minimize the impact of climate change on agricultural activities **Environmental Management** As noted above, water has a high priority on the Federation's agenda and occupies a prominent position in the industry's *Environmental Resource Management Strategy*. The principal goal of the Federation's *Environmental Resource Management Strategy* is to utilize sensible, practicable and well designed agricultural policy to realize our vision of the future. That vision includes an economically viable industry, functioning on a well-managed agricultural land base that can provide open space, clean water, healthy food, wildlife habitat, and speaks to a renewed connectedness between Nova Scotians and the farm community. The Federation's approach to environmental resource management is principally based on science and driven by experience. Our experience has shown us that collaborative efforts based on a combination of voluntary measures (best management practices), along with the appropriate and judicious use of regulation and guidelines is more effective in managing our natural resources than a "one size fits all" regulatory approach. We also realize that conservation practices produce the best results when they are clearly understood by all stakeholders and implemented via incentives. The Federation places a priority on working with partners to maintain, and enhance, our natural resources through the development of outcome-based, self-regulatory approaches, using sound science and cost-benefit analysis to achieve goals. Our approach endeavors to bring together resources from the Nova Scotia Department of Agriculture, the Nova Scotia Department of Environment and Labour, Agriculture and Agri-Food Canada, the Nova Scotia Agricultural College, other interested public and private agencies and the farm community in a combined initiative intended to meet the emerging challenges of on-farm environmental management, more specifically:

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		• the conservation, protection and management of water resources; • energy conservation and the development of opportunities for renewable energy sources; • meeting public expectations with respect to the use of soil nutrients, water management and land-use practices; • enabling Nova Scotia's agricultural industry to adapt to climate change and reduce greenhouse gas emissions, and; • ensuring that there is a support system in place to sustain the continued development and adaptation to acceptable standards of environmental resource management. **Water** The strategic management of water resources is a priority for the success of agriculture in the future. Access to water is becoming a key economic driver for agriculture. As the consultation document notes with respect to Nova Scotia's seemingly abundant water resources "...Nova Scotia is not immune to water related problems." Since 1996 the agricultural industry has faced varying degrees of water related issues ranging from too much to too little. It is reasonable to assume that if the province faces shrinking supplies of fresh water, agriculture can expect a shrinking share of a shrinking supply, and farmers fully recognize that the economics of water use do not always favor their needs. The goal of the Federation's agricultural water management strategy is to protect and improve the quality of water resources throughout the Province of Nova Scotia through research, education, extension efforts, and to facilitate communications among federal, provincial and local agencies, and the agricultural industry on water quantity and water quality issues involving agriculture and the greater community. **Identified Issues** Key issues that present challenges with respect to agricultural water resource management include: • Increased demand for water resources from competing interests. • The low priority for agriculture water use in water allocations. • The limited knowledge of groundwater and surface water resources. • The limited resources available for agricultural water management.

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		• Mitigating the impacts of climate change. • The increasing costs of waste water management. **Identified Themes** The Federation's water management strategy identifies a number of themes among them:[1] **Watershed Management** Watershed management recognizes that the water quality of our streams, lakes, and estuaries is the result of the interaction of upstream features. Activities of all land uses within watersheds impact the water quality of downstream water bodies. Point and nonpoint sources of pollution in a watershed contribute nutrients, bacteria, and chemical contaminants to water courses. Watershed management encompasses all the activities aimed at identifying sources and minimizing contaminants in a watershed. **Best Management Practices** Water management deals with the water cycle as water moves into and around major features of the farm property, the house, farm buildings, fields and natural areas. As potential sources of contamination for ground and surface water are recognized, best management practices offer a practical, affordable approach to conserving a farm's soil and water resources without sacrificing productivity. These practices focus on the development and implementation of remedial measures that address water quality and water conservation on a site specific and watershed basis. **Water Supply** Why do we need to ensure a water supply for agriculture? Safe, reliable water supplies and the accompanying infrastructure are a critical factor in sustaining agricultural production. Depending on the weather alone to provide enough water to support their farm operations is a chance few Canadian producers can afford to take. In fact, producers often have to deal with water management issues as a result of Canada's variable climate. Therefore, providing tools to better manage water resources to secure a long-term water supply simply makes good business sense (*Canada-Nova Scotia Water Supply Expansion Program).* The development of secure water supplies are funded under the National Water Supply Expansion Program (NWSEP)

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		and federal-provincial agreements. The NWSEP supports the Environment element of the APF through the development, enhancement and protection of vital water resources to help address water constraints in agricultural areas of Canada. The objective of the Canada-Nova Scotia Water Supply Expansion Program is to ensure the agricultural sector/community has access to a secure, good quality water resource to meet its existing and growing needs through a water management program that stresses efficient and effective use of available rural water supplies (*Canada-Nova Scotia Water Supply Expansion Program*). The NWSEP program has been a key element of the progress the farm community has made with respect to advancing and dealing with water related issues. **Water Policy** Understanding the interactions of water and agricultural policies is crucial for achieving the efficient management of water resources. Agricultural and environmental policies need to converge progressively toward mutually compatible objectives. Since water is such a key element of the future for both agriculture and the greater community, water policy is a good place for this convergence to begin. The primary interests of the agriculture sector in water policy include but are not limited to: ▪ Water security: protection of agricultural access to water which recognizes principles of adequate supply, assured access, and affordability. ▪ Development of drought management strategies ▪ Regulation of the water supply, to ensure that all users and beneficiaries contribute to conservation. Allocating water among competing interests and assigning responsibilities for the protection of water resources is a political issue, and agriculture usually becomes the residual claimant in this situation. Agricultural water management policy, then, needs to be positioned in a social, environmental and political context. If there is recognition and a public commitment regarding the crucial link between water security, food security, energy security and the role of agriculture; then there needs to be a change in the way we think about water and our approach to managing our water resources. That approach needs to be premised on meeting agriculture's current and future demands, while at the same time

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		contributing to the economic and environmental stability of the greater community. The development of an agricultural water policy can begin by answering a number of questions, including: • What is the balance between food production, water security and environmental sustainability? • How can the water needs of agriculture be managed in a sustainable manner ensuring adequate access while at the same time considering the needs of the greater community and environmental sustainability? • What are the options and their consequences for improving agriculture's access to water? • What are the options and their consequences for sourcing water from ground water sources, surface water sources, recycling opportunities and rain and run-off? • Are there lessons to be learned from other jurisdictions? • And, finally and foremost, is agriculture water use a priority and is the public willing to invest in the infrastructure, technology and managerial upgrades that may be required to manage water in the future. **Current Industry Initiatives** What is the industry doing to meet the challenges it faces with respect to water management? Following are some examples of initiatives that the Federation has pursued and is currently pursuing that focus on the protection and use of water resources. **Nutrient Management Planning** The development and delivery of Nova Scotia's nutrient management initiative has been spearheaded by the Nova Scotia Federation of Agriculture's Nutrient Management Committee in partnership with the Nova Scotia Agriculture College, the Nova Scotia Department's of Agriculture and Environment and Labour and the Nova Scotia Institute of Agrologists. To date approximately 1000 farm businesses have nutrient management plans in place. Nutrient management planning is a key component of the judicious management of soil and water resources. The Federation's approach to nutrient management planning is consistent with its overarching objectives and approach to environmental resource management; and, is informed by its definition of nutrient management planning. The Federation defines nutrient management planning as:

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		An agricultural practice designed to reduce environmental risk and maximize the efficient use of soil additives by balancing the major plant nutrients – nitrogen, phosphorus and potassium – with crop requirements considering: 1) the amount, timing and application of soil additives including manure, chemical fertilizers and/or other materials that contain nutrients; 2) soil type and topography, and; 3) existing levels of available plant nutrients in the soil. **Environmental Farm Planning** The Nova Scotia Federation of Agriculture began the development of environmental farm planning in 1995 as part of an initiative developed by the Atlantic Farmers Council. Today Nova Scotia's Environmental Farm Plan Program is recognized as one of the most comprehensive environmental farm plan programs in Canada with more than 1000 farm businesses participating. The program is funded by Agriculture and Agri-Food Canada and the Nova Scotia Department of Agriculture and is delivered by the Nova Scotia Federation of Agriculture. The program is a tool to assist farm businesses in assessing environmental issues and developing and implementing remedial measures to mediate environmental problems. It assists farm businesses with issues such as: preventing soil erosion; protecting water resources; ensuring fuel, pesticides, farm wastes and fertilizers are properly stored and handled; and, provides wildlife with a healthy habitat. **Waste Water and Manure Management Chair** One of the objectives of the Nova Scotia Federation of Agriculture's *Environmental Management Strategy* was the establishment of a Waste Water and Manure Management Chair at the Nova Scotia Agriculture College. The Chair is currently in place and is actively engaged with the farm community in dealing with waste water and soil management issues. **Development of an Integrated Approach to Watershed Management (Thomas Brook Project)** The Thomas Brook Project began in 2000 as part of the Federation's *Environmental Management Strategy*. The objective of this initiative was to assist and support the development of an integrated approach to agri-ecosystem management in Nova Scotia watersheds. The project is now one of six Watershed Evaluation of Beneficial Management Practices (WEBs) sites in Canada. WEBs is a national project that has stimulated the formation of a network of living

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		laboratories across Canada bringing together hydrologists, economists, and agri-environmental experts from academia, government and non government organizations . The project is providing Nova Scotia's agricultural community with valuable information regarding the implementation of best management practices, water management and understanding the ecology of watersheds. **Extension Services (Water Coordinator)** For the past 18 months the Nova Scotia Federation of Agriculture has employed a Water Resource Management Coordinator. The Coordinator has been responsible for: ensuring consistency and coordination in relation to the delivery of farm water resource management activities in Nova Scotia; developing outreach programs and initiatives that support high priority issues and research in relation to water management needs; and, working directly with farm businesses on water related issues. The position has been funded through the National Water Expansion Program (NWSEP). An application to extend this initiative is pending. **Partnering With Nova Scotia Department of Environment** Water availability is one of the largest problems facing agriculture and this problem has increased due to farmers switching to crops with higher water demands. Many agricultural producers are expanding their water supplies and irrigation equipment. Knowing how much water is currently being extracted is an important factor in knowing how much water can be allocated to agricultural users in the future. During the past year, utilizing funding from Agriculture and Argi-Food Canada, the Federation of Agriculture partnered with the Department of Environment in a project examining ground water in the Annapolis Valley. A funding application is pending to extend this partnership for another year. The key objective of the project is to inventory all significant water withdrawals in the Annapolis Valley to aid in the development of a water budget for watersheds with high agricultural use. **Riparian Health Assessment Pilot and Strategic Planning Initiative** Key attributes of healthy riparian areas include their ability to effectively trap and/or filter sediment, support groundwater recharge, provide primary productivity and enhance overall biodiversity. As a result riparian areas are frequently being identified as essential components of environmental management systems for many different types of

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		farms. One of the most popular programs to describe the functionality of riparian areas is the "Cows and Fish" tool, established in the province of Alberta in 1992 through a partnership between a number of government and non-governmental agencies. The "Cows and Fish" program relates to the understanding and management of riparian areas and improving riparian use strategies to enhance water quantify and quality. The program is presently helping producers, planners and landowners better understand the health of riparian areas. The Federation of Agriculture, as part of its Ecological Goods and Services Initiative, has recently developed a partnership with the Town of Stewiacke, the Union of Nova Scotia Municipalities, the Nova Scotia Agriculture College and Agriculture and Agri-Food Canada to develop a Riparian Management Tool for designated water sheds in Nova Scotia. The objective of the project is to develop a better understanding of riparian health and function, and facilitate the actions of local governments, environmental farm planners and individual property owners in addressing riparian management issues. The anticipated result is the establishment of a framework for enhanced riparian management planning and activities throughout Nova Scotia. **Agricultural Water Resources Education Web Site** With the cooperation of Agriculture and Agri-Food Canada and funding from the NWSEP program, the Federation is currently developing and implementing a water resource micro-website. The objective of the project is the delivery of an interactive, "one stop" hub for geographical water resource information. This site will be a beneficial tool for both farmers and residents in the region for climate based water management planning, as well as serve as a tool for watershed conservation. The interactive map will have a "clickable" map of Nova Scotia (or regions of NS) that will enable users to: • Identify the watershed in which they live. • See the features of a particular watershed area. • Link to local weather and climate information. • Access other information such as: links to local watershed groups, flow information etc.

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		This project is expected to provide the Federation and its partners with a platform for a water information network that can provide a planning tool for farm businesses in the future. **Communications** Through a Contribution Agreement between Canada and the Nova Scotia Federation of Agriculture, the Federation employs a communications specialist position. The key focus of the position is to capture and promote success stories related to environmental issues. Other duties include assuring that environment related factsheets, technical bulletins, reports and newsletters are produced in 'plain language' that is easily understood. A funding application for resources to continue this position is pending. **Summary** A cursory examination of current water literature sends a strong message that water is a key global issue. The Earth Policy Institute, an organization dedicated to building a sustainable future, includes water as one of its twelve Eco-Economy Indicators. Eco-Economy Indicators are twelve trends that the Earth Policy Institute tracts to measure progress in building an eco-economy. Water resources are an indicator because water scarcity may be the most underrated resource issue the world is facing today. (*Earth Policy Institute*) In many parts of the world the demand for water has outstripped supply; more than one billion people lack access to safe water. While Nova Scotia appears to be immune, or unaffected, by many of the more serious impacts of water shortage, the reality is that only proper planning will enable Nova Scotians to continue to enjoy the advantages of being 'unaffected' by serious water issues. The only way to mitigate future water issues is to develop a strategy that will provide all water users with the planning tools required to make the right choices today – the development of a comprehensive water management strategy for Nova Scotia. As previously noted the agricultural industry, with a future largely dependent on adequate supplies of clean water, is particularly vulnerable if a comprehensive and planned approach to managing the province's water resources is

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		neglected. The implications of climate change alone - changing precipitation patterns, hotter temperatures and longer growing seasons – call for a renewed approach and change in the way we think about water. The Federation's willingness to take a proactive approach, to share responsibility for the protection of the Province's water resources and build partnerships with other actors is clearly demonstrated through the initiatives outlined above (Current Industry Initiatives). However, in the final analysis, the farm community needs some indication that policy makers recognize the fundamental link between food security and water security and that future discussions related to the development of a comprehensive approach to water policy include the farm community.
A/O	Nova Scotia Ground Water Association	The use of ground source energy has several potential economic and environmental benefits, particularly as its use can help to reduce our reliance on fossil fuels. However, if not done properly, the construction for and use of ground source energy can also cause local and large-scale negative impacts to our aquifers, groundwater resources and related surface waters. Fortunately, these negative impacts may be relatively easy to mitigate, but this will happen only if appropriate regulations are put in place to ensure the proper construction and operation of these systems in a way that is consistent with the protection of our aquifers and the equitable sharing of our groundwater and geothermal resources. To date, no such regulations exist in Nova Scotia. **Magnitude of the issue:** Since there are currently no regulations in place to control the use or application of ground source energy systems in Nova Scotia, we have no clear handle on the actual numbers or types of systems being installed. However, rising fossil fuel and related energy costs, and recent Federal subsidies, have encouraged a large number of individuals and businesses to switch to ground source energy sources, and comments from provincial and national water drilling industry sources suggest that the demand for these systems is large and increasing at a significant rate. Many federally-funded capital construction projects have already included the use of ground source energy systems as "experiments", but now their use in more conventional terms is increasing. The tourist center at Grand Pré serves as one example, and the waterfront project involving several deep wells in Dartmouth serves as another. The Halifax Regional Municipality and other municipalities have begun to request that ground source energy be considered for

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		use in all of its new construction projects. Up and coming wineries and other industries are looking to utilize ground source energy for cooling and heating, and we know that individuals and home owners are looking to follow suit. In response to the increasing demand from all sectors, some of the conventional water well drillers in Nova Scotia have geared part of their business, and some have switch their entire businesses, over to the art of geothermal drilling and ground source energy system installation. We understand also through the grape vine also that non-drilling companies have, or are in the process of, purchasing drilling equipment solely for the purpose of installing ground source energy systems. In the absence of any proper regulations, growth in demand and the numbers of suppliers getting involved in the ground source energy industry can result in a significant amount of mayhem and possible damage to our groundwater resources. These are problems that would take a long time to recognize, be difficult to properly and scientifically characterize in light of the absence of any consistent data and monitoring, and could result in unnecessary economic and environmental cost. **Popular approaches to ground source energy use:** There are two popular approaches in use in Nova Scotia for obtaining geothermal energy, and both involve the drilling of deep boreholes into the ground and our aquifers. The two most popular processes include: 1) open-loop systems, where water is pumped from one or more wells, heat or cold are extracted from the water, and the water is disposed of or returned to the aquifer; and 2) closed-loop systems, where a U-shaped pipe is placed into deep bentonite or gravel-packed boreholes to circulate refrigerant underground and back to surface. With both techniques, many boreholes (tens to hundreds) may be required at some sites, and the boreholes may extend several hundred feet below the surface. **Current regulatory environment and technical concerns:** The open-loop technique involves pumping water from aquifers, and as such there are some regulations already in place for the construction of the water extraction wells and with regards to water withdrawal if volumes exceed 23,000 L/d, but there are no clear regulations and/or controls to follow on returning water to aquifers.

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		Closed loop systems are not classed as wells, and since there is no need to withdraw water from the boreholes drilled for their installation, there are no regulations in place at all regarding the construction or use of closed-loop ground source energy systems. Our concerns, and areas where it is suggested that regulations may be needed regarding ground source energy systems and the protection of aquifers and groundwater supplies, include the following (listed is in no particular order of priority or significance): • system construction practices: – there are no defined setbacks for either type of ground source system, particularly for closed-loop systems where boreholes may be advanced through septic systems, contaminated zones, etc., – there are no requirements for casing to be installed in closed-loop systems to help isolate surface waters and shallow aquifers from deeper groundwater aquifers, – bentonite was used in earlier closed-loop systems, but there are reports that gravel fill (more efficient energy transfer by advection) may be used, and is being used, which: a) due to pump-induced vibrations in piping rubbing against sharp gravel, could cause the release of refrigerant into aquifers, and b) Allow inter-hydrostratigraphic flows within boreholes – this is of particular concern in multi-layered geology where groundwater quality may vary from one horizon to the other, or where water production is taking place. – There are no requirements regarding the numbers or wells required or for pumping tests to be done on water injection wells in open loop systems – thus, failed systems may cause operators to dispose of water to surface instead (impacting streams and causing groundwater balance deficiencies). • the effects on possible water quality changes associated with thermal changes at wells or within aquifers at closed-loops or at open loop water injection locations, • thermal interference between adjacent ground source energy users,

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		• thermal, chemical and/or physical hydraulic interference between ground source energy users and adjacent conventional groundwater supplies and well fields, • system density and the overall impacts that many smaller, closely spaced systems may have on the subsurface aquatic environment • maintaining an overall subsurface thermal balance where the heating and cooling season demands may differ. These issues are not broadly covered in the general or system advertising literature. Since the perception of any negative impacts may be less than the impacts resulting from the use of more conventional energy forms, and since there are both economic and environmental pluses to ground source energy, the focus by stakeholders in most literature appears to be only on the benefits of ground source energy use. However, there reference in some US government literature (a longer history of ground source energy use?) to the need for proper site studies and controls in system design to ensure that efficiencies are maintained, particularly where there may be excessive heating or cooling of the ground around the boreholes, where systems are too close together, where too heavy a demand is put on the systems; or in open loop systems where demanding too high a volume of water from a borehole can exhaust its supply, where thermal breakthrough can occur, or where thermal plume migration can impact other boreholes or the surrounding environment. We know of one recent study (study source to be made available when it is found) of extensive thermal and related groundwater quality impacts over a large part of an aquifer below the Canada Packers plant in St. Boniface, Manitoba, due to the use of ground source energy (open loop) for chilling purposes only. We also know of a more recent reference to the application of solar energy to help maintain subsurface thermal balance in a ground source energy project in Montreal (again, source to be made available when it is found), in an effort to offset the effects of heating season that is longer (more demanding) than the cooling season. **Closing:** We suggest that the current activities on the Water Strategy may be the perfect time and place to consider the need for and the nature of new regulations regarding the construction and use of ground source energy in Nova Scotia,

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		and/or to identify situations where and how proper hydrogeological assessments may be required to be done, either for larger systems or in areas where large densities of smaller systems are expected to be installed, in an attempt to assemble the type of scientific data needed to properly assess possible issues, to mitigate possible negative impacts, and to help improve overall system designs and efficiencies for what may amount to a wonderful alternative energy source.
A/O	Nova Scotia Home Builders Association	Attached is a document used when our builders register R2000 homes. You will note on page two, Environmental Features, that R2000 requires Water Conservation measures before the home can be certified R2000.This should be used an example of what should happen in all new home construction, whether single family or multi. The Province, through a consultation process, must decide if this will be accomplished through education, incentives or regulations. **Water Conservation:** - Water saver or low flush toilets 6 l/fl __ - Low flow shower < 9.8 l/min @ 5.5 kg/cm^3 __ - Low flow faucets <8.3 l/min @ 4.1 kg/cm^3 __ As for existing houses, it makes little sense to educate consumers if wasteful and inefficient toilets, shower heads and faucets are allowed to be sold in NS. The NSHBA feels very strongly that the protection of our water resources should be paid for by all Nova Scotians through the general tax rate and through usage charges.
A/O	Nova Scotia Salmon Association	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* That we undervalue our resources. That water is used too heavily and liberally by industry, and that our natural resources do not carry enough 'political clout' to defend themselves, or to uphold their importance. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Conservation. Period. From households using low-flow, low consumption appliances, to industries being held to strict

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		regulations... it is our obligation to protect one of our single most valuable resource. The only way to do this fairly - for industry and for nature - is to ensure we tap the resource in the most environmentally friendly and least damaging way possible. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Low flow appliances. Abide by strict regulation. Reduce consumption during peak usage times. Mandate that industry not only reduce consumption, but improve the condition of the watersheds they work with - through restoration, funding, etc. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Federally and provincially, there needs to be a commitment. Also, large industries that have high usage should pay more. I believe individuals already pay fairly based on their usage. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* PROTECT OUR NATURAL AREAS!!!! Nova Scotia's heritage is based on our wilderness and our natural areas. They cannot be jeopardized for the sake of industries. Our watersheds need to be protected through better business practices, strict development rules, and more funding for restoration projects.
A/O	Nova Scotia Salmon Assocation Adopt-A-Stream program manager	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* In order to protect and conserve our water resources, for all of its values, we must think in terms of the entire watershed (and everywhere is in a watershed not just the list above). More effort is needed to educate the public, industry and governments about the need for and the means to protecting all watercourses and water bodies. The development and use of very best management practices by all sectors, municipalities, residents, industry-manufacturing, forestry, agriculture, development etc. needs to be strongly encouraged. For the most part best management practices are well known but need to be insisted upon and so more broadly applied. In particular: Riparian buffers need to be protected and in many areas re-established for all watercourses and for all activities not

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		just forestry but also agriculture, and new development and existing urban/suburban and all residential lots. This needs to come from provincial legislation and incentives and not simply left to the mishmash of municipal by-laws. Road construction and maintenance – best management practices please! Almost all gravel roads are enormous sources of sedimentation in our streams and this does not need to be the case. Improved road maintenance and upgrading practices could go a long way to reducing silt and sediment pollution. TPW needs to become committed to protecting watercourses, making it a priority and this will require it offer/insist upon better (additional) training for equipment operators (both employees and contractors) to learn best grading techniques; ditch sloping, culvert maintenance etc. Please consult the instructor, Hugh Hambly, of the NSEL Watercourse Alteration Certification course for Single Span bridges and Culvert installation for clear direction on this. Water conservation efforts need to be adopted by all sectors, not just using less but better use of water through recycling and modification of activities. In agriculture for example over the longer term, better soil management practices that increase organic content will increase moisture retention, reducing dependence on irrigation and more immediately modify the timing and methods of irrigations – e.g. not spraying water into the air over crops at high noon in the summer, which is regularly done in the Annapolis Valley. Great support for community-based water quality monitoring and education efforts about best management practices is needed. Aquatic habitat protection and restoration is needed to increase the productive capacity and resilience of our watersheds. The Government of Nova Scotia particularly the Department of Environment needs to take a more proactive approach to water protection – the current system of acting on complaints is not adequate. It also needs to offer more leadership and coordination regarding silt and sedimentation and as mention above, great responsibility for the impact of roads and highways on our rivers, streams, lakes and wetlands. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* The water needs of the economy must not, and need not, compromise the integrity of aquatic ecosystems. Better

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		forestry practices, particularly greatly reduced clear cutting and pesticide use need to become the norm. The province should set goals to increase the total forest cover (with diverse native species composition) to improve water retention and infiltration to ground water as well for filtration of pollutants. Mining must be done without the contamination of our lakes and streams - no matter the upfront costs because it is the future generations (human and other) that will pay and pay and pay for contamination. In this day and age there is NO excuse for the release of pollutants into the environment especially into waterways. Environmental protection needs to the top priority and strictly enforced. Water conservation efforts need to be adopted by all sectors, making not just less but better use of water, water recycling and modifying activities to use less. In agriculture for example over the longer term better soil management to increase organic content and increase moisture retention, more immediately modify the timing and methods of irrigations. Alternatives to watering livestock in waterways need to become mandatory and the province needs to assist farmers in making this transition. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Assist community based groups to increase public awareness about water protection and conservation,and to encourage best management practises across their local watershed. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* - Use full cost accounting to value water, and set water use fees accordingly. - Develop a funding strategy to support the implementation of the water strategy over the long term. Consider a mix of Environmental Trust Fund, user fees from local residents and businesses for local level water management programs, etc... - Additional resources for water management for all levels of government and community groups. Increase financial resources for NSDEL so that it can obtain better information on water resources, enforce legislation, organize and update water information, educate and train staff in watershed management, and coordinate provincial water quality monitoring.

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		- Better utilize local community groups as participants in water management – partially by providing them with some financial resources (seed funding, etc...)
A/O	Pitu'pag Partnership	*Question One: What are your biggest concerns when it comes to water in NS?* • Water quality • Wetlands protection • Inventory of freshwater resources in NS and their sensitivity (protection measures because they are finite and fragile) • Impacts of climate change • Buffer zones for development • Better understanding of microbiology of freshwater systems in NS • NAFTA - protection of water resources from sale • Sustainability • Availability of protection plans for watersheds that aren't municipal drinking water sheds • Watersheds have no legislative boundary - all have to work together - collaboration necessary • Sensitivity of areas where freshwater meets salt water (barrachois) and protection of those areas • Frog population monitoring (ecosystem indicators • Acid rain • Invasive species • Pesticides • Siltation • Groundwater resources • Landuse development • Education programs for public on importance of this finite resource • Mi'kmaq traditional knowledge and the role of legends in teaching and managing water resources *Question Two: How do you think we can ensure the water needs of the economy are met today without compromising the ability to provide the same services in the future?*

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		• Protection policies • Conservation practices • Plan..... • How do we know how much water is available....we have to know this • Policies to protect from overuse and resulting water quality problems (salination and industrial impacts) • Decision making should be guided by having clean drinking water now and forever • Policies that reflect the irreplacability of water • Maintenance of water quality necessary to able to access Treaty rights (bad water - no fish - not able to fish.. . .this is a treaty right) • Inability of legislators to bring treaty rights into legislative process – need to build this in ... can piggy back on existing Mi'kmaq treaty rights • Wetland protection legislation • Addressing gaps in existing wetland legislation (on federal lands) • Move away from mitigation to protection *Question Three: What are you willing to do to conserve and protect NS's water?* • Compliance with new legislation • Education • Participate in development of new legislations • Looking at new technologies that ensure safe water will be there and will be a result of the treatment process • Conserve • Use low flow devices, turn off water when brushing teeth, short showers.... etc • Engage people in consultation process • Sacrifice development to protect water resources *Question Four: Where should the money come from to finance the implementation of the water strategy? How do you think this money should be distributed and used? Why?*

Code	Name	Comments
		• Onus to spend money on the areas identified as important by people through this consultation • Prioritize areas of most importance • Cost shared between all levels of government
A/O	Queens County Fish and Game Association	1) All lakes, rivers, streams, bogs, and swamps provide valuable benefits to all Nova Scotians, as well as the flora and fauna that utilize them. Aquifers must not be allowed to become polluted through the many fractures in our Provincial bedrock. 2) While hydro power may be green, its past damage to inland watersheds has been enormous. Disruptions of water flows through watershed diversions, and interruptions and loss of fish populations is their legacy. 3) Recent negative impacts from acid rain emissions arriving in less then four days from the Ohio Valley in the United States have decimated fish population and is affecting our forests and their ecosystems. Water quality has declined and the Clean Air Act of 1980 has been a failure due to a lack of support from the USA to reduce smokestack emissions. 4) Recreational and wilderness opportunities include angling and wilderness appreciation abound on certain local watersheds, and this can be sustainable if properly managed. The quality of water is just as important as quantity of water under specific situations. 5) Clean unpolluted water is important to the health of all Nova Scotians, and promotes who we are to tourists. We want to live and convey all benefits of a healthy environment. 6) Water Approvals issued by the N. S. Department of Environment to N. S. Power come under scruteny every 10 years. A directive should be issued to mitigate past damage to watersheds due to previous water diversions and questionable water storage and release. Improper fish passage and a lack of willingness by N. S. Power to promote recreational access to reservoirs should be corrected. This is the time to address these deficiencies. *11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* That acid rain is having a negative impact on all fresh water in Nova Scotia, and that the USA Government is not attempting to reduce their emissions in a reasonable manner.

Code	Name	Comments
		12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future? Move forward on a sustainability basis. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Members of our association have been pursuing all issues that have the ability to negatively impact upon the quality of our fresh water and its usage by citizens, fish and wildlife. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Preventative action is cheaper than re-active measures. Require the USA to improve its emissions and pollution as well as pH will improve. Heavy metals will not leachate as easily into the water. User pays has always been the situation in Queens County. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* April 30, 2008Water Strategy Coordinator Water & Wastewater Branch Nova Scotia Environment and Labour5151 Terminal Road, 5th Floor Halifax NS B3J 2P8Dear Sir or Madam: We would like to offer the following comments for your consideration during the review process for this water strategy: 1) All lakes, rivers, streams, bogs, and swamps provide valuable benefits to all Nova Scotians, as well as the flora and fauna that utilize them. Aquifers must not be allowed to become polluted through the many fractures in our Provincial bedrock.2) While hydro power may be green, its past damage to inland watersheds has been enormous. Disruptions of water flows through watershed diversions, and interruptions and loss of fish populations is their legacy.3) Recent negative impacts from acid rain emissions arriving in less then four days from the Ohio Valley in the United States, have decimated fish population and is affecting our forests and their ecosystems. Water quality has declined and the Clean Air Act of 1980 has been a failure due to a lack of support from the USA to reduce smokestack emissions.4) Recreational and wilderness opportunities include angling and wilderness appreciation abound on certain local watersheds, and this can be sustainable if properly managed. The quality of water is just as important as quantity of water under specific situations.5) Clean unpolluted water is important to the

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		health of all Nova Scotians, and promotes who we are to tourists. We want to live and convey all benefits of a healthy environment.6) Water Approvals issued by the N. S. Department of Environment to N. S. Power come under scrutiny every 10 years. A directive should be issued to mitigate past damage to watersheds due to previous water diversions and questionable water storage and release. Improper fish passage and a lack of willingness by N. S. Power to promote recreational access to reservoirs should be corrected. This is the time to address these deficiencies. We hope you will give appropriate consideration to these concerns during this process. Respectfully submitted: David Dagley Secretary Queens County Fish and Game Association P. O. Box 1598Liverpool, N. S.N0T 1K0 *16. I would like the following question answered.* We would like to receive updates on the progress of this initiative as well as future reports.
A/O	The Sackville Rivers Association	Our mandate is to: 1) Protect and where necessary restore the environment of the Sackville River watershed, 2) Raise awareness about the environment of the Sackville River and its adjacent watersheds, 3) Establish a Conservation Corridor along the length of the Sackville River and, 4) Assist other watershed groups with organization and program development. We are pleased to offer our comments and suggestions to further the development and adoption of a Water Resource Strategy for Nova Scotia. We have structured the format to highlight existing problems affecting our freshwater resources, followed by the SRA's recommendations and solutions. **Development of land without provision of vegetative buffers adjacent to watercourses and wetlands** *Recommendations:* -- Regulate that all watercourses and wetlands in Nova Scotia be protected by mandatory undisturbed natural buffers to prevent siltation, to mitigate vegetation removal, to maintain groundwater recharge, to reduce rate of surface runoff, and to prevent the increase of water temperature. The Halifax Regional Municipality, Provinces of Prince Edward Island and Manitoba have already passed legislation for requirement of mandatory buffers. The current requirement in Nova Scotia

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		for buffers to watercourses during wood harvesting operations must be expanded to include all aspects of land development. Where no natural buffers exist, vegetative buffers should be created wherever possible. -- Large rivers, lakes and wetlands should be protected by a minimum 100 metre buffer. -- Small rivers, lakes and wetlands should be protected by a minimum 30 metre buffer. -- Intermittent and seasonal brooks should be protected by a minimum 15 metre buffer. -- Government should acquire title to all buffers. -- No application of fertilizers, herbicides and pesticides within the buffers. **Lack of Flood Plain legislation with respect to development of land.** *Recommendations:* -- Identify and map all floodplains in the province. -- Legislation at the municipal level that restricts construction or disturbance within floodplains. -- Tributaries and feeder brooks must be subject to floodplain legislation. -- Government should acquire title to all land within floodplains. **Sedimentation, non-point source pollution and erosion.** *Recommendations:* Stormwater management in new development and construction: -- Mandatory stormwater retention or detention by construction of retention or detention ponds and engineered wetlands. -- No net increase in run-off. -- No direct discharge to natural watercourses. -- Encourage Green Roof technology and construction by offering tax incentives. -- Green building technology to LEEDS standards or equivalent. -- Legislate total daily mean limits (TDML) for pollutants in stormwater as per U.S. Environmental Protection Agency regulations.

Code	Name	Comments
		-- Installation and maintenance of oil/grit separators for hard surface stormwater treatment. -- All new development must have a sedimentation and erosion control plan designed, implemented and supervised by a professional engineer. -- Maintain or increase natural, pre-development groundwater infiltration rates. -- Minimize impermeable surfaces for new development and maximize green site coverage by retention of natural vegetation or plantings. -- New road construction projects must have a stormwater management and treatment plan. -- DOTPW Sedimation and Erosion control guidelines to become mandatory. -- Sedimentation and erosion controls must be designed with respect to soil types. -- All construction workers to be certified with respect to sedimentation and erosion control with a revocable Green Card. -- Stormwater discharge from a site that exceeds natural run-off rates be subject to a surcharge. -- Utilize green gabion technology promoted by companies such as Maccaferri, in place of standard rock gabion construction. Stormwater management for areas undergoing redevelopment: -- Retrofit with end of pipe treatment such as engineered wetlands, and detention or retention ponds. -- Installation and regular maintenance of oil/grit separators for hard surface stormwater treatment. -- Establish vegetative buffers adjacent to all watercourses. -- Construct vegetated swales to intercept surface run-off. -- Maintain or increase green site coverage by retention of natural vegetation or plantings. -- All construction workers to be certified with respect to sedimentation and erosion control with a revocable Green Card. -- Stormwater discharge from a site that exceeds natural run-off rates be subject to a surcharge. -- Utilize green gabion technology promoted by companies such as Maccaferri, in place of standard rock gabion construction. Regulatory Changes

Code	Name	Comments
		-- Adopt a statement of Provincial Interest in the use and development of land. Section 193 of the Environment Act. -- Add construction activities as an undertaking under Part IV of the Act. -- Add regulations to support activities under Section 105 of the Act. -- Create a way of ticketing by summary offence -- Create mandatory provincial standards for the adoption of by-laws by municipalities concerning sedimentation and erosion. -- Create a Top Soil Preservation Act similar to Ontario that permits municipalities to develop by-laws regarding the removal of topsoil and regulating erosion and sedimentation from construction sites. -- Revise the Environment Act to prohibit the deposit of sediment in waterways and the discharge of any material that may impair the quality of receiving surface waters. Water quality limits should be applied to receiving waters and not to the water leaving a construction site. -- A municipality should not issue a permit for grading or construction of any building unless it conforms with plans approved by the Province. (See the State of Maryland's Sediment Control Law, Articles 4-101 through 4-109, Annotated Code of Maryland (Appendix VI).) **Forestry operations - clearcutting, road construction, stream disturbance and Siltation** *Recommendations:* -- All watercourse crossings should be constructed as bridges or 3- sided (open bottom culverts). -- All watercourse crossings should be built to accommodate the 1:100 year flood with an additional 20 cm for ice allowance. -- All watercourse crossings must be constructed to permit upstream and downstream fish passage. -- All existing watercourse crossings should be upgraded to comply with the above statements. -- Buffer widths to all watercourses as outlined above under *buffers*. -- No direct discharge from ditches to natural watercourses. -- Maintain natural runoff rates during and after harvesting.

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		-- Forest Stewardship Council guidelines should be adopted as legislation. **Acid Precipitation** *Recommendations:* -- The Provincial Government must make emission controls more stringent, especially for coal-fired power generation. -- The Provincial Government must implement a program of taxation based on fuel consumption (carbon tax). The Province of Quebec introduced a carbon tax in the fall of 2007. Starting July 1, 2008, the Province of British Columbia is implementing a carbon tax on all fuel use. The Provincial Government must start a liming program for all acid-stressed rivers similar to the West River Sheet Harbour Project developed by the Nova Scotia Salmon Association, to be funded by a carbon tax (payment by polluters). -- Set a high example of acid precipitation abatement in Nova Scotia prior to international negotiation for the reduction of airborne pollutants. -- Improve building codes to reduce energy demand and emissions. **Salmonids (Trout and Atlantic Salmon) require cold water to complete their life cycles. Spring fed rivulets, brooks, rivers and lakes are *cold-water refuges* for salmonids in time of drought and extreme summer temperatures** *Recommendations:* -- Cold water refuges are invaluable and must be identified mapped and protected by legislation. **Watercourse crossings for vehicles and animals** *Recommendations*: -- All engineered structures for watercourse crossing must design to accommodate the 1:100 year flood event, plus a 20 cm allowance for ice. -- Fish passage (upstream and downstream) must be maintained for all watercourse crossings. -- Existing watercourse crossings that do not meet the above criteria must be upgraded/improved. -- Bridges or bottomless culverts are the preferred structures for watercourse crossings. **Conversion of natural watercourses to piped systems, resulting in loss of aquatic habitat, ground water recharge, loss**

Code	Name	Comments
		of floodplain, potential for increased flooding, storm surge and erosion *Recommendations:* -- Wherever and whenever possible, avoid the destruction of natural watercourses by utilizing methods other than the traditional civil engineering design (i.e. piping) -- Adopt a *Daylighting Policy*, similar to the policy of Halifax Regional Municipality to restore natural watercourses that have been buried or channeled by pipes and culverts. **Eutrophication of Lakes** *Recommendations:* -- Test all lakes in Nova Scotia to determine the existing or pre-development /pre-cultural background values of phosphorus and nitrogen present. -- Allow no more than a 50% increase from these values. (See policy approved by Province of Quebec in March 2006 and policy proposed by Ontario Ministry of the Environment). -- Develop mitigation techniques for all lakes found to be above natural background levels. -- NSDOEL should have qualified professional limnologists on staff. **Lack of funding for enforcement, protection and restoration of our water resources** *Recommendations:* -- Carbon tax on fossil fuel use to increase funding for our water resource protection. -- Increased funding to Department of Environment and Labour. -- Stormwater discharge tax (surcharge) from developed sites. -- Increased fees for water withdrawal and use. -- Water resource tax to apply to the purchase of pesticides, herbicides and fertilizers. **Excessive water withdrawal from natural watercourses by agricultural, municipal and commercial users (i.e. golf courses)** *Recommendations:*

Code	Name	Comments
		-- Develop artificial reservoirs, ponds and lagoons isolated from natural watercourses wherever possible, to capture snowmelt, rainwater and surface run-off. -- Usage must be metered in all cases to quantify use. -- All watercourses to be gauged. -- Water usage is not to be maximized to the point where aquatic life processes are negatively affected. -- Watercourse flow rates (as measured at mouth or point of discharge) must be quantified and measurable i.e. not to fall below 75% of daily-recorded flow rates. **Lack of background information on historical flow rates for most watercourses** *Recommendation:* -- All watercourses to be gauged. **Lack of enforcement of existing regulations and legislation** *Recommendations:* -- Increase numbers of enforcement personnel. -- Provide specific education to enforcement personnel regarding sedimentation and erosion. **Jurisdictional problems and conflicts between government departments and government levels** *Recommendations:* -- Coordinated response involving all 3 levels of government for protection and enforcement of regulations and legislation with respect to pollution i.e. Siltation events. -- Streamlined regulations to aid in enforcement and prosecution. **Pesticide, herbicide and fertilizer use** *Recommendations:* -- Ban lawn fertilizers containing phosphorus. (Commencing January 1, 2009, the Province of Manitoba will be applying province-wide limitations on use). The City of Minneapolis is a North American leader in this methodology. -- Vegetative buffers along all watercourses.

Code	Name	Comments
		-- Restrict use of chemical pesticides and herbicides and fertilizers for residential use. -- Increased use of natural and organic solutions, (i.e. Halifax Regional Municipality Pesticide By-Law). -- Water resource tax to apply to the purchase of pesticides, herbicides and fertilizers. **Cumulative Effect** *Recommendations:* -- Watershed Planning – Each new development must be evaluated with respect to the cumulative effect of all prior development within the watershed. **The Provincial Water Resource Strategy should be kept current** *Recommendation:* -- Public review and update every 3 to 5 years. **Lack of watershed management** *Recommendations:* -- Develop watershed management plans for all watersheds. -- The province to create and fund watershed management groups. -- Recognize existing watershed groups. -- Watershed groups to have regulatory powers. -- i.e. Conservation Authorities in Ontario **Wetland loss and destruction.** *Recommendations:* -- Identify, inventory and map all wetlands. -- Protect by legislated buffers. -- All wetlands and buffers to be under public ownership. -- No net loss policy. -- Destroyed or damaged wetlands to be replaced at a ratio of 3 created wetlands for every one destroyed i.e. DFO no

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		net loss policy for fish habitat -- Prohibit recreational vehicle use within wetlands and buffers. -- Prohibit wood harvesting by use of heavy equipment within wetlands. **Manmade obstructions and obstacles within watercourses, restrict or prevent fish passage, traps sediment, prevents natural ebb and flow of water, heavy metal build-up in aquatic life** *Recommendations:* -- Remove inactive or obsolete obstructions and obstacles i.e. dykes, dams and causeways. -- Remove "grandfathering" clauses from existing legislation and regulations. -- Grandfathering clauses allow for the continuing existence of dams and causeways without provision for fish passage i.e. construction of fish ladders. -- Environmental Impact Studies for all existing dams and causeways. **Lack of Environmental Education with respect to Water Resources in the Education System** *Recommendations:* -- Mandatory water resources studies to be part of school curriculum. -- Increase resources and funding for educational programs such as River Rangers, Fish Friends and Project Wet. -- Nova Scotia Youth Corps Program be expanded, to include University students, commencing in April/ May when their services are urgently required by NGO's. Remuneration should reflect current tuition fees. -- Establish a program to provide grants to NGO's for water resource education outreach programs. **Lack of existing water quality information** *Recommendation:* -- The NSDOE should establish a program to acquire full spectrum baseline data for all watercourses in the province. **"As of Right" Development that does not allow for public input prior to construction** *Recommendations:* -- Replace "As of Right" Development in Municipal and Provincial Subdivision legislation by Development Agreement.

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		Off Highway Vehicles that cause erosion, sedimentation and aquatic habitat disturbance *Recommendation:* -- OHV task Force Recommendations should become legislation. Increased level of enforcement. **Degraded watercourses** *Recommendations:* -- Create criteria for endangered streams (e.g. Lower Fraser Valley Stream Review). -- Identify all endangered streams. -- Fund mitigation and restoration of the endangered streams. **Sewage effluent in natural watercourses** *Recommendations:* -- All treatment plants must maintain tertiary level treatment for discharge as well as phosphorous/ nitrogen removal. -- All effluent must be polished by discharge to an artificial wetland before discharge to a natural watercourse. -- Release of sewage effluent to a natural watercourse not to exceed a ratio of 1: 5 of the natural daily flow. -- All receiving waters must have a study to determine phosphorus and nitrogen levels (i.e. Nine Mile River, Tantallon, HRM). -- Mandatory septic tank cleanout every 3 years. -- Mandatory inspection of on-site systems. -- Sewage treatment plants for Federal installations, aboriginal reserves, schools, trailer parks and condominiums to be owned and operated by the local Municipality. -- On site reuse of effluent (i.e. Golf course irrigation – Westgate Subdivision – HRM) **Ground water withdrawal by agricultural, municipal, and commercial residential users** *Recommendations:* -- Ground water aquifer studies to determine short and long term effect on water supply with regard to recharge rates.

Code	Name	Comments
		-- All usage should be metered to determine consumption and to fund studies and water resource protection. **Funding sources to implement a permanent and comprehensive Water Resource Strategy** *Recommendations:* -- All groundwater usage should be metered to determine consumption for funding the Water Resource Strategy. -- Stormwater discharge from a site that exceeds natural run-off rates be subject to a surcharge. -- A program of taxation based on fuel consumption (carbon tax). **Large projects under ten hectares in area or under ten kilometres in length that are currently exempt from Provincial Environmental Impact Assessment** *Recommendation:* -- All large projects must undergo a full Environmental Impact Assessment. **Conflict of interest and mandates between Provincial Government Departments** *Recommendations:* -- Develop cooperative policies with respect to water resource management. -- N.S. Department of Agriculture encourages cultivation of land next to natural watercourses, construction of dykes which reduce natural floodplains, infilling of wetlands to increase agricultural use and watercourse obstructions. -- N.S. Department of Natural Resources regulating watercourse buffer widths for forestry operations. -- The N.S. Department of the Environment must be the provincial authority for the protection of floodplains, watercourses, wetlands and the creation of watercourse buffers in forestry, adjacent to agricultural lands and residential developments. **Lack of incentive for private landowners to donate significant wetlands and natural areas to the public for water resource protection** *Recommendations:* -- The Provincial Government should assume all costs associated with the donation of significant wetlands and natural areas.

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		-- Conveyance of property or a limited interest (i.e. conservation easement) should be encouraged with major tax incentives. The SRA wishes to emphasize three major issues that affect water quality in the Sackville River Watershed: 1) **Lack of watershed management** - there is no Authority to manage or deal with water resource problems on a watershed basis in Nova Scotia. The Province of Ontario has created Conservation Authorities with regulatory powers for watershed management. 2) **Acid Precipitation** - there is no policy in place for mitigating its effects on our rivers, lakes and streams. 3) **Siltation, sedimentation and erosion** - with lack of controls, insufficient coordination between government departments and lack of enforcement. The Sackville Rivers Association believes that the adoption of the preceding recommendations would give Nova Scotia a Water Resource Policy to protect and conserve our wonderful resource for current and future generations. We would again like to congratulate the Government of Nova Scotia for undertaking this vital initiative.
A/O	Soil & Water Conservation Society of Metro Halifax	1. Our overview 1-page submission on your proposed WRMS <http://www.gov.ns.ca/enla/water/WaterStrategyHow.asp> - our modus operandi (for total efficiency, we respectfully ask that you click on underlined words in all of our email-submissions to immediately launch the relevant web pages since our submissions will be mostly repetitive of what we made dating as long back as 1991). We will not be filling that form on your web page as it is really not conducive to our science/engineering-based methodology! We beg that you (and all recipients) study in detail the submissions that we had already <http://lakes.chebucto.org/DOE/wrms.html> made to the WRMS when your former Manager, Kate Moir MCIP, had invited us on August 14, 1997 to make the submissions. That is when the WRMS process had begun in reality! Kindly consider the 2 submissions in that web page <http://lakes.chebucto.org/DOE/wrms.html> as our formal submission to your present WRMS consultative process since we have no desire in duplicating ourselves! We may make subsidiary submissions prior to your deadline of June 01, 2008 though. When we made those submissions dated September 22, 1997 and July 06, 2001, we consulted not only our

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		acclaimed and extensively published scientists/engineering professors in Canada and the USA, but also the general public (inclusive of affluent citizens) via several well advertised workshops that we organized all over HRM as well as the Hants and Lunenburg Counties! Our team had also videotaped a selection among the thirty (30) public discussions that we spearheaded during the 1990's to early 2000's. We had invited your departmental staff to attend but none of them attended, alas! During the last few months, we received several emails from your department inclusive of from the Hon. Mark Parent PhD and from your present Manager, David Briggins P.Geo., that we should make submissions to the WRMS for which we sincerely thank you all. We are strongly hoping that this consultation sequence is not a mockery of our volunteer but international <http://lakes.chebucto.org/> acclaimed science/engineering research, mostly at the applied level! We had also made numerous written <http://lakes.chebucto.org/DOE/submissions.html> submissions to your department over the years dating as long back as the Minister's Task Force on Clean Water in 1991 some of which could be seen in the relevant web pages! With the best wishes to all staff and elected representatives as well as to all the Cc'd and Bcc'd recipients! http://www.chebucto.ns.ca/~limnes/ Shalom Murti Mandaville Post-Grad Dip., Professional Lake Manage. Chair & Scientific Director Soil & Water Conservation Society of Metro Halifax- <http://lakes.chebucto.org/> SWCSMH, a multi-discipline scientific/technical stakeholder group 310-4 Lakefront Road, Dartmouth, NS, Canada B2Y 3C4 Tel: 902-463-7777 2. *2nd submission*: Lake Carrying Capacities (LCC's) based on TP/Cha Kindly study the various scientific concepts in our webpage titled, "Lake <http://lakes.chebucto.org/TPMODELS/NOTES/lakecap.html> Carrying Capacities Homepage". This web page has

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		links to some successful examples worldwide. While your department always felt it was municipal responsibility during our extensive discussions over the last whole two decades, nonetheless, select other Provinces of Canada have taken it among themselves to set standards. A major example is the Province of Quebec (see <http://lakes.chebucto.org/TPMODELS/Quebec/phosphore-eco-regions_selection.p df> a select extract here in French). The Province of Ontario was the first to propose an enlightened methodology <http://lakes.chebucto.org/TPMODELS/ONTARIO/proportional_tp.html> in 1990 but they have not adopted it as a formal policy yet. These policies take into account the `natural background values of TP', i.e., that existed prior to any watershed disturbances. These are quite simple to ascertain and we have already accomplished that in 1,500 <http://lakes.chebucto.org/TPMODELS/tpmodels.html> (one thousand five hundred) lakes/ponds although we have to finalize the values for the last 500 of those. The Federal CCME guidelines on Phosphorus are too general to adopt; in addition they do not apply to shallow lakes/ponds without carrying out extensive limnological studies. Important PS: Our next submission will have the peer-consensus trophic standards since your department is totally ignoring the fact that most lakes in Nova Scotia are shallow! Even some of the reports you have placed in your website for public <http://www.gov.ns.ca/enla/water/surfacewater/> use are not based on sound limnological principles, alas! Your departmental as well as its professional consultants, including select academia, have been using trophic guidelines that were developed for deeper lakes in order to carry out their assessment of impacts on shallow lakes/ponds which resulted in erroneous conclusions in several cases. Shallow <http://lakes.chebucto.org/shallow.html> lakes have their own limnological basis!

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		3. *3rd submission*: Trophic status determination and an addendum to our 2nd submission dated February 19, 2008 Addendum to our 2nd submission: We request that your department adopt an official policy on Lake Carrying Capacity that is similar to that of the Province of Québec (see <http://lakes.chebucto.org/TPMODELS/Quebec/phosphore-eco-regions_selection.p df> a select extract here in French), or to the one proposed by the Province http://lakes.chebucto.org/TPMODELS/ONTARIO/proportional_tp.html of Ontario. Those policies are based on the `natural background values' in Total <http://lakes.chebucto.org/DATA/PARAMETERS/TP/tp.html> Phosphorus, i.e., those values that existed prior to any disturbance in the watersheds; hence they take into account the varying concentrations in lakes/ponds throughout the Province. 3rd submission: Our recommendations on trophic status determination:-- We request that the department immediately implement the final recommendations of the peer consensus, 16-year, 18-country Organization for Economic Co-Operation and Development (OECD) research <http://lakes.chebucto.org/TPMODELS/OECD/oecd.html> which also forms the primary backbone of the Canadian Council of Ministers of Environment- CCME <http://lakes.chebucto.org/DATA/PARAMETERS/TP/popup.html> (2004) guidelines on trophic states. But the CCME committed grave errors which we enunciate below. The final recommendation of the OECD is clearly enunciated in our webpage titled, OECD http://lakes.chebucto.org/TPMODELS/OECD/probability.html Probability Distribution Diagrams, which also contains a 4-minute mp3 <http://lakes.chebucto.org/TPMODELS/OECD/vollenweider.mp3> sound extract from hours of our intense discussions with the OECD's chief scientist, Dr. Richard Vollenweider. We are willing to submit the entire taped discussions with Dr. Vollenweider <http://lakes.chebucto.org/PEOPLE/vollenwedier.html> on a written request of your Minister of the Environment. (But the CCME committed severe scientific errors by not taking into account the OECD's probability distribution diagrams, and thus the CCME ignored the fact that Total Phosphorus <http://lakes.chebucto.org/DATA/PARAMETERS/TP/tp.html> represents phosphorus species of varying `biological

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		availability', a fact known to most authentic limnologists <http://lakes.chebucto.org/INFO/PROFESSIONALISM/professionalism.html> !) Herewith we state that the majority of studies conducted in Nova Scotia do not take into account the probability distribution diagrams and this includes reports published by your own staff which you have cited in your related webpage <http://www.gov.ns.ca/enla/water/surfacewater/>, and thus you are totally misleading the citizens who may access that website, alas! In addition, most of Nova Scotia <http://www.gov.ns.ca/enla/water/surfacewater/> 's lakes are shallow, and in order to set the trophic status at a high confidence level, one has to take into account the littoral production as well <http://lakes.chebucto.org/shallow.html> . We have been implementing that modus operandi in some of our formal studies indeed. And finally, kindly study the 3-page http://lakes.chebucto.org/DOE/WATER_QUALITY/MODELLING/modelling-wq1.PDF informal submission we made to your manager, David Briggins, on May 22, 2002. 4. *4th submission*: Stormwater treatment We respectfully request your department mandate the requirement of total stormwater <http://lakes.chebucto.org/SWT/treatment.html> treatment in major new developments; for example, in urban/suburban developments exceeding in 20 hectares overall. Stormwater <http://lakes.chebucto.org/SWT/treatment.html> treatment implies methodologies capable of removing 80-95% of all `stressors <http://lakes.chebucto.org/INFO/POLLUTANTS/pollutants.html> ' that typically accrue after an area is occupied by the end users. Especially, such treatment methodologies should be capable of removing stressors smaller than 20 microns as well! Similar requirements are mandatory in some enlightened jurisdictions in the USA and we possess multiple scores of published papers as well as the intermediate results of such innovative treatment methodologies. We are unaware of such stormwater treatment anywhere in Nova Scotia although we had made numerous

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		submissions to your department dating back to the Minister's Task Force on Clean Water in 1991! This is mostly the responsibility of your department and not of municipal units although many of your senior professional staff had always `passed-the-buck' to municipalities during our past discussions, to state in simple English. Examples of failures in HRM:-- A recent significant failure was evident at RUSSELL <http://lakes.chebucto.org/WATERSHEDS/COWBAYR/RUSSELL/russell.html> LAKE, Dartmouth although HRM's Planning Staff along with an `academic representative' of a Dartmouth Planning Committee (inappropriately) claimed that there would be stormwater treatment during the legal public hearing held by HRM's Harbour East Community <http://www.halifax.ca/commcoun/hecc/hecc.html> Council on May 25, 2005. When issues rise after-the-fact, HRM always shifts the total responsibility to your department. See also a recent staff report d/February <http://www.halifax.ca/council/agendasc/documents/080226cai07.pdf> 13, 2008 to the HRM Regional Council where they were professional enough to admit that `channelized stormwater' is typically disposed off into freshwater courses without any treatment. 5. *6th submission*: Ban/limitation on fertilizers containing phosphorus This can be implemented with no further delay in two phases as follows: Phase-1: Ban/limit lawn fertilizers containing phosphorus. Commencing January 01, 2009, the Province of Manitoba will be applying province <http://www.gov.mb.ca/waterstewardship/wqmz/fertilizers.html> wide limitation and Nova Scotia could follow suit with a similar or more stringent mandatory policy. An overview of this initiative can be found in the web page of Glendale Golfs <http://glendalegolfs.com/?p=191>, Manitoba! The North American leader in this methodology is the Minneapolis http://lakes.chebucto.org/TPMODELS/NOTES/minneapolis_lawn-fertilizer.html City Bylaw. We understand other

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		municipalities in the states of Minnesota and Wisconsin are following suit. Public education, while admirable, may not be sustainable in the medium to long term. The costly $120,000 Federal-Provincial <http://lakes.chebucto.org/WATERSHEDS/SHUBIER/FIRST/stewardship.html> SEDA project at First Lake, Lower Sackville was inconclusive and we have extensive videotaping of it as well as the combined biological and chemical data. Phase-2: Farms: - Nova Scotia could also follow the methodology proposed by Manitoba (kindly consult the Manitoba Water <http://www.gov.mb.ca/waterstewardship/index.html> Stewardship department). PS: Pursuant to our past submissions to your department, we found that your department did not see the imperative value, perhaps because the phosphorus concentrations in lakes across Nova Scotia are lot lower than those in the central and western areas of North America. We acquiesce that our values are lower and I personally have carried out Predictive <http://lakes.chebucto.org/TPMODELS/tpmodels.html> Modelling of approximately fifteen hundred lakes/ponds (1,500) to date. Such comparisons are not based on professional lake management though. Comparisons have to be made with the `pre-cultural' values, i.e., those that existed prior to any anthropogenic impact on our watersheds which can be determined in two ways: i) by Predictive Modelling, and/or ii) by Paleolimnological <http://lakes.chebucto.org/PALEO/paleo.html> techniques utilizing diatom inference models. See also Indicator <http://lakes.chebucto.org/WATERSHEDS/MANDELL/referencelakesinAtlanticCanada .html> thresholds for anthropogenic stressors of freshwater lakes in N <http://lakes.chebucto.org/GENERAL/novascot.html> ova Scotia as reported by former DFO biologist, Paul Mandell, as part of his research at Dalhousie University. 6. *7th submission*: Our long-term recommendations to set up a credible "LAKES AUTHORITY" staffed with qualified limnologists inclusive of accredited lake managers

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		We herewith renew our request that the NSE (Nova Scotia Environment) waste no further valuable time in setting up such a Lakes Authority <http://lakes.chebucto.org/DOE/lakes_authority.html>; we had suggested this first to Mr. Tim Smith of your department on February 28, 1994 and renewed this request on numerous occasions following the aforesaid. The rationale is enunciated there in <http://lakes.chebucto.org/DOE/lakes_authority.html> clear language. Such Lakes Authorities have been the norm in enlightened jurisdictions in the USA and in parts of Western Europe; some of us had indeed attended their yearly conferences in the years gone by. At these conferences, citizens-at-large voice their concerns and scientific staff do take them into account. The conferences are designed as typical town-hall meetings and not as scientific conferences, hence the citizens feel more comfortable. Your department has never conducted such regular town-hall meetings in its entire history, alas! At the present, there is absolutely no section of your department which handles the complaints effectively either. The Regional Office (in Bedford) does not respond to telephone calls or even detailed emails some of the time; the exceptions are where one complains to the media when there is some kind of generalized response from your large communications offices but even in those cases, there have rarely been follow up pragmatic actions taken! 7. *8th submission*: Ban the sale and cosmetic use of pesticides Kindly consider the Province of Ontario's supreme leadership; kindly see their relevant web page. "The ban would likely take effect next spring. It wouldn't affect pesticides used for farming or forestry. Golf courses would still be able to use pesticides, but must meet certain conditions to minimize environmental impacts. Pesticides would still be used for health and safety, such as controlling mosquitoes, which can carry diseases like West Nile Virus." 8. *9th submission*: Effective action/responses should be mandatory! Your department seems to be wholly `dysfunctional'. It has been getting progressively worse ever since the early 1990's inspite of all the public statements made by the Ministers and/or by your department's communications department.

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		The aforesaid critique applies equally to the Regional Offices (especially the Bedford office) and the HQ on Terminal Road as well. Emails rarely get responded to in a focused manner and phone messages are rarely returned, alas! Essentially, there is rarely a follow-up! As three (3) major representative examples, kindly click on the following and study the commitments which were never followed up to this day, alas:-- (1) The commitment letter <http://lakes.chebucto.org/DOE/1999/PIC/Hamm_1999.jpg> (1999) from the Rt. Hon. John Hamm MD; there has been no pragmatic follow up to it! (2) The Record of Decisions (1996) by Mr. Darrell Taylor of your Division which is scanned in 2 parts (taylor96_1.jpg <http://lakes.chebucto.org/DOE/1996/PIC/taylor96_1.jpg> and taylor96_2.jpg <http://lakes.chebucto.org/DOE/1996/PIC/taylor96_2.jpg>). (3) A firm letter <http://lakes.chebucto.org/DOE/1994/PIC/Harrison_1994-02-21.jpg> of commitment by the Hon. Robbie Harrison in 1994 although we had donated him synoptic studies that we carried out especially for the honourable minister easily worth over $50,000 on a prior written request by the same <http://lakes.chebucto.org/DOE/1993/PIC/harrison1.jpg> Minister in 1993! We definitely have to look forward in a positive manner but we also have to learn with major broken promises in order to judge a department's or even a senior staff person's professionalism, etc.!
A/O	South Shore Naturalists Club	Compared to many other parts of the world, Nova Scotia has an abundance of water in the form of lakes and river systems. It also has the benefit of control over its resource without significant in-flow h m or out-flow to neighbouring jurisdictions. However, the quality and quantity of this water is already under stress from various sources, including acid rain, agricultural run-off, forestry practices, the inherent nature of our underlying rocks, and wastage in the distribution *system.* The water resources of Nova Scotia are valuable in two distinct but interconnected ways. First, water is consumed by the people of Nova Scotia, whether through private residential use, or through large-scale industrial operations. Secondly,

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		water impacts on the total environment we live in, whether trees, plants, animals, -tic life, insects or micro organisms, and on the quality of the recreational enjoyment of our natural environment. The challenge of the Water Resources Management Strategy is to reconcile the often competing demands on our water resources. We would like to see the following specific points addressed in this strategy: 1. **(Data)** No strategy can be implemented without a solid scientific understanding of the nature and extent of the resource. The first task must be to undertake a thorough analysis of all water resources, in lakes, rivers, streams and underground aquifers, and to establish baseline data on both quantity and quality. A similar analysis must be made of current water usage, whether through municipal supply systems or privately operated wells, with special attention to large-scale industrial use. 2. **(Quality)** Where degradation of water quality is found, the source of the contamination must be identified and corrective measures put in place. Particular areas of concern include the effects of agriculture on water quality, both from livestock and from the use of pesticide and fertilizers. The Government must encourage and support more sustainable agricultural practices. The same applies to forestry where inappropriate cutting endangers the health of lakes, rivers and streams, and herbicide use threatens both water quality and bio-diversity. Regulations protecting water courses must be more strictly enforced, and penalties for inappropriate removal of vegetation should include remedial planting. 3. **(Wastewater)** Wastage from leakage in municipal supply systems has already been recognized. Encouraging water conservation measures is meaningless if the underlying infrastructure is not repaired and upgraded. Closer attention must be paid to large-scale industrial uses, and measures put in place to support systems and processes which would reduce consumption through innovative recycling and water reusage. Similar attention must be paid to waste water treatment to prevent contamination through improperly handled waste, and to encourage where appropriate the separation of reusable gray water from the waste stream. 4. **(Ownership)** Water is a resource belonging to all residents of Nova Scotia. We urge the Government to avoid the pitfalls of "for profit", ownership of any part of the water system. The provision of clean and uncontaminated water through municipal water systems must remain under the control and ownership of the elected municipal and local

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		governments and not be handed over to private ventures operating for profit. *5.* **(Integrate with strategies and planning of other Government departments)** Finally, we urge the Government to integrate the Water Resources Management Strategy with long-term strategies and planning of other Government departments. For instance, proposals and decisions formulated under the auspices of the "Resource Strategy" must be critically examined for their impact on water quality. The potential damage from uranium prospecting and mining is of particular concern. We thank you for this opportunity to contribute to the long range planning for a healthy and sustainable future for Nova Scotia, and respectfully request that our concerns and recommendations are given due consideration,
A/O	Southwest Paddlers Association	**(1)** Watersheds and their coastal estuaries ought to provide the basic context within which all water issues are discussed and resolved; **(2)** Research (if not already available) is needed to establish baseline data on existing water volume (surface and ground) that exists, and the estimated time needed for recharging (replenishing) water resources. This data will define the sustainability of the resource and establish the maximum allowable volume of draw-down; **(3)** Establish Watershed Management Groups (or Watershed Advisory Groups) of major stakeholders from government, NGOs and the public to oversee each watershed and, therefore, water and ecosystem quality and sustainability. **(4)** Laws and policies must be drafted to protect watersheds and larger ecosystems; **(5)** All water use must be sustainable in the long term; **(6)** Public access to lakes, rivers and seacoasts must be maintained or re-established; **(7)** Insuring a sustainable source of clean water for personal residential use must precede commercial demands, however, the objective would be a balance of the two demands; **(8)** Population densities must be based on the long-term sustainability of a clean water supply; **(9)** Promote clean, eco-friendly, water-based tourism (e.g. canoeing, kayaking); **(10)** Increase forestry set-backs from lakes, rivers and streams; **(11)** Where dams or mills are removed, riverbeds must be cleaned and restored;

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		(12) Where dams remain, fish-ways must either be installed or upgraded to minimize their negative effect on migratory fish species (e.g. Sissiboo River, Digby Co.); (13) Continue to restore rivers affected by mining operations (e.g. Tusket River); (14) Continue working toward the government commitment of protecting 12% of the provincial landmass; (15) Work with Environment Canada to enforce the Navigable Waters Protection Program where it applies to inland waters (river obstructions, bridges); (16) Work with Environment Canada to increase number of publicly available (on-line) river flow-rate gauging stations (The only one available on-line in southwest N.S. is on the Roseway River at the Welchtown Bridge, Lower Ohio, Shelburne Co.); (17) Where Environment Canada has a flow-rate gauging station, make its data publicly available on-line. We understand that N.S. Power has privileged access to the data from the gauging station on the Tusket River at Wilson Road Bridge, S. Canaan, Yarmouth Co.; (18) Over-lapping federal and provincial jurisdictions (Environment Canada and N.S. Environment and Labour) cause public confusion and a lack of clear and efficient administration and compliance;
A/O	Tusket River Environmental Protection Association	This is one of the most important environmental issues which must be addressed by all Nova Scotians. It's interesting to note that this resource issue has not been delegated to voluntary planning whose recommendations would be independent of government influence. Over the past number of years government has conducted three similar public reviews with water being one of the primary issues. These were the Minister's Clean Water Task Force, The Water Resource Management Strategy of 1997, and a Watershed Stewardship workshop held in 1999. The resulting recommendations from these consultative reviews have never been actioned and most likely are gathering dust on the shelves at 5151 Terminal Road in Halifax. The results from the review of this Water Resource Management strategy must not be allowed to go unactioned as has their predecessors. **Primary Focus**

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		The Water Resource document has set out four key issues, Human Health, Economic prosperity, Ecosystem Integrity, and Emergency and Hazards Preparedness and asked for response to questions from all Nova Scotians. After careful review it is our conclusion that the answers to all of the questions in keeping with the four key issues can be addressed with one main focus which is **watershed management**. The questions presented can only be properly addressed by effective watershed management Boards/Committees for each of our major provincial watersheds. These Boards must include members representative of all stakeholder groups, be clearly mandated and have clear terms of reference. They must be given regulatory authority and must not be relegated to advisory status. They must be government funded but could/should consist of volunteer stakeholder representatives. The development and implementation of this concept will not be short term and is the only process which can effectively address all water issues in our province. **Appendix A** is a suggested draft for Terms of Reference. **Supporting comments** The primary sources of degradation in watershed ecosystems are improper land use and development without proper regulation. Examples include: Examples include: - Improper forestry operations such as excessive clear cutting, inadequate setback from watercourses, and improper planning for access roads - Careless agricultural practices such as improper herbicide and pesticide use, livestock overgrazing, inadequate buffers, and filling or draining of wetlands - Urban and industrial development such as excessive density, excessive area of impervious surfaces for roads and parking lots *Degradation is evident in a number of ways including,* - Flash flood conditions of streams, erosion, sedimentation, increased water temperatures, toxicity from pollutants, algae

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		blooms, and loss of water quality. All of these factors can lead to reduced biodiversity, loss of ecological integrity, increased health risks, and loss of potential sustainable economic benefits. The managing of resources at the watershed level is more effective and practical than management by municipal units. Watersheds are not confined to municipal boundaries. Management through Watershed-based boards or Committees is an option that has proven to be effective in other parts of North America, particularly when the committees are representative of all watershed stakeholders and have a mandate to enforce their decisions. This requires commitment by government to the model as well as sustained funding. **Practical Considerations** - The Implementation and enforcement of strict regulations should be a minimum starting point. - A Watershed division or director is highly recommended within the department. This office should be tasked with the overall supervision of all provincial watershed Boards - Carefully designed monitoring programs must be established and implemented to provide a baseline assessment of current ecological conditions in all of the provincial watersheds and follow-up surveys will be needed on a regular basis to provide an assessment of changes in the health and integrity of these ecosystems. - It is important to determine how much water is contained in each of the various storage areas such as groundwater aquifers, wetlands, lakes, rivers throughout the province and what their typical replenishment rates are in order to make decisions about withdrawal allocations for all users. - The monitoring plans currently in use need to be expanded to fill in information gaps so as to improve decision making capabilities. - Decisions about withdrawal allowances from any surface or groundwater source should consider potential ecological as well as socioeconomic effects that may result under different scenarios. - Watershed Management Boards could form special committees to investigate and report on various watershed issues - A major issue of concern is wetlands

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		- Careful monitoring and enforcement is needed. - Wetlands have been easy for landowners/developers to degrade and destroy because municipalities and the province have not been effective in enforcing rules on development around sensitive habitats. - There are no setback requirements for development next to wetlands, streams or lakes at the provincial level other than those for forestry which has a 20 m buffer requirement. - As a result, cutting of trees is commonplace right up to the water's edge in many locations. - Adequate setback/buffer requirements and monitoring that prevents damage to these habitats are required. - 20 m buffers should be considered a minimum and 50 or 100 m could be justified based on ecological/biodiversity impacts that have been identified. - These committees could investigate and recommend additional legislation specific to the protection of wetlands. - The recently revised provincial wetland directive does not effectively address the key issues associated with harmful development near wetlands. - Without adequate wetlands as natural buffers between development and watercourses those ecosystems will be degraded. - Sediments will be washed in, - Water temperatures will rise, - Fish spawning habitats will be degraded and biodiversity will decline. - Actually filling in or draining wetlands is even worse as - Filling or draining wetlands leads to increased flooding downstream and decreased filtration of runoff. The science for this is clear and well documented. - The best option is to not allow development in wetlands and to work with landowners to find alternatives. - For those wetlands that landowners need to alter it is important to have a well devised plan for how to implement the "no net loss policy" implicit in the. The Environmental Goals and Sustainable Prosperity Act. - In other parts of the country when wetland "mitigation" has been required a simple "duck-pond" type wetlands have

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		been dug as replacement wetlands regardless of the type of wetland that was destroyed and with no thought to its location in the watershed, or of the ecological function or services that were lost. - If mitigation is to be of any real benefit, it will be important to require developers to replace the lost wetland with a wetland of at least an equal size, and also to replace the wetland in a part of the watershed and with a particular type that minimizes the loss of ecological function. In conclusion it is our suggestion that the Watershed Management concept is the best option for both development and implementation of a new strategy for the protection and management of the water resource in Nova Scotia. **Appendix A** **Terms of Reference for Watershed Management Boards** Boards shall include representatives from the list below **Stakeholders** - Agriculture - Environmental groups - Forestry - Industry - Land owners - Community associations - Recreational interests **Government** - Municipal Councilors - Department of Environment - Natural Resources - Transportation and Infrastructure Renewal - Agriculture and Fisheries

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		- Department of Fisheries and Oceans (Federal) - Department of Health Others? Each Board member shall have an alternate to represent he/she during their absence and that member shall be responsible for ensuring that their alternate is kept up to date with Board activities To ensure continuity the Board shall operate on the CO=CHAIR SYSTEM Board meetings shall be held on a regular basis as determined by the Board The Board shall operate by consensus with a clear definition of consensus determined in advance If consensus is not attainable then majority vote shall apply The Board shall delegate a recording secretary who shall be responsible for the recording and distribution of all minutes and correspondence in a timely manner **Tasks** Monitor and review all land based and water related activities within the watershed Develop protocols for environmentally sustainable activities within the watershed Consult with all user groups within the watershed on a regular basis Organize sub committees within the watershed to address applicable stakeholder issues Provide reports and recommendations to government agencies Others?
A/O	Union of Nova Scotia Municipalities	In the fall of 2002, the Province of Nova Scotia released the Drinking Water Strategy – the first water management strategy ever developed for the province. The strategy outlined a three-year action plan to conserve and protect Nova Scotia's drinking water. The Environmental Goals and Sustainable Prosperity Act, enacted in 2007, committed the Province to developing a comprehensive water resource management strategy that includes drinking water, water quality and quantity, and wastewater, by 2010. The discussion paper -"Towards a Water Resources Management Strategy for Nova Scotia"- is the first step in the development of the comprehensive strategy.

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		Municipalities have been invited to review and respond to the discussion paper. To that end, the Union of Nova Scotia Municipalities (UNSM) has prepared this submission, while also encouraging individual municipal units to make submissions and to take part in the public consultation sessions. Municipal members of the UNSM Sustainable Practices Committee, the UNSM president, and UNSM staff also met with NS Environment senior staff and members of the Province's Inter-Departmental Drinking Water Management Committee on May 14th, to discuss municipal concerns and issues related to water. However, it is vital that municipal governments take every opportunity to be involved in the ongoing creation of a new provincial water management strategy over the coming two to three years. **Background** Of the many services that municipal governments provide, perhaps no two services are as critical to the health and livelihood of its citizens as that of supplying clean water and safe removal of wastewater. Yet, unless these services are compromised or disrupted, they are often taken for granted. They are also two of the most complicated and costly systems that municipalities manage, maintain, and monitor within their portfolios. Nova Scotia has a mix of both public and private systems that handle drinking water and sewage – 40% of the population is dependent on private water supplies, with the remainder of Nova Scotians using one of approximately 1500 public water drinking supplies. Forty-five percent of the population uses on-site wastewater systems, while the remainder use central treatment (25%) or discharge raw sewage directly to the environment (30%). Whatever the mix of delivery, treatment and removal methods used, there is a common sentiment amongst Nova Scotians - they need, and have a right to, safe, sustainable water supplies, and safe, sustainable wastewater disposal. These same sentiments are shared by municipal governments across Nova Scotia. In particular, the failures that occurred in Walkerton, Ontario are an ever-present reminder to municipal officials of the tragedy of a contaminated water supply in a small, rural town – not unlike what could happen in any small, rural setting in Nova Scotia. Municipal officials understand the importance of strong water and wastewater regulations at the federal and provincial level of government, and there is widespread support for good legislation and appropriate standards. The challenge is in how municipalities are able to respond to this call for action.

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		In addition to challenges related to meeting water and wastewater regulations, municipalities are concerned with a variety of other water issues, some of which are intertwined: cost and funding issues related to managing public and private water and wastewater systems; human resources issues for managing and monitoring water; water availability and accessibility; water consumption and conservation; conflicts around water; emerging and alternative technologies related to water and wastewater systems; authority/jurisdictional or royalty issues around water; and broader watershed and coastal zone management issues. The remainder of this submission addresses some of the key messages that municipalities put forward as part of the development of a water resource management strategy for Nova Scotia. **Key Messages** **1. Engage municipalities fully in the process to develop a Water Resource Management strategy for Nova Scotia** • Municipalities do not have independent power to regulate water, but have control and influence over land uses in their jurisdictions (municipal planning strategies/land use bylaws). The Municipal Government Act gives authority to municipalities to plan land use within municipal boundaries. It is through restrictions on land uses and activities that water protection measures can be implemented at the municipal level. • Municipal governments manage the day-to-day operation, maintenance and monitoring of the water treatment plants and distribution systems, and wastewater treatment systems. • Huge portions of municipal budgets are tied to water and sewer infrastructure debt and ongoing maintenance. • Municipalities have a considerable stake in the development of a water strategy that matches to municipal priorities, and municipalities are key in overall protection and management of our water and wastewater systems and our water resources in general. • It is critical for municipalities to be “at the table” in the development of a water resource management strategy over the next two years. • The opportunity to respond to the discussion paper is step one, however, we see a need to more fully open up dialogue between the Province and municipalities’ position, which will help lead to

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		solutions for all Nova Scotians. • The Province needs to hear from elected officials as well as administrators and operators. In the day-to-day world of multiple priorities, it is often difficult to engage municipal representatives, but it is vital that they participate in this process that will lay out how to manage our shared water, into the future. • We believe there are lessons to be learned from the model used to consult with municipalities on the CCME Municipal Wastewater Effluent standards (i.e., Municipal Provincial Joint Advisory Group and the municipal stakeholder focus sessions held) **2. The Strategy needs to address targeted funding for municipal water and wastewater infrastructure/collection systems to meet federal and provincial standards.** • There is widespread support for good legislation and appropriate standards related to water and wastewater. However, there needs to be recognition that a "one-size fits all" model does not necessarily work (neither across the country nor even across the province). There is support for using a risk-based approach to identify/prioritize systems. Municipalities want to see consistency in applying regulations which has not always been the case in the past. • Municipalities have limited internal options available to them to pay for expensive infrastructure. • Municipalities are also subject to competing priorities and rising demands from citizens for improvements to municipal services. Municipalities find themselves with insufficient budgets and unable to make all the required upgrades to aging systems to-date, and anticipate further challenges. • Municipalities need adequate, consistent, and targeted funding options to meet their obligations for safe municipal water and sewer systems. • Within the key issues identified by stakeholders in the Municipal Wastewater Effluent focus sessions of 2007, were several recommendations related to funding, as follows: - There is a need for wastewater-specific funding – not simply options attached to other funding programs. - It is critical that the full cost of implementing the (Municipal Wastewater Effluent) Strategy be taken into

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		account. - Funding estimates should include the costs for addressing deficiencies in the municipal collection systems, including overflows. - Concern was expressed that costs for facility operation and maintenance are not included given the need to upgrade facilities at additional cost. - Funding to improve treatment of municipal wastewater needs to be managed in an equitable and sustainable manner. (From Canada-Wide Strategy for the Management of Municipal Wastewater Effluent: A Summary of the Nova Scotia Stakeholder Focus Sessions) These comments can equally apply to funding for water systems and funding of the water resource management strategy. Municipalities need adequate, consistent, and targeted funding options to meet their obligations for safe municipal water and sewer systems. • There are some provincial programs to assist municipalities with planning (e.g. Municipal Drinking Water Supply Planning Assistance Program), but are under-subscribed. Municipalities need to be better informed of what is available to them. **3. The Strategy needs to address ways to improve on-site septic system management and private well management.** • While municipal systems are a concern, the large proportion of the Nova Scotia population in rural communities that rely on private systems is also a priority. • 40% of the population is dependent on private water supplies, and 45% of the population uses on-site wastewater systems. • "If on-site systems are treated as a second class option in terms of regulation and management, it should not be surprising if they provide second class performance when compared to central collection and treatment systems." (From, "Options for On-site and Small Scale Wastewater Management in Nova Scotia", by D.H. Waller, 2003) • The Strategy needs to identify both the mechanisms and the resources to make on-site septic and private well systems

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		"first class". • Examples of initiatives to consider and or broaden: o Continued provincial support and expansion of initiatives such as the home assessment program; o Support and pilot new programs to encourage wide-spread private well-testing in rural Nova Scotia; o Pilot new technologies for monitoring and detecting contamination; o Support of more initiatives like the Nova Scotia Septage Treatment Facility Assistance Program; - Explore opportunities with municipalities to pilot/promote municipal pumping programs and other implementation tools such as by-laws, wastewater management districts, communal sewage systems, and revolving loan funds. **4. The Strategy needs to address human resource capacity issues faced by municipalities related to municipal water and wastewater systems.** • Municipalities require adequate numbers of trained and qualified operators, technicians/technologists and managers for our municipal systems. • There has been mandatory certification required for operators since the mid-90's. • There may be issues of limited technical expertise in municipalities related to interpretation of data. • Concern has been expressed that information being collected for reporting to the Province does not always seem to be relevant, useful, or used by the Province to provide feedback to Municipalities. This is especially relevant given the human resource challenges facing municipalities. • Municipalities outside the Kings County-metro Halifax-Colchester County "corridor", in particular, are hampered by shortages of certified operators. • There needs to be enough training available at regular intervals to satisfy needs, and opportunities for ongoing training and upgrading. • The AMA is currently having preliminary discussions with the Nova Scotia Community College regarding the possibility of introducing new courses on Water and Wastewater Operator training, both pre- and post-employment. These types

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		of discussion need to be encouraged and supported. **5. The Province needs to invest in water conservation and efficiency programs to encourage wise use of water for all sectors, and to ensure adequate water supplies for current and future generations.** • There is a growing sense of uncertainty as municipalities consider the availability of water resources for current and future generations, particularly with the potential impacts of climate change. • Many key sectors are heavy users of water, e.g., manufacturing, agricultural. We need to sustain our industry base while identifying ways to engage these sectors in conservation and efficiency programs. The institutional/commercial sectors can also be large water consumers. • Finding new water supplies from conservation saves money on infrastructure, and saves on energy use from pumping and treating water. For example, in the Durham Region, Ontario, they are investing $17.2 million over 10 years on water efficiency and conservation. Building infrastructure to provide the amount of water that will be saved would have cost $125 million. • Resources need to be allocated in Nova Scotia to explore a variety of educational programs and resources need to be allocated to engage users - incentives/rebates/grants and various other methods. • Initiatives to consider/broaden include: o Audit and retrofit programs; o Programs to encourage implementation of low-flow fixtures, water reclamation systems, rainwater capture programs and green-roofs; - Water metering programs. **6. The Province needs to better partner with municipalities to encourage and support a range of demonstration projects, with the intent of more wide-spread application across the province. The Province needs to expand work with partners and stakeholders (municipalities; researchers; universities; industrial, agricultural and community groups) to support a range of projects to more broadly integrate best practices across the province.** • There are new and emerging technologies that may prove to be cost-effective and environmentally beneficial alternative

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		ways for municipalities to manage water and wastewater. • There are lessons to be learned from other jurisdictions in terms of best practices related to water quantity management, source water protection and management of watersheds in general. • There are many stakeholders and partners interested in preserving and conserving water resources in Nova Scotia. • Community-based/volunteer based initiatives have been effective in many instances and require sustained/dependable support to build and maintain networks, and generate good information. • An example of a new technology that has been piloted in Nova Scotia already is the mobile septic dewatering. • Other examples to consider and broaden include: o Riparian management and assessment programs; o Environmental farm plan programs; - Sediment measure controls. **7. The Strategy needs to explore more options for the protection of potable watersheds.** • Municipalities have a major role to play ensuring healthy watersheds to protect drinking water supplies (source-water protection). Source water protection is a cost-effective way to protect drinking water because it can reduce or eliminate expensive treatment options. • Municipalities currently have some options in protecting potable watersheds, e.g., source water protection planning, land acquisition, development of land use bylaws, and land designation as a protected water area. • However, there are issues regarding the regulation of watersheds outside municipal boundaries - municipalities have limited options in how they can protect these watersheds. In some cases towns' water supplies are located outside their municipal boundaries in the surrounding counties. Some rural county residents are supplied by town systems, some villages operate their own utilities and other villages are serviced by county utilities. • A full-range of options needs to be explored to identify satisfactory solutions for all municipalities. **8. The municipalities anticipate working closely with the Province on the development of sustainable coastal management policies, to ensure the value of these resources continues for current and future generations.**

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		• The sound management of our coastal areas requires cooperation of the different levels of government. • There are a number of issues of interest for municipalities' related to coastal areas – coastal land use and development, loss of traditional access to coastal areas, non-residential ownership of coastal lands, coastal conflicts, and the impact of climate change on our coasts. Municipalities have a major role to play in addressing the sustainable use and development of coastal areas in the province. • In November, 2007, the Province committed to the development of a coastal framework for the province within two years, and the UNSM supports this initiative, and looks forward to working closely with the Province on the development of sustainable coastal management policies, to ensure the value of these resources continues for current and future generations. **9. The municipalities anticipate working closely with the Province to ensure the protection and preservation of wetlands.** • Municipalities recognize that they have a role to play in ensuring the protection and conservation of wetlands through environmentally-sound land use planning and development policies and practices. • Wetlands make up 14% of Canada's territory. Climate change may cause more evaporation, which might, in turn, dry up wetlands. Nova Scotia's wetland areas are also of great interest to many municipalities – they provide a range of important "ecological goods and services" to the public, as well as having economic, recreational, social and cultural importance. The effect of wetlands on water quality in Nova Scotia is particularly substantial. • The UNSM looks forward to working with the Province to ensure the protection and preservation of wetlands. **10. The Strategy needs to identify both the mechanisms and the resources to enable expanded water quality sampling/monitoring of freshwater systems, and the use and sharing of this information.** • The importance of Nova Scotia's freshwater lakes and waterways to a healthy and sustainable province should be emphasized in the development of the Strategy. The potential impact of climate change on our freshwater systems should not be under-stated. • These eco-systems need to be preserved and protected, and basic information to inform good management and good

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		decision making about conservation and land-use needs to be collected. • Examples of initiatives to consider and/or broaden include: o More resources available to increase monitoring programs, whether by the Province, municipalities or volunteer community groups/ngos, and to allow for more in-depth analysis and comparison of parameters monitored; to better link and support the network of monitoring bodies, particularly for understanding long-term trends across the province; o More resources available to expand the water quality parameters being monitored where needed (e.g., more testing of beaches for e-coli); o More resources to educate users about stewardship of the resources; - More resources available to advise users of risks (more public advisories). **11. Nova Scotians need to know whether the commercial extraction of drinking water is a sustainable activity, at any scale. The Strategy must seek to answer this question for Nova Scotians before considering this activity.** • The long-term sustainability of our water resources for future Nova Scotians is critical and a major concern. We know that climate change will impact on our water resources. • The multi-faceted issue of the extraction of drinking water (bulk exports and commercial bottling/sale) is of interest and concern to municipalities. • The Province has regulations related to bulk water extraction, but there is growing concern about this issue in general. And, we are aware that there are potential trade implications as part of this discussion. • However, there is also concern for municipalities that, where our water resources can be identified to support this type of activity, there is no mechanism for the municipality to receive royalty fees. **12. The Strategy should address the issue of jurisdictional authority and the establishment of water rates for municipalities.** • Currently, the Utilities and Review Board (UARB) in Nova Scotia has the authority to regulate municipally owned water utilities, and set water rates.

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		• Many municipalities feel this decision-making should be retained by the municipalities themselves. • They are already tasked through legislation to set their own tax rates, so believe they should also have the authority to set their own water rates. **13. While the Province's upcoming Energy Strategy and Climate Change Action Plan will address renewable energy issues, the UNSM acknowledges that water will play a role in meeting our energy needs and reducing our reliance on fossil fuels in the future, thus it needs to be referenced within a Water Strategy.** • As Nova Scotia seeks ways to address the challenge of climate change and issues of security/costs of fossil fuels, we are turning to renewable energy opportunities to help meet these challenges. In fact, it provides part of our energy mix now – through 33 hydro systems in the province, and a small tidal power plant. • Our energy future may include tapping the resources in Nova Scotia provided by our tides; by offshore wind or waves; by additional small-scale/run-of-the-river hydro, or by combination hydro-wind projects – all of these utilize Nova Scotia's water resources. • While we will need a broad menu of options to help us meet energy needs in the future, and we need to act quickly to reduce our greenhouse gas emissions, we need to recognize that many of these technologies are relatively untested. Some will cause conflicts within and between our communities. Few, to-date, have identified community benefits to encourage engagement. And all will require thorough environmental assessment processes with good community consultation and mechanisms to benefit communities and municipalities. **14. The Strategy needs to have clear, measurable outcomes with accompanying time-frames into the short, medium and long-term.** • The Strategy needs to identify performance measures and report on these measures to the public on a regular basis. • It would be expected that these will link to other provincial and federal strategies and the Environmental Goals and Sustainable Prosperity Act. • There should be linkages to the mandatory Integrated Community Sustainability Plan (ICSP), required to be completed by every municipality. Communities may use the ICSPs to help them plan for water sustainability, so the potential

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		synergies of these two ongoing processes need to be acknowledged and wherever possible, capitalized on.
B	In Agriculture	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Mis-management of watershed. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Irrigation using modern technology and knowledge about crop requirements that is timing and amounts. Use of alternative supplies for crop needs such as rainwater collection and off-stream holding ponds filled in the off" season. Protect watershed wetlands (forestry and agricultural practices and developments of other businesses mining. Industrial parks, residential areas, regulate to reduce impact. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Reduce usage, pay fair share, agree to work with the strategy once it is in place. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Both government and private sector, which would include end users.
B	Canadian Seabed Research	**Data/ Technology** My comment relates to developing a better understanding of the resource that exists in the various key watersheds in the Province. In order to fully understand the actual volume of the resource that exists in any watershed the key lakes should be mapped to obtain an accurate assessment of their bathymetry. By knowing the volume of the resource in a particular area the Government will be able to make better decisions regarding the types of future developments that may be appropriate for those areas. Modern multibeam technology now exists that be used to map such lakes at high speed very efficiently. In addition to obtaining bathymetry some geological data on bedrock outcrop or soft bottom sediment can be discerned. Such

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		information would be useful to assess potential bottom habitat issues and pollution response. Canadian Seabed Research is a local marine mapping company that has been incorporated in Nova Scotia for 23 years now. We employ over 10 employees and have purchased a wide selection of marine mapping equipment over the years. I encourage you to visit our website as listed below. We would like to purchase a state of the art multibeam system but find there are few Government mapping programs that would help support such a purchase here in Nova Scotia. Should the Province decide that watershed lakes were to be mapped CSR would be pleased to invest in such equipment in order to help in this mapping process. Such an investment would help position CSR for international work and better secure employment opportunities for local marine science graduates. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* In order to understand actual volume of resource, key lakes should be mapped to obtain accurate assessment of their bathymetry. Modern multi-beam technology exists to map at high speed very efficiently. In addition to obtaining bathymetry some geological data on bedrock outcrop or soft bottom sediment can be discerned. Such information would be useful to assess potential bottom habitat issues and pollution response. CSR is a local marine mapping company that has been incorporated in NS for 23 years. We would like to purchase a state of the art multibeam system but find there are few Government mapping programs that would help support such a purchase here in NS. Should the province decide that watershed lakes were to be mapped CSR would be pleased to invest in such equipment in order to help in this mapping process. Such an investment would help position CSR for international work and better secure employment opportunities for local marine science graduates.
B	Farmer- Kings	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Need to ensure good practices are in place to protect from contaminants getting in the water systems *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?*

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		Provide for the ability to build ponds to enable water to be stored for irrigation for agriculture.- be open to uses of streams for small-scale hydro-electrical projects- Recognize that changing a water course is not necessarily bad - it can Provide environmental advantages *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Practice good environmental stewardship by:- protecting watercourses- minimizing erosion- creating ponds which provide habitat- ensuring agricultural runoff does not occur- avoiding accidental spillage of chemicals in watercourses *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Government will have to play a large role in this. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* There needs to be a good balance between use of the water resources and protection of them- it needs to be recognized that all change is not bad
B	In Kings	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Quantity and quality of water for wash, irrigation, etc. Adequate drainage systems so that farm land is productive. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Shared responsibility between users, beneficiaries or public funding.
B	Nova Scotia Power Inc	**Note: Introduction/ history of NSPI available upon request.** Over the last 14 years since the inception of the Relicensing Program, NSPI has completed extensive environment studies and monitoring across its Hydro systems. Studies conducted under the relicensing program are intended to provide a "snapshot" of environmental conditions across the watershed with a special focus on aquatic health and productivity, the scope of which includes: • The effects of water management strategies on aquatic habitat, upstream and downstream of dams, specifically

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		relating to: o Flow management; o Reservoir management; o Fish passage; and o Species of conservation concern • The effects of other land use practices and other factors that contribute to prevalent environmental conditions on the watershed (e.g. acid precipitation, etc.) Water quality (including chemistry, productivity, and nutrients) and fish populations (diversity, distribution, and health) are used as the key indicators of aquatic health; although the program also includes surveys of habitats, bathymetry, shoreline/wetland vegetation, and species of conservation concern. For systems that have previously been relicensed (i.e. between 1995 and 2003), the environmental studies for subsequent renewals (i.e. every 10 years) are conducted in a more streamline manner. This is facilitated by the selection of representatives sites for monitoring key indicators of aquatic health, with the intent of monitoring for change over time. In circumstances where specific issues arise that are outside the scope of baseline monitoring, focus studies can be undertaken. The program also provides the opportunity to present and discuss the results of environmental monitoring programs with interested stakeholders. Overall, this program has resulted in significant improvements to our collective understanding of the aquatic health of the respective system watersheds. It also forms the basis across our Hydro Systems for ongoing, continual improvements to fish habitat and association ecosystem components. Based on both our long history as stewards of water resources in Nova Scotia, as well as our recent experiences with the Relicensing Program, NSPI believes a successful water resources management strategy for Nova Scotia will include or address the following elements: 1. **Stakeholder Consultation** – Given that water is essential for the health and well-being of people and communities in this province, stakeholder consultation is perhaps the most important aspect to consider in the development of the strategy. Beyond the development of the strategy it is necessary to build mechanisms within the strategy for

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		ongoing stakeholder consultation. One of the key challenges in water management is balancing the needs of respective users, particularly in situations of conflicting use by multiple stakeholders. With this in mind consideration should be given to developing criteria that promote balanced water use while adequately protecting core ecological processes. 2. **Environmental Monitoring Programs** – There are currently extensive environmental monitoring programs and studies in Nova Scotia undertaken by a variety of stakeholders including, but not limited to, provincial and municipal government, academia, community groups, environmental non-government organizations, and industry. Several important considerations relate to environmental monitoring programs, including: a. Promoting improved public education of environmental monitoring programs, in terms of both awareness and the capacity to interpret key results. b. Identifying key indicators of ecosystem health (e.g. specific water quality parameters). c. Continuing to develop and support standards for monitoring programs. d. Improving and promoting mechanisms for accessing information, including data sharing and analyses. 3. **Surface Water Management Models** – Although there are numerous water management models available, the bulk of these models have been developed in other jurisdictions and are not useful in Nova Scotia. Those that may be useful have not been formally calibrated and promoted for use in this province. With increasing pressure on water resources in the province, often by multiple stakeholders with competing needs, there is a need to either develop or adopt and calibrate water management models. These models could then be used to guide decisions for water use while ensuring balanced water management strategies are implemented that provide effective protection for core ecological processes. 4. **Risk Management Approach** – Given the breadth and complexity of potential issues associated with developing and implementing an effective water management strategy across Nova Scotia, it is important to consider utilizing a risk management approach to ensure priority issues are addressed. Adaptive management is key of this approach in responding to emerging and evolving issues.

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		5. **Climate Change and Renewable Energy** – Addressing climate change and lowering greenhouse gas emissions are a key elements of achieving Nova Scotia's sustainable prosperity goals as outlined in the *Environmental Goals and Sustainable Prosperity Act*. One of the identified means to achieve this is building additional renewable energy capacity within the province, as specified in the Renewable Energy Standard issued by the Department of Energy in 2007. At present, NSPI's Hydro fleet constitutes the bulk of renewable, sustainable energy in Nova Scotia and accounts for approximately 8% of our generation. Although wind power is expected to provide much of the initial, additional renewable generation, the Hydro resource will continue to play an important role particularly in the integration of wind power into Nova Scotia's electric power system. There is also potential for development of additional hydro power within the province, and tidal instream energy conversion technologies will be tested in the Bay of Fundy as early as 2009. It remains clear that water will continue to play an essential role in providing Nova Scotians with renewable and sustainable energy. 6. **Water Strategy Funding** – There have been successful programs in the past that the Government of Nova Scotia may wish to consider re-implementing. An excellent example is the WaterWorks program administered by NSPI. Through this program, approximately 50% of the water fees paid by NSPI to use water to generate electricity were directed back to stakeholders and community groups. Activities were funded under the program across the province, including: enhancement programs, education programs, construction of fishways, research and monitoring programs, etc. **Background Info** As both historic users and stewards of this essential resource, Nova Scotia Power Inc. (NSPI) is pleased to comment on the ongoing development of the Nova Scotia Water Resource Strategy. Water security is a vested interest of the company as we rely on freshwater and marine systems for the production of electricity, particularly for our hydroelectric generating fleet. To this day NSPI continues to operate 33 Hydro Generating Stations on 16 watersheds throughout Nova Scotia. Operation of our Hydro facilities is directed towards achieving a sustainable balance between public & employee safety, protection of the environment, generation of electricity, and recreational uses of the watercourse. Each of these

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		facilities are regulated by the terms and conditions of Water Authorizations issued under the Nova Scotia Environment Act, and are renewed every 10 years through the Relicensing Program. This program provides for extensive consultation and environmental monitoring to support the development of sustainable water management strategies that meet the needs of multiple stakeholders. A review of this program should be helpful in the development of a more comprehensive water resources management strategy for Nova Scotia. Nova Scotia has a longstanding reliance on water power to support industry in the province. In the early days it was in the form of water-powered mills to support the lumber and agriculture industries, but by the early 1900s it had expanded to include the development of hydroelectric generating facilities to provide electric power to Nova Scotians. Around the same time the Nova Scotia Government became concerned over the control of the use of rivers for power development and in 1909 introduced legislation to provide a bill to control water resources in the province. Several additional pieces of legislation were passed by the Nova Scotia government between 1912 and 1919 that influenced the development of the hydroelectric industry in the province. The first of these was the *Free Fishing Act* passed in 1912 which provided for free access by the public to the shore of streams and rivers in the province for the purpose of angling (Murphy 1961). It essentially took away the private ownership of land on both shores of waterways which had enabled owners to reserve fishing privileges, in effect transferring angling interests from small groups to the public as a whole. This would have the effect of limiting future opposition (by these landowners) to large-scale hydro development as well as any associated compensation. With a growing demand for electricity, the need for larger, more complex systems was identified and the possibility for conflicts with other river interests was acknowledged. Out of the need for a provincial water policy the Nova Scotia Water Power Commission was formed on June 10th, 1914 (Murphy 1961). Its objective was to undertake investigations throughout the province and make recommendations for the development of a policy. Reports were issued by the Water

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		Power Commission in 1916, 1917, and 1918 (Murphy 1961). As the result of the work done by the Water Power Commission, the government enacted both the Water Act and the Power Commission Act in 1919. The Nova Scotia *Water Act* provided the Minister with the authority to grant authorizations for the use and development of river waters within the province. With the passing of the *Power Commission Act* in 1919, the Nova Scotia Power Commission was formed. The development of the St. Margaret's Bay Hydro System was the first project undertaken by the newly formed Power Commission in the early 1920s. This system continues to operate to this day as part of NSPI's current fleet of 16 hydro systems (Figure 1). All of these systems were initially authorized under the *Water Act*. The Nova Scotia Power Commission was eventually merged with the private Nova Scotia Light and Power Company Ltd. in 1972 to form the Nova Scotia Power Corporation (NSPC). The NSPC was subsequently privatized in 1992 to form the present day Nova Scotia Power Inc. In 1994, the Nova Scotia *Environment Act* came into force and the *Water Act* was repealed. In the same year NSPI initiated discussions with the Nova Scotia Department of the Environment to determine a process for future relicensing of the 16 Water Authorizations, of which the first 12 were due to expire between 1996 and 2003. Up to that point renewals of previous Hydro approvals had been carried out in a straightforward, abbreviated manner with minimal or no public involvement. The new *Environment Act*, however, had distinct provisions for both environmental assessment and authorizations which introduced more extensive public consultation and environmental studies to the approval process. The NSPI Hydro Relicensing program was developed to address both these aspects while also recognizing these were not new systems but existing developments that had successfully operated, in some instances, for over 75 years. It was also structured to adhere to the following criteria:

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		1. Consistent with the *Environment Act* and its relevant regulations regarding approvals. 2. Appropriate in scope and extent so as to provide a balanced, cost-effective review of existing conditions and concerns (including a focus on collecting representative but not exhaustive environmental information). 3. Provide appropriate opportunities for public consultation. 4. Any proposed improvements or adjustments would be affordable and practicable. While the program initially included the participation of the federal Department of Fisheries and Oceans and the provincial Department of Inland Fisheries, it has since expanded to involve the Departments of Natural Resources and Tourism, Culture & Heritage – Heritage Division. The Relicensing Program is now in the second "round" of approvals renewal, the first "round" being the group of Authorizations that expired between 1996 and 2003. Given that the Authorizations under the Environment Act were renewed for a period of 10 years, the second round was defined by the first of "new" approvals to expire and start the process over again. The Relicensing process itself takes approximately 2 years to complete and includes the following activities: NSPI Relicensing Program Activity A – Regulatory Consultation System Relicensing Scoping Exercise Preliminary Consultation with NSEL & Regulatory Departments Review/Confirmation with NSEL & Regulatory Departments Regulatory Review/Approval of Relicensing Application Activity B – Stakeholder Consultation Identification of Stakeholders

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Meetings/Discussions with Identified Stakeholders
Public Open House

Activity C – Information Gathering/Environmental Studies
Review of Existing Information
Consolidation of Operating Information
Fieldwork and Data Collection
Preparation of Relicensing Report and Application

As this shows, stakeholder consultation and environmental monitoring are key elements of the Relicensing process, and both have improved as the program has matured. Early in the process much of the consultation was really about getting to know the different stakeholder groups and learning to understand their concerns. Although formal consultation occurs 2 of every 10 years, in reality stakeholder consultation is an ongoing activity. At some of our Hydro Systems it often involves numerous meetings each year with the various stakeholder groups.

Over the last 14 years since the inception of the Relicensing Program, NSPI has completed extensive environment studies and monitoring across its Hydro systems.

Watershed

Studies conducted under the relicensing program are intended to provide a "snapshot" of environmental conditions across the watershed with a special focus on aquatic health and productivity, the scope of which includes:

- The effects of water management strategies on aquatic habitat, upstream and downstream of dams, specifically relating to:

  Flow management; reservoir management; fish passage; and species of conservation concern.
- The effects of other land use practices and other factors that contribute to prevalent environmental conditions on the watershed (e.g. acid precipitation, etc.).

Water quality (including chemistry, productivity, and nutrients) and fish populations (diversity, distribution, and health) are

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		used as the key indicators of aquatic health; although the program also includes surveys of habitats, bathymetry, shoreline/wetland vegetation, and species of conservation concern. For systems that have previously been relicensed (i.e. between 1995 and 2003), the environmental studies for subsequent renewals (i.e. every 10 years) are conducted in a more streamlined manner. This is facilitated by the selection of representative sites for monitoring of key indicators of aquatic health, with the intent of monitoring for change over time. In circumstances where specific issues arise that are outside the scope of baseline monitoring, focus studies can be undertaken. The program also provides the opportunity to present and discuss the results of environmental monitoring programs with interested stakeholders. Overall, this program has resulted in significant improvements to our collective understanding of the aquatic health of the respective system watersheds. It also forms the basis across our Hydro Systems for ongoing, continual improvements to fish habitat and associated ecosystem components. NSPI is committed to the stewardship of water resources in Nova Scotia, as demonstrated through the management of our Hydro Systems across the province and through the successful implementation of our Relicensing Program. NSPI is appreciative of the opportunity to participate at this stage in the development of a water resources management strategy for Nova Scotia, and look forward to ongoing participation in the process.
I	NA	**Value** As I read your Water for Life paper, it talks of the commitment of Nova Scotia's people to protecting our water resource, and that is true for some people. But the majority of the people, who live in Nova Scotia, live in an urban area. Their water comes from a tap and their groceries from a retailing mega giant. I am not so sure that they understand how precious our water and agricultural land resources are. **Climate Change** I am afraid over the next 100 years this is going to change as global warming puts a world wide strain on the most basic of resources. Re-dealing the deck as to who lives in as "has" nation as opposed to a "has not", but lessening the quality

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		of life for all. **Goals** I strongly urge policy makers take this opportunity to make Nova Scotia a leader in protecting our watersheds, our wet lands, our flood plains, as an important step in preparing for these changes. **Knowledge/ Awareness** I own one of Nova Scotia's small farms with a 200 acre woodlot. I am involved in the agricultural and forestry community. I see operators who are incredible stewards of the gifts that have been lent to them. Yet others pursue their occupations with a short sightedness that scares and angers me. **Watershed** Protect our watersheds. It is common for streams that 50 years ago that ran year round, to now flash flood in the spring and fall, and go dry in the summers. For years forestry and agricultural practices have accepted logging and cultivation practices to the stream edge. We must be willing to adopt policies to ensure that adequate buffer zones are required along any watercourse. We must be willing to monitor, prosecute, and fine those that practice any harvesting or cultural practice that negatively impacts on water temperature, water quality or flow. Perhaps we can bring some of these steams back. They would slow the release of water in the spring, lessen soil erosion as the run off slows down, and vegetation catches our topsoil before in ends up in our waterways, polluting our waters. Vegetation corridors would not only protect our waters, but would help create valuable wildlife habitat and corridors, both along and in the watersheds. **Wetlands** Protect our wetlands. Your paper notes the wetland loss that we have seen here in Nova Scotia. We can take some comfort in that we have done better than some areas in the world. But wetland loss has to stop now. There is no habitat that produces as diverse populations of wildlife and flora as a wetland. They act as the earth filtration systems, carbon sinks, and the ground waters recharger. One acre of wetland can hold 1.5 million gallons of water, slowly releasing it into water systems, purifying the water as it passes. I challenge the people of Nova Scotia not only to stop the loss of wetlands, but to increase our wetland area. Wetlands can do an incredible job in purify water. Let wetland

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		development become an important part of each community's water purification systems. Not only can they be a low cost addition to these systems, they can become important wildlife/ flora sanctuaries and present recreational opportunities. **Flood plains** Not enough is done to protect our flood plains. I daily pass a flood plain that for the last 25 years they owners have taken every opportunity to fill that plain in. I am sure they feel they are increasing the property's value, but I am not so sure their residential neighbours are as enthusiastic as more of them face flooding issues each spring. Our definition of what is a wet land and flood plain seems confusing and our regulations seem to vary from municipality to municipality. Let us do more to protect these areas so as our seas rise and we experience the heavier, more violent rainstorms that are being predicted, our flood plains can protect us, our agricultural land, and our properties. **Financing** The cost of doing these things can not be born alone by the landowners for the betterment of all Nova Scotians. The department of agriculture has taken steps to assist farmers to better protect water with a number of cost sharing projects. I applaud these initiatives and urge them to continue until all farms in Nova Scotia are compliant. However we need to offer some sort financial compensation to take land bordering rivers and streams out of agricultural production, especially row crop production and putting it into permanent cover forage production or even better, allowing forested buffer zones to return. We also need some sort of incentive program in place to allow wood lot owners to set aside timber in wet areas and along water ways to ensure a slowing of run off in the spring and improvement in our stream and river quality. These must be a cost born by all Nova Scotians, as it may be people downstream that will receive the benefit of a land owners practice many miles away. **Conclusion** I am one very small person. I hope that by receiving submissions from people like me, government policy makers will realize how important the preservation, no, the improvement, of our natural resources are to people like myself. Europeans have only been in North America for roughly 300 years. In that time, we have gone from an ocean resource where "cod could be caught from the ocean by the men dipping baskets into the water" to where the industry has

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		collapsed. We have lost species, top soil and wetlands. Our climate is changing. Our seas are rising. Please do not be swayed by those who quote employment statistics or argue for GDP increases. We have to preserve our most basic foundations of life and water, comes only second to the air that we breathe.
I	NA	Concerns about the management of our province's waters as follows: 1. INADEQUATE COMMUNICATION. Communication of the N.S. Department of the Environment - the lead government department regarding water - with stakeholder groups and members of the public should be improved; by means including an expanded website, a newsletter, and open houses. 2. LOSS OF PUBLIC ACCESS TO WATER. This problem is particularly acute in those areas of Nova Scotia that are experiencing population growth and/or rapid recreational/tourism development, including suburban HRM. The province should devote more resources to the purchase of coastal and shoreline properties, and to establishing a province-wide network of water access points. 3. WATER POLLUTION. Our current system of laws and regulations designed to prevent water pollution, and their enforcement, are inadequate. The only bodies or water in our province that are reasonably clean are those that are far from human habitation, industry, commerce, and agriculture.
I	NA	**Introduction** Water is one of the biggest necessities to life on earth. It is found in almost every single environment on the planet, and acts as the backbone to some of the largest ecosystems in the world. Society would not be what it is today without reliable access to freshwater. In our daily lives we turn on a tap, have a shower, wash our clothes, and never really wonder where all of this water comes from and what it takes to get it. Because of the limitations placed on the usage of surface water bodies as viable freshwater sources, groundwater has been targeted as an important part of water infrastructure throughout the country and the world. As time goes on, an increasing percentage of the population is relying on and looking towards groundwater as a viable freshwater source. This report will review the Water Strategy put forth by Nova Scotia Environment and Labour (NSEL), assess and compare its effectiveness in terms of groundwater to other groundwater strategies in other parts of the country and the world, and suggest a plan for further action.

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		Literature Review The water strategy is part of a new regime from the NSEL to develop a comprehensive provincial water resources management strategy. This strategy includes, yet is not limited to: addressing water resource issues, looking into future problems in water availability, assessment of present water management practices, and public knowledge on water topics that range from well maintenance to arsenic contamination. In 2002, a three year action plan was put into effect to update watershed protection plans, operator training, and to develop monitoring programs (Environment and Labour Nova Scotia, 2005). The finalized report summarizes the activities done between the initial launch of Nova Scotia's Drinking Water Strategy in October 2002 and the date of publication September 8, 2005. These activities were overseen by the Interdepartmental Drinking Water Management Committee that included members from several departments including, and not limited to: Environment and Labour, Agriculture and Fisheries, and Natural Resources. Major accomplishments outlined in this document are the application of standards for water treatment and operator certification at all municipal water utilities, distribution of informative documents on private well ownership, and the registration of small public drinking water supplies with Environment and Labour (Environment and Labour Nova Scotia, 2005). Examples of some of the actual work done was the organization of workshops orientated to upgrading operator knowledge and certification in all different aspects of water management from chlorination and disinfection to water treatment operations (Environment and Labour Nova Scotia, 2005). After the completion of this drinking water strategy, the Water Strategy was created to continue these efforts of improvement to the province's water management. The Water Strategy covers several different aspects from water resources and usage, impacts on ecosystems, sustainability, to public knowledge and the value of Nova Scotia's water (Environment and Labour Nova Scotia, 2007). The document is reader friendly with colorful diagrams, beautiful photography, and easy-to-read facts and figures on what the NSEL plans to do, and has done, to further the implementation of this strategy. It gives statistics on water usage and sources in the province, water consumption in the typical Canadian household, and wastewater management. For example, the NSEL claims that the average Canadian household of two to four people uses from 681 to 1360 litres of

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		water per day (Environment and Labour Nova Scotia, 2007). There is an emphasis put on four key issues throughout the discussion: Human health that addresses safe water consumption, recreation, and general well-being, Economic prosperity which comprises of sustainable and prudent water usage, Ecosystem integrity that looks at the protection and conservation of ecosystems and biodiversity, and Emergency and hazard preparedness which focuses on the impact of hazards on safety and health. Throughout the discussion of these issues, several questions are posed to the reader which indicates that the NSEL is very open to public opinions and ideas on how to handle this issue. Focusing in on the information given on the groundwater situation in the province, it is clear that there is very little data on the aquifers of the province. At the beginning of the discussion, a statement reads "*Nova Scotia's water resources include over seven thousand kilometres of coastline, more than six thousand lakes larger than one hectare in size...and extensive groundwater resources."(*Environment and Labour Nova Scotia, 2007). Then it goes on to state that there are only twenty four hydrometric stations and twenty four observation wells spread across the province. This imbalance of observation and data collecting versus amount of water within the province will be discussed further in the following section. **Assessment and Comparison of the Water Strategy** As a general public document, it is very well laid out and informative. Yet from the view of a hydrogeologist, missing components and indiscrepencies are apparent, and in some cases, alarming. According to Natural Resources Canada (2004), in 2001 approximately 50% of Nova Scotians relied upon groundwater as their source of freshwater. Since almost half of the province's population relies on groundwater it would be considered prudent to have a comprehensive groundwater observation well network. In the Water Strategy (2007), the NSEL states that they have an observation well network comprising of twenty four observation wells that has been in operation since 1965. Having only twenty four observation wells may seem adequate to the general public, yet from the point of view of a hydrogeologist it is alarming. To be able to assess the usability of the aquifers within Nova Scotia, more observation wells are needed. The information that can be gathered from the present observation well system is water chemistry, and the water level of that specific point. Having wells spread out on such a large range makes it nearly impossible for any type of extrapolation of trends

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		to occur. Accurate flownets cannot be created with twenty four wells spread over an area of 55,284 km² (Encyclopedia Britannica, 2007). When compared to other regions that do not rely as heavily on groundwater sources such as the state of Ohio, it is clear that Nova Scotia is in desperate need of more observation wells. Figure 1 shows the extent of the observation wells in Nova Scotia compared to that found in Ohio. For reference, Ohio has an area of 116,096km² according to the Encyclopedia Britannica, 2007. Along with this is the fact that the locations of the aquifers within the province are not known, therefore protection plans cannot be developed for these sources. In the same report from Statistics Canada, approximately 24% of the population of Manitoba relies on groundwater as their freshwater source (Natural Resources Canada, 2004). Manitoba has over 200 observation wells that monitor several major aquifers within the province that provide information on groundwater chemistry, water level, hydraulic head, and flow rates within the aquifer (Betcher et al., 1995). These wells are all located in major aquifers that are used as freshwater sources for major cities. Since there are so many observation wells within each of the aquifers, it is easy to assess any changes to the aquifer in its quality and viability as a freshwater source. With the present observation well network in Nova Scotia, this type of broad-scale assessment is not possible but is needed. When looking for data from the Nova Scotia network, there are several publications dating from 1967 to 1986, then the 2007 report on 14 of the observation wells as the latest publication (Environment and Labour Nova Scotia, 2008). There is very little to no information from the well network that has been published for the years between 1986 and 2007. This is a large problem since hydrogeochemical trends are not known for any of the groundwater sources in the province, be it seasonal variability, natural fluctuation, or anthropogenic impacts. This can be problematic for areas that are affected by natural contamination or are located down-flow from high-risk contamination sites (e.g. old mine tailings). The hydrogeochemical data from these previous years would have shown possible trends in the mobilization of toxic materials, or fluctuations in their concentrations. Along with the insufficient number of observations wells to assess groundwater reservoirs, there is a lack of surface water monitoring stations across the province. In total there are only twenty four hydrometric stations situated

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		across the province that has an abundance of lakes and rivers. For a comparison, the British Colombia and Yukon hydrometric program has a total of 2400 hydrometric stations collecting streamflow and water level data (Environment Canada, 2008). It is also interesting to note that 16% of the freshwater generated from the municipal sources is lost through leakage. This is considered to be a low percentage, yet compared to more modern systems that have been devised for developing countries, this percentage is high (pers. comm. Dr. G. Ferguson). **Plan for Further Action** After the analysis of the Water Strategy put forth by the NSEL, there seems to be a need for further action. The Strategy is lacking in three key components: Data collection, Resource assessment, and Sampling regimes. This section will go through strategies on how to improve in these three components. **Data Collection** There is a desperate need for data on the groundwater sources and geology of the province. This data can be acquired through several different means. This province is rich with geological spatial data and maps, yet the data needed for this type of study is cross-sectional maps. These maps allow hydrogeologists to discern where aquifers are, which Formations they are interacting with, and where recharge, discharge, and migration areas of each aquifer are possibly located. The means of collecting water samples and well data are diverse in cost, efficiency, and quality. A water study done in the state of Vermont sent out a request for a water sample to the residents within the study area (pers. comm. Dr. G. Ferguson). This is a quick and easy way to receive samples from a large area, particularly in the rural regions of the province. If this does not provide a good yield of samples, there is always the tedious process of going door-to-door in the study area asking to test residence wells. Reaching out to consulting groups, drilling companies and other industries that work with groundwater is another budget-efficient way to receive groundwater data. This type of sampling can be somewhat risky since the quality of the samples are not known. Yet for an overall view of the hydrogeological systems within a large area, this method of sampling would be acceptable.

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		From this type of broad sampling, areas of interest can be focused upon with intensive sampling and study done by professionals. The sampling done by this group would include drilling new observation wells in areas of interest determined by analysis of the previously collected data, hydraulic head and flownet analysis, anthropogenic effects within the area, and any other points of interest that may come up. When new wells are drilled, forms must be filled out that include information about how the well was drilled, amount of casing, and geologic layers intersected. These forms would be formatted after the style used by the Manitoba Water Stewardship. The sampling from these wells would lead to the development of aquifer mapping, recharge and discharge information, and geochemical assessment. **Resource Assessment** Once data has been accumulated on all observation wells and aquifers, assessment of the viability of groundwater being a freshwater source can commence. This assessment would encompass general information about the aquifer, contamination risk of the aquifer, projected ecological effects from aquifer use, and viability as a freshwater source. The general information on the aquifer would include geochemistry, water type, directional flow, extent, bulk volume, and flow velocity and residence time. This general information can be indicators of whether the aquifer is actually a viable source or not. If the aquifer does not have a large volume of freshwater available, the study could stop at this point and funding can be redirected to other aquifers that are considered to be more useable sources. Contamination risk of the aquifer would include studies on the recharge areas and discharge areas of the aquifer, surface water and aquifer interactions, mobility of any natural contaminants within the area (e.g. aresenic and mercury), and interconnectivity to any anthropogenic or natural sources of contamination. To project any ecological counter effects caused by the use of any aquifer as a freshwater source could be done by case studies in a contained environment, modeling of the aquifer's response to usage, and observation from other regions in similar situations. Once these assessments have been completed, then the aquifer can be considered as a viable freshwater source. **Sampling Regime** Once an aquifer is deemed a source of freshwater, observation of the aquifer is very important. Since there is no information on the aquifers previous to now, all of them would go through a sequence of intense sampling and

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		analysis. After a year of sampling every month or so (depending on factors discussed earlier in this section), the aquifer would undergo a review. If the aquifer is considered to be in a steady state, sampling would decrease to four times a year. If the same aquifer continues to show steady state, sampling from that aquifer would decrease to sampling once every year to two years. Others that show either high variability in their chemistry and hydrogeology, or are in areas of high risk of contamination would be under continuous analysis and higher rates of sampling. The rate of sampling would depend on the amount of fluctuation within the aquifer and its level of risk to contamination. **Conclusion** The Water Strategy developed by the NSEL is a strategy to update and improve all aspects of water use and knowledge throughout the province. It emphasizes issues such as human health, economic prosperity, ecosystem integrity, and emergency and hazard preparedness. Even though the Strategy is a well thought out document it is clear from a hydrogeologic view that the need for data on groundwater is needed and should be looked into. This problem can be resolved by the acquisition of more data, the assessment of aquifers as freshwater sources, and developing a sampling regime that is aquifer specific. **References** Betcher, R., Grove, G., Pupp, C. 1995. Groundwater in Manitoba: Hydrogeology, Quality Concerns, Management. Environmental Sciences Division, NHRI Contribution No. CS-93017. Encyclopedia Britannica, 2007. Environment Canada, 2008. Hydrometric Program for British Columbia and Yukon. Found April 8, 2008. <http://scitech.pyr.ec.gc.ca/ClimHydro/hydro_explanation_e.asp> Environment and Labour Nova Scotia, 2008. Water Resource Reports and Maps. Found April 8, 2008. < http://www.gov.ns.ca/nse/water/groundwater/groundwaterresources.asp> Environment and Labour Nova Scotia, 2007. Water Strategy: Water for Life, towards a water resources management

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		strategy for Nova Scotia. Environment and Labour Nova Scotia, 2007b. Nova Scotia Groundwater Observation Well Network: 2007 Report. Environment and Labour Nova Scotia, 2005. A Drinking Water Strategy for Nova Scotia: Final report. Natural Resources Canada, 2004. Groundwater: Importance of Groundwater. Found on April 8, 2008. <http://atlas.nrcan.gc.ca/site/english/maps/freshwater/distribution/groundwater/1> Ohio Department of Natural Resources, 2008. Observation Well Monitoring Program. Found on April 8, 2008. < http://www.dnr.state.oh.us/water/waterobs/about_water_obs.asp>
I	NA	Water is essential to life and cannot be taken for granted. The government should take the lead in setting measurable standards for both the quantity and quality of this vital resource. Effective public consultation for setting water policy requires comprehensive statistics of all major water users in the province in order for a complete discussion to take place. The provincial government has failed to provide these necessary statistics, particularly in respect to the large industrial users. **Quantity:** The government needs to quantify the resource. This means first estimating the present quantity of existing fresh water in the province. Next we need to assess the quality of this water and set a quality standard. With this information we can then pre-determine the amount and quality of the water resource we wish to maintain. Standard testing methods could be designed to insure our consumption of water is kept at a sustainable level where we are not taking quality water from future generations. **Value:** Sustainability of our water should insure the quantity and quality of the resource remain above an established level. Standard testing results could be translated into a dollar value to maintain the resource. All users would pay accordingly to insure the quantity and quality of the resource are not diminished. This is the 'user pay' principle. The carbon tax is an instructive model. Our government should be able to establish the value of a litre of quality water. The cost of recovering and restoring the water to the established quality standard can be charged to the user. For industrial users the full cost of production could then be included. Excluding these water quality restoration

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		costs will only lead to degradation of this precious natural resource for short-term economic gain. **Economics:** The underlying problem is the economic model we are using. The primary resources of water, air and soil are being depleted by industrial users for economic gain. The full cost of restoring these resources needs to be charged to the users. We cannot continue to afford to allow users, particularly corporations, to consume and deplete our water, air and soil resources. Our first responsibility should be to insure future generations have quality water to drink, quality air to breathe and quality soil to grow their food. **Data/ Knowledge:** The public consultation was very poor. The discussion was managed and facilitated for a particular preconceived outcome. Informed public consultation to formulate policy requires the government to first provide adequate comprehensive information to guide a full discussion of the topic. This was not done. When the facilitators were asked for this information there was an admission the Department of Environment was not doing a good job of compiling the statistics on industrial water uses. The discussion guide attempts to focus attention largely on residential water uses over industrial uses. The source of residential drinking water is the same source industrial users draw from for their business activities. Where are the accurate statistics on all the major users of our water resource in the province? A full discussion cannot be carried on without the relevant information of all water resource users. Vital information was sadly missing from the discussion guide, 'Water for Life.' Page 6 of the guide indicates "*Municipal water use by sector",* but makes no mention of industrial uses not on municipal water supply systems. It is relatively safe to assume the big industrial users such as the three pulp and paper companies in the province are not utilizing water from municipal water supplies. Where are the full statistics on industrial water uses in the province? Apparently the government would have most of this information because on page 10 of the guide it says, "*Current regulation in Nova Scotia requires anyone using more than 23,000 litres of water per day from a groundwater or surface water source to apply for an approval*." This is the same part of our water resource, apart from municipal water supply systems, that the guide says 40% percent of Nova Scotians depend on for their safe drinking water. If and when the government decides to do its job of providing full statistics on present resource consumption we

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		can perhaps proceed with useful public consultation to formulate policy on resource uses. The recent pretence of consultation will only lead to more rejection of government policy by an increasingly informed and demanding environmental public consciousness.
I	NA	*The province of Nova Scotia is committed to sustainable development.* *What are you ideas about how we can ensure that development is undertaken in a way that does not put strain on the water available for the area or the surrounding natural environment?* 1. There must be more stringent requirements of the development community to ensure that water resources are protected – this includes both water quantity considerations (i.e. stormwater collection systems, stormwater management, flood and floodplain management, availability and sustainability of groundwater resources and impacts on existing aquifer users), water quality considerations (i.e. stormwater treatment), and issues that affect both quantity and quality (i.e. inflow and infiltration reduction, removal of legacy "as of right" designations that would put water and wastewater systems out of compliance if developed – even if only proposing to add a single unit/lot and despite the fact that the unit/lot may currently fall within a 'servicing' boundary). If the addition of the extra unit(s) will make exacerbate a compliance situation, then quite simply they should not be allowed and there should be no exceptions. The unit/lot may only proceed once available capacity is confirmed. 2. Every municipality should have guiding documents (i.e. planning documents – Official Plans, secondary plans; and servicing documents – Master Servicing Plans done by municipalities, functional servicing plans done by developers in support of proposed development) to identify growth potential, servicing needs and limitations, and the economics of developing. Development should pay for itself and not be a burden to existing taxpayers. 3. Development charges (DC) should be levied for all new lots to be developed. Development charges should cover costs for infrastructure such as water and wastewater services (distribution/collection and treatment), stormwater collection and management/treatment services – in addition to non-water related services such as roads (including sidewalks) and potentially transit services. Development charges would go into DC reserve funds. These reserves are drawn on to support capital improvement works that are growth driven (i.e. water/wastewater treatment plant

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		capacity upgrades, road widenings, enhanced transit routing services, etc). 4. If development requires infrastructure in advance of municipalities' plans for the capital investment, the developer/developer group must front end the cost of the works and the works must be done to the same standard that the municipality would follow if building the works. 5. No lots should be permitted for construction (or ideally should not be saleable) until the developer/builder has proven that servicing is technically, economically, and environmentally feasible. The servicing proposal must demonstrate that it will NOT cause negative impacts to the environment (i.e. wastewater effluent does not compromise the assimilative capacity of the receiving water; additional lots serviced will not cause upsets to or overflows from the existing wastewater treatment facility regardless of "as of right" designations; on-site wells will not be impact the sustainability of groundwater resources at a 1) macro level (community level and long term health and resilience of the aquifer) and 2) micro level ('my neighbour's well is impacted/has gone dry'). 6. Greater authority through the governing legislation (Municipal Government Act) to give powers to the municipality to restrict and/or prohibit development that does not comply with planned growth areas, current servicing limitations, and environmental protection requirements. 7. Water quality issues must be considered with respect to surface water (currently sediment and pollutant transport into the receiving waters without prior treatment). 8. Water quantity issues must be considered (i.e. flood impacts/erosion related to stormwater management practices). **Supporting sustainable economic prosperity** ***Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, and to drink.*** *How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* 9. Water conservation practices should be promoted (including low flow shower heads, low flush toilets (where practical), front loading washing machines, watering restrictions/bans/programs, landscape practices, etc). 10. Continued watershed/source water protection (some examples are already in place in many communities throughout

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		Nova Scotia). 11. Protection of water resources from agricultural wastes (i.e. farm management practices related to discharges to receiving waters, locations of grazing/livestock areas relative to watercourses, water supplies). 12. Commercial/industrial users should look at opportunities for recycling water through their manufacturing/production processes. 13. Need to look at the combined impact of residential and commercial/industrial water taking from private wells on the source water (either surface or aquifer) – can the water supply be sustained at the current rates for a prolonged duration? If not, then alternative service delivery should be proposed or investigated. **Maintaining and protecting healthy ecosystems** *What are your ideas about how we can provide landowners with the ability to develop their land while ensuring the conservation or restoration of wetlands and their natural functions?* 14. Conservation Boards/Districts/Authorities should be established with actual powers to enforce regulations/standards and establish policy for protection of watersheds. Need to have sufficient authority to be a useful quasi-governing body (recommend these conservation boards be watershed based – although this will potentially span municipal boundaries. Can look to other North American jurisdictions for guidance and direction. 15. Identify and map areas of significant interest (i.e. wetlands, protected areas, watershed features, buffer zones). 16. Outline acceptable uses for lands in these areas. 17. Develop a policy that permits exchange of areas of natural and significant interest for constructed features where it can be shown that there is a net benefit to the exchange. 18. Encourage forms of development that will work with the existing natural environment/terrain rather than whole scale changes to the natural environment (actually, Nova Scotia has had some success in working around the natural features in lieu of clear cutting whole tracts of land to develop it). **Preparing for water-related emergencies and hazards** *Emergencies disrupt our lives and change what people, businesses and communities require to continue with their*

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		daily routines. During and emergency, such as a drought, who or what should have priority access to water? 19. Hospitals and other care facilities should have first access to water. Essential businesses to the overall health of the community should be next. Daily minimums should be provided to all residents for essential use (i.e. consumption). Outdoor water use (lawn watering, washing cars, washing driveways and sidewalks) should be restricted during droughts and/or emergencies. In periods of prolonged shortages, further restrictions may be imposed on daily use. 20. As we all require a minimum daily amount of water for our physical survival/consumption, water allocation should be restricted to an equivalent amount based on these daily minimums times a factor of safety to account for variability in persons per household. In times of drought, users that exceed the allocated daily minimums may be surcharged for that use. 21. Commercial/industrial customers asked to restrict their use that fail to do so should be subject to a surcharge and/or penalty. 22. In general, we need to become smarter and more environmentally aware of our water use and overuse. A shift in attitudes and behaviours in times of abundant water will help us get through times of drought. **Valuing Nova Scotia's water** *We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* 23. One of the difficulties in establishing a financing strategy is the method of collection. For consumers on centralized services, this is more straight-forward. However, many other consumers are on private wells and septic systems and are therefore not set up as water and wastewater customers. So how do we charge these consumers for the overall health and sustainability of our water resources? Once the water strategy is defined, an implementation plan must be established. The implementation plan must include a prioritization methodology and the estimated cost of each item in the plan. As "Water for Life" is a

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		provincial initiative, the Province should develop per capita costs for implementing the proposed plan. Then a review of the financial feasibility of implementing the strategy must be made. Opportunities for grants should be explored in addition to soliciting financial support from large commercial and industrial users. One way to apportion the costs is to spread them over all of Nova Scotia – this has the effect of making programs more affordable, however, some customers may argue that they are paying for works that benefit others. An alternative is to apportion costs based on the needs within each watershed – this means that costs for works within a specific watershed would be paid for by the population within that watershed. The downfall here is that some areas may have a disproportionate amount of works to be completed within a specific watershed, and the consumers themselves may not have the same ability to pay for these works. There is a compelling argument that all Nova Scotians benefit from protecting our water resources, therefore, we should all pay. This option may need to be phased in over several years to help with affordability. As for collection of the costs, this may be done by partnering with the municipalities on the tax bills, creating a transfer payment for water resource protection payable through the municipality, or possibly by putting a charge on the existing water and sewer bills. Another way to collect costs associated with the proposed strategy is to implement user fees – perhaps associated with the public's use of provincial parks (i.e. a small surcharge on each park entry pass or use that would be remitted to a reserve fund used to fund the works identified in the water strategy/implementation plan). 24. A two tier payment system may be appropriate for existing water and sewer customers. That is, a base rate is paid by customers relative to standard consumption rates (for both residential and commercial/industrial customers). Users that exceed this standard consumption rate would be subject to higher rate for the portion over the minimum and/or a flat rate surcharge. The consumption limits should be standardized across residential customers; and again

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		across commercial/industrial customers. However, high use commercial/industrial customers may be able to negotiate better surcharge rates if they can demonstrate an effort to reuse/recycle their manufacturing water and wastewater needs. 25. Water resource districts or watershed districts should be established. These could then levy user rates to all residents or households within the district regardless of the type of water and sewer service delivery. This would require some method of partnering with the municipality for rate collection (see points above in item 23). All monies collected in relation to the water strategy/implementation plan should be put into a reserve. The reserve would be used to fund a portion of the works identified in the implementation plan. **Sharing the responsibility for managing water** *Everyone (individuals, communities, businesses) can contribute to the conservation and protection of water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* 26. Personally, we have already used water saving devices such as low flow showerheads, low flow toilets, and front loading washing machines. Also, ensuring that our behaviours include not leaving the tap running while brushing our teeth, making sure we use the dishwasher for a full load of dishes, the washer for a full load of laundry, and using watering cans to water plants and flowers. Grass gets plenty of water from the rain we get in Nova Scotia – therefore it is not necessary to put on a sprinkler in most locations. 27. An education campaign to inform the general public of the value of protecting our water resources would be beneficial. The average person doesn't usually understand where their water comes from, what happens to their wastewater (both sanitary and storm water) and the human impacts on our water resources. A full education program that informs the public about the basic hydrologic cycle and how our activities affect it and our environment is needed.
I	NA	First and for most I believe protecting our water and land is of utmost importance.

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		The concern I have is who should pay. Please protect the landowners. Unlike what is happening in Lawrencetown, Annapolis County. The few landowners who own land in the watershed protected area don't seem to be getting considered for any sort of compensation for the limitations put on their land and the potential drop in property value because of a protected area designation from the adoption of a Land Use By-law. The whole village should pay the cost of protecting the water, possibly by raising rates and forwarding some restitution to the landowners or as with agricultural land, tax exempt, not just the few who happened to purchase the land and must continue to pay tax on it. On top of that the water utility is profiting from the sale of clean water.
I	N/A	I am a resident of the Avon Peninsula in Hants County who is greatly concerned about the future availability of clean water in this and the Brooklyn area of the county, which is majorly impacted by mining activities and has been for over 50 years. Memories of residents are long recounting the history of the Miller Creek gypsum operation, but we also are hearing more recent complaints from others not on, but residing close to, the peninsula: cbc.ca.ns DeAnna wrote:Posted 2008/03/17 At 3:01 PM ET I'm happy to hear a halt has been called for the expansion of the Fundy Gypsum Company's operations. I live about a five minute drive away from their area of operation. Last summer, after one of their blasts, our well water was dirty for many weeks. For this to happen in my area, the village of Brooklyn, is odd but other neighbours reported the same problem. We worried then, with the possibility of the Company expanding, we might be experiencing more of the same in the future. It was costly to us because we had a plumber in on a few occasions to deal with the situation and we were changing water filters every week. We believe it either was a stronger than usual blast or one in an area closer to where we live which sent vibrations through the ground and shook extra silt/dirt into our wells. De Anna Aston, Newport, N.S. http://www.cbc.ca/canada/nova-scotia/story/2008/03/17/gypsum-quarry.html We know several of our neigbours have had similar circumstances with their well water over the years, where it has

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		muddied or simply dried up after putting in a dug well. We are all deeply concerned about the availability of clean water in future in this area. These concerns been widely documented with the department over many years and most recently commenting on the possible expansion of Fundy Gypsum's operations deeper into the Peninsula. The operation has not been granted approval for a third mine, but yet blasting is coming closer to our house and my husband and I are starting to feel our house shake now for the first time since moving here 4 years ago. We are concerned about the impact the blasting will have on our concrete cistern down the road. To dig it up and repair it will come at great expense, and there are others who have lived in the area for many years who have had unexplained cracks appearing only for the company to deny it. We are most disappointed that not one of these sessions advertised is being held in Hants County where these water issues need to be addressed specifically as a result of intense and increased mining activity. We are dismayed that Legislation pertaining to blasting re: Pits and Quarries does not include proximity to wells/water sources. We are dismayed to learn that, apparently, this legislation, may not even apply to Fundy Gypsum's current operations on the Peninsula with respect to proximity of homes from mining activity, the two tonnes of ammonium nitrate used daily as the blasting agent and the toxicity of their final discharges ending up in local ground and surface water. All considered, this is a company who appears to operate "above the law" when it comes to being held responsible for its impact on resident and community health. We would also like to request that a formal complaint process be set up through the Department of Environment for residents who are also noticing the increase in strength and frequency of blasts. Complaining to the company does very little and they claim they have received little complaints when we know they have received many. If the company receives none these days it is because residents know it is futile to do so. In the past week, three of our neighbours have asked where they might complain.
I	NA	Water is making headlines. On the news, in schools and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia? 1. Water should never be sold privately or transported out of the province

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		2. Water should be managed regionally, to ensure that municipalities, etc. have what they need 3. Water should not be removed from a system unless it is extremely necessary so that ecosystems continue to function properly **What are your ideas about how we can ensure that development is undertaken in a way that does not put strain on the water available for the area or the surrounding natural environment?** 1. Conduct studies that identify the limits for development and water usage throughout NS. For example, if the Valley is experiencing water shortage, then there should be a cap on the industry and activities that occur there 2. Charge customers more for "unreasonable" water usage to reduce strain on water systems **Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, and to drink. *How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?*** 1. We need to identify the carrying capacity of areas throughout NS in terms of business and residential water use and put the appropriate limitations on development to ensure that the water quantity and quality will be there when we need it in the future. **What are your ideas about how we can provide landowners with the ability to develop their land while ensuring the conservation or restoration of wetlands and their natural functions?** 1. The province needs to create more jobs dealing with alterations to land, monitoring, development approvals, regulations, etc. Right now, the province is doing a poor job at this; there are projects going through that should not be. A government employee will tell you themselves that they need support and they can't do enough to prevent some land alterations from occurring. **Emergencies disrupt our lives and change what people, businesses and communities require to continue with their daily routines. During an emergency, such as a drought, who or what should have priority access to water?** 1. Farms that grow food to be sold locally, fire services, residences, and medical services are just a few People need information about water resources to increase their knowledge and make informed decisions. What kind of information about water do you want or need? 2. I would like to be provided with information that demonstrates to me where the water in a particular system, region,

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		or in my community goes on an annual basis. For example, what new businesses have popped up in my community that use water and how much are they using, etc. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why? 1. The money should come from tax payers. I don't like working deals with businesses to obtain business funding for projects in NS. Firstly, the money should be distributed to those who need it most, and then work on down the line to those who need it least. I feel this way because water is a basic human need and we first need to satisfy the needs of those most in need. This isn't the same as putting up a Wal-Mart or putting in a community swimming pool. Everyone (individuals, communities, businesses) can contribute to the conservation and protection of water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water? 1. I agree. Speaking as a resident, I feel that there is a lot that I can do. Overall, I feel that those who use excess water should be charged much more for doing so; both residences and businesses. Personally I already do a lot; however, if I can be shown other examples of how to limit my water usage, I would do it. For example, I don't water my grass; I take short occasional showers(no baths/low-flow shower head), I do short loads of laundry, I flush my toilet as little as possible, I try to participate in a lifestyle that limits CO2 production (heating the planet) such as driving infrequently, and buying products that don't produce CO2 directly or indirectly. These are just a few ideas and I feel that these are all very simple things that other people can be doing. Other comments: 1. We should consider that certain businesses and industries may not be suitable at all towards achieving a sustainable water resource strategy. For some reason, we are still mitigating and reducing impacts of industry and businesses to water systems, when we should be prohibiting impacts. For example, it makes no sense to allow a company to pollute a certain amount; they shouldn't be polluting at all 2. We need to recognize that we can't fully address the issue of water quality until we have addressed the issue of air quality, since many contaminants find their way directly into the water systems from the air 3. We should manage our water and air as basic human needs; that something we nurture and don't pollute. We are

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		not at present
I	NA	I was pleased to find that the report comprehensively addressed the issues facing water managers today. I do, however, have a few concerns with the policy and the policy-making process: 1) **Controlling demand/abstraction from private wells:** Since groundwater and surface water are interlinked, abstraction from private wells can affect water levels and quality of municipal supplies. How does the government plan to manage demand from smaller private wells? 2) **Cost recovery:** A sustainable water system must recover all its costs. Increasingly this is done through higher water charges. Does the government plan to introduce a pricing scheme that better reflects the actual price of water? What measures are in place for financial regulation? Has metering been considered as a demand management/pricing option? 3) **Service Delivery:** Has the government performed audits on the municipal water providers to determine their efficiency in water provision (i.e. both in terms of diminishing non-revenue water losses and service delivery in a financially efficient manner)? Could efficiency of scale be improved? How are the municipal systems held accountable? Has the government considered adopting different business models for service provision (i.e. private investment, contracts, corporatization)? 4) **Policy process:** How does the government plan to incorporate public feedback into policy? 5) **Communication:** How is the government communicating information to the public? Not currently residing in NS, I am not able to access local media. However, if the website and the water strategy briefing paper are the primary means through which this information are communicated, I am concerned. The briefing may be too long and complex for people who either struggle with literacy or who do not have a keen interest in water issues. Perhaps communication should be extended to radio programs, TV stories, or even flyers/social marketing schemes highlighting the main issues so that awareness is raised amidst a greater proportion of the population. 6) **Human right to water:** As you may know, Canada is the main country preventing explicit international legal recognition of the human right to water and sanitation. Canada is seen to contradict its own legal obligations and development policies by denying people, particularly in developing countries, the means through which they can legally hold their government accountable for progressively improving the condition of water and sanitation. Has the government considered

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		incorporating the human right to water in its policy? This presents an exciting opportunity for Nova Scotia to become a national leader in initiating such important policy reform. My dissertation investigates the public perception Canadians have of the right to water, as the public is the key instrument in instigating policy change. Would the Nova Scotian government consider supporting such research? I would be interested in contacting key government employees and community members to interview or survey.
I	NA	**Introduction:** As a Masters student at Dalhousie's School of Resource and Environmental Management, I would like to submit the following comments regarding Nova Scotia's Water Resources Management Strategy. Specifically, my interest in the development of a comprehensive provincial Water Resources Management Strategy is in the intersection between protection of vital water resources necessary for human health and economic prosperity and biodiversity conservation. **Watersheds:** Firstly, I would like to acknowledge the provincial government's commitment to conserving vital water resources, through the designation of 24 out of 82 municipal water supply areas as Protected Water Areas under Section 6 of the *Nova Scotia Environment Act* (1994/95). I whole-heartedly support the use of a proactive 'multi-barrier approach' to protecting water sources from source to tap. I also believe that important water management decisions should occur at the watershed level, and that this approach is compatible with creation of provincial protected areas. Designating watersheds under the *Environment Act* (1994/95) allows for the creation of regulations controlling and restricting certain land-use and development activities in and around protected watersheds. These controls and restrictions are essential to maintaining and enhancing water quality and preserving broader ecosystem integrity. **Regulations/ Education:** Many municipalities are pursuing designation of their drinking water sources to safeguard them for the use and enjoyment of current and future generations. However, presently regulations governing the management of Protected Water Areas are negotiated with municipal water works operators on a case-by-case basis. In some cases, municipalities have used zoning to manage Protected Water Areas, restricting different types of activities in different zones. However, in many cases this approach permits certain agriculture, forestry, residential development and recreation activities that can have deleterious impacts on water quality and biodiversity conservation. If feel that the

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		province should engage in education and awareness activities aimed at informing municipalities about the options available for protecting their water resources. In some cases, municipalities have gone a step further and sought the designation of their water supply area as a Wilderness Area under the *Wilderness Areas Protection Act* (1998). This designation prohibits all forestry, mining, residential development and road building activities, and places restrictions on the use of Off-Highway Vehicles (OHVs). Nova Scotia Environment should encourage other municipalities to follow the example set by the Town of Antigonish and currently being pursued by the Town of Amherst. **Knowledge/ Technology**: Under the Protected Water Area designation, after regulations are passed, municipal water operators are responsible for ensuring they are properly communicated to the public and effectively enforced. Provincial capacity-building is needed to ensure that responsible local bodies have the knowledge, tools and resources required to work collaboratively with government departments in assessing, managing, and monitoring protected watersheds according to legislated regulations. **Wetlands**: Finally, I respectfully request that the Province honour its legislated commitment to develop a stand-alone Wetland Policy by 2009, to prevent the net loss of wetland area and function. Wetlands are unique and productive ecosystems, often referred to as 'cradles of biodiversity', and are critical environments for biodiversity preservation. Sadly, uncontrolled development continues to cause wetland losses today, while more insidious actions, such as sedimentation and excessive nutrient enrichment decrease the functional value of wetlands for humans and wildlife. A strong commitment to achieving the 'no net loss' goal will require a watershed- level approach to wetland conservation. Nova Scotia's Wetland Policy should recognize the invaluable hydrologic functions wetlands perform, including enhancement of water quality, water recharge, flood and erosion control and carbon storage. By storing and dispersing nutrients, storing pollutants and filtering sediments, wetlands maintain and enhance the quality and quantity of Nova Scotia's water resources. Thus, their conservation should be a top priority. The Wetland Policy should follow the following mitigation sequence: Avoid- Minimize-Compensate. The first priority should be to avoid development on wetlands whenever possible to protect their ecological and socio-economic functions. Second, unavoidable impacts must be minimized. Proponents should be financially responsible for mitigation

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		strategies, and approvals for alterations should not be granted if a proponent has not submitted a detailed plan outlining precautionary measures and aspects of project design that aim to minimize impacts on wetlands. Finally, proponents must compensate for any loss of wetland area, function or value, where minimization is not feasible. Compensation efforts should focus on restoration projects that aim to improve the condition of a currently degraded wetland habitat. Proponents must also be held responsible for rigorous, long-term post-development monitoring to ensure that mitigation efforts are successful. Legislation governing the establishment of protected areas in Nova Scotia was not designed with wetland conservation as a primary focus. As a result, although wetlands of significant ecological value may be captured within Nova Scotia's protected areas network, there is no systematic method for evaluating the ecological significance of various wetlands (for example by type, size, position within the landscape, etc) in a systematic way and targeting them for protection. Other jurisdictions, like Ontario and New Brunswick, have made legislative commitments to protecting wetlands of ecological significance using a ranking system that evaluates wetlands relative to one another. I recommend that a commitment to designating provincially significant wetlands be included in Nova Scotia's Wetland Policy. A proactive planning process would ensure that wetlands that contain significant features, support rare species or species at risk, and those that provide critical feeding, breeding and migration habitat are given adequate protection. Special consideration should be given to the conservation of rare provincial wetland types, such as salt marshes, which are both ecologically rare and have been disproportionately impacted by human development.
I	NA	*1. The province of Nova Scotia is committed to sustainable development. What are your ideas about how we can ensure that development is undertaken in a way that does not put strain on the water available for the area or the surrounding natural environment?* The primary sources of degradation in freshwater ecosystems is improper land use or excessive and poorly regulated development in watersheds. Improper forestry operations (e.g., excessive clear cutting, cutting on fragile soils, inadequate setback from watercourses, poor sitting of access roads), agricultural practices (e.g., heavy pesticide and herbicide use, farming steep slopes, overgrazing, inadequate buffers, filling or draining wetlands, livestock in streams, excessive irrigation) urban and industrial development (e.g., excessive density, excessive area of impervious surfaces for

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		roads and parking lots, Degradation is evident in a number of ways including, increased flashiness of streams, erosion, sedimentation, increased water temperatures, toxicity from pollutants, and loss of water quality. All of these things can lead to reduced biodiversity, loss of ecological integrity, increased health risks, and loss of potential economic benefits from other services that these ecosystems normally would provide. The managing of resources at the watershed level is more effective than management by municipal units. Watersheds are not confined to municipal boundaries. Management through Watershed-based Committees is an option that has proven to be effective in other parts of North America, particularly when the committees are representative of all watershed stakeholders and have a mandate to enforce their decisions. This requires commitment by government to the model as well as sustained funding. Monitoring programs must be implemented to provide a baseline assessment of current ecological conditions in all of the provinces watersheds and follow-up surveys will be needed on a regular basis. 2. *Nova Scotia 's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, and to drink How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* It's important to know how much water is contained in each of the various storage areas such as (groundwater, wetlands, lakes, rivers) throughout the province and what their typical replenishment rates are in order to make decisions about withdrawal allocations for all users. The monitoring plans currently in place need to be expanded to fill in knowledge gaps to improve decision making capabilities. Decisions about withdrawal allowances from any surface or groundwater source should consider potential ecological as well as socioeconomic effects that may result under different scenarios. In the section of the document on clean drinking water nothing is mentioned about contamination from pharmaceuticals/prescription drugs, chemotherapy drugs, caffeine, birth control pill metabolites, cosmetics and other household contaminants. It will be critical to quantify levels of these contaminants in provincial freshwaters to determine if and where we have problems and what appropriate remediation actions might be necessary. Careful monitoring programs designed to detect the presence and concentrations of these as well as other

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		industrial and agricultural contaminants now entering our freshwaters will need to be implemented. Implementing and enforcing strict regulations should be a minimum starting point. Need to be sure regulations are sufficient to protect these resources and we need to provide sufficient enforcement need to set standards for wastewater effluents that are at least as high as those included in the Municipal Wastewater Effluent Strategy released by the Canadian Council of Ministers for the Environment. It is well known that primary treatment of the domestic sewage is not sufficient to protect human and ecological health. The bar should be set higher, particularly in areas upstream of key water and other natural resources. Consideration should be given to ability to pay; and a program should include loan and grant opportunities for poorer communities. Another factor related to sustainable use of our freshwaters is conservation. In the section on municipal water use a figure of 16% loss to leakage is cited as a province-wide rate. Based on a median water loss due to leakage for other large municipalities in North America of around lo%, 16 % is unacceptably high and points to the need for infrastructure repair as part of a general water conservation program. For large water authorities, a 16% loss to leakage means a substantial economic cost and suggests repair or replacement is needed to promote sustainability. Typical water use per day in North American households is about 100 gallons per person per day So, for a four person household, that amounts to about 1500 litres per day per. The fact that Nova Scotia only requires individuals/businesses that use more than 23,000 litres of water per day from groundwater or surface water sources to apply for an approval makes it difficult to fine tune control of water use in any area. Setting a lower threshold requirement for approval would provide greater flexibility in limiting water use in times of low supply without resulting in unreasonable restrictions on home use. 3. *What are your ideas about how we can provide landowners with the ability to develop their land while ensuring the conservation or restoration of wetlands and their natural functions?* Getting a better estimate of wetland loss will be important. The no net loss clause in the Environmental Goals and Sustainable Prosperity Act is a good step in the right direction. Careful monitoring and enforcement is needed. Wetlands have been easy for landowners/developers to

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		degrade and destroy because municipalities and the province have not been effective in enforcing rules on development around sensitive habitats. There are no setback requirements for development next to wetlands, streams or lakes at the provincial level other than those for forestry which has a 20 m buffer requirement. As a result, cutting of trees is commonplace right up to the water's edge in many cases. We need strong setback/buffer requirements and monitoring that prevents damage to these kinds of habitats. 20 m buffers should be considered a minimum and 50 or 100 m could be justified based on ecological/biodiversity impacts that have been observed. **A stand alone wetland policy** Need additional legislation specific to the protection of wetlands. The recently revised provincial wetland directive does not effectively address the key issues associated with harmful development near wetlands. [The science is clear and well documented. If you do not provide a natural buffer between development and watercourses you will degrade those ecosystems. Sediments will be washed in, water temperatures will rise, fish spawning habitats will be buried and biodiversity will decline. Actually filling in or draining wetlands is obviously even worse. Filling or draining wetlands leads to increased flooding downstream and decreased filtration of runoff. The best option is to not allow development in wetlands and work with landowners to find alternatives. For wetlands that landowners need to destroy it's important to have a well thought out plan for how to handle the "no net loss policy". In other parts of the country when wetland "mitigation" has been required a relatively simple "duck-pond" type wetlands have been dug as replacement wetlands regardless of the type of wetland that was destroyed and with no thought of ecological function or services that were lost. If mitigation is to be of any real benefit, it must require developers to replace the lost wetland with a wetland of at least an equal area, and to replace the wetland in a part of the watershed and with a particular type that minimizes the loss of ecological function. We need to recognize that wetlands created by humans will not act as true replacements for the ones that are destroyed and in many cases will be entirely inadequate, but it only makes sense that we require developers to construct replacement wetlands with as much attention paid to replacing the lost wetland's function as possible. 4. *Emergencies disrupt our lives and change what people, businesses and communities require to continue with their daily routines. During an*

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		emergency, such as a drought, who or what should have priority access to water? - could say something about increased likelihood of flooding due to wetland loss and climate change - not sure I want to say anything about who gets the water when wells are running dry 5. *People need information about water resources to increase their knowledge and make informed decisions. What kind of information about water do you want or need?* The assessment of the biological and ecological integrity of all of our freshwater ecosystems as well as the integrity of the watersheds associated with these ecosystems should be a top priority. Assessment at regular intervals across all ecosystem types in the province to provide some measure of status and trends (and classes of ecosystems would help to identify and prioritize problem ecosystems and watersheds. A classification system appropriate for our various freshwater ecosystems will be needed and developed so that a statistically valid sampling scheme can be devised that that will allow extrapolation about *status* and trends of various ecosystem types from a limited sampling of particular representatives of each ecosystem type and class. Maintaining a detailed inventory of watershed land use and land use change across the province would also help identify which ecosystems are likely to be most at risk. Educating the public (individuals, businesses, municipalities) about practical approaches to water conservation, the need for water conservation and maintaining good water quality, the meaning of biological and ecological integrity, wharf watersheds are and the importance of maintaining good land use practices in our watersheds to the health of our waters and to Nova Scotians, *etc.*
I	N/A	1. The province of Nova Scotia is committed to sustainable development. What are your ideas about how we can ensure that development is undertaken in a way that does not put strain on the water available for the area or the surrounding natural environment? **(Data)**In order to gauge and predict the impact of development on ecosystem and watershed integrity good background or baseline data is required. This means the province must invest in a much better survey and monitoring program than currently exists. Baseline data on all types of freshwater systems must be acquired and, as part of an on-going monitoring program, changes and degradation tracked.

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		(Land use) Better practices in forestry (i.e. no clear cutting) and agriculture (reduce run-off) and incentives for conservation in domestic and industrial use of water will help mitigate strain on watersheds. Incentives could be increased fees or taxes that could in turn generate the revenue to improve study and monitoring mentioned above. 2. *How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Our ability to provide those same services in the future depends on knowing what the supply is and controlling the demand so as not to exceed the supply. To know Nova Scotia's water supply requires a comprehensive study or survey of all the freshwater systems in the province. It is the government's responsibility to quantify our fresh water resource. Economic incentives, or disincentives, are one of the tools for controlling consumption and stimulating conservation. Currently, home owner consider the cost of water to be a negligible fraction of the household budget. Water use fees, coordinated with municipalities can be used to put pressure on new sub-divisions and large-area lots that use municipal water supply. **(Increase fees to foreign companies exporting our water)**: The cost of using water for some industries is practically nil. A particular case of abuse I have read about in the media is the American company Nestle that pumps water out of our aquifers for a nominal license fee of about $100 per year. The water sells for approximately $2.00/litre. Every industrial water use application must be subject to a socioeconomic impact study carried out by the government (through independent consultants and academics) paid for by the proponent, to establish an appropriate usage fee. For a foreign company exporting our water I would think a fee of 30 or 40 cents per litre would be appropriate. Again this revenue could be used to study water supply, promote conservation and plan water usage. *3. What are your ideas about how we can provide landowners with the ability to develop their land while ensuring the conservation or restoration of wetlands and their natural functions?* Industrial (forestry) and development set backs should be increased. The provincially mandated 20 m forestry set-back should be increased to at least 50 m. Suburban and cottage set backs don't seem to exist. They should be at least 20 m

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		The idea of creating a new wetland to compensate for one that is destroys by development or mining is rarely successful and should only be attempted with planning, consultation and monitoring by independent and government experts. *4. Emergencies disrupt our lives and change what people, businesses and communities require to continue with their daily routines. During an emergency, such as a drought, who or what should have priority access to water?* During emergencies the obvious priority for water use is drinking water for the population. The second priority for water is agriculture. Mitigation plans should be prepared in advance to control water distribution in accordance with the severity of location of the emergency. *5. People need information about water resources to increase their knowledge and make informed decisions. What kind of information about water do you want or need?* People and businesses need to be made aware of the impact of their behavior and consumption on the water supply and watershed integrity. Education can play an important role in getting this message across. Curricula in elementary and high school could go a long way to fostering an appreciation of water just as it has been successful in promoting participation in recycling. Conserve Nova Scotia could be enlisted in this effort. A study should be carried out to see what has been successful in other jurisdictions around the world that are water-stressed such as Southern Europe or the Southern United States. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place we will need to finance it. *Where should this money come from? How do you think the money should be distributed and used? Why?* Water can be conserved and revenue generated at the same time through a system of financial levers. However this has to be handled with care. The availability of drinking water is an inalienable right of the public and cannot be made to be a significant fraction of the budget of the poorest Nova Scotians. On the other hand without a cost there is little incentive to conserve. A balance must be achieved based on the best information available. I think such an analysis will suggest that the cost of domestic water should increase a little, the cost for industrial use should increase moderately and the cost of selling water should increase dramatically. The same principle should apply to agriculture, but the policy

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		will have to based on the appropriate analysis. *7. Everyone (individuals, communities, businesses) can contribute to the conservation and protection of water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I am willing to pay more if the money is used wisely for a legitimate water strategy as proposed above. I am willing to conserve domestic use of water because I am aware of the issue and I am willing to learn more. Government buildings could transition to water-less urinals as a symbolic gesture. Government buildings could ban sale of bottled water which is one of the worst exploitations of water in the province. We give it away to someone who sells it back to us at an exorbitant price. Not selling bottled water in the workplace sends the message that municipal water is good to drink - that's what it's for.
I	N/A	Mainly my concern is that the issue of water is so huge that it really touches all aspects of our living - whether social, economic or environmental. It seems to me that issues; like very serious rural development initiatives, would eliminate two of the big questions the paper says we face- Halifax having 70% of the population; and rural areas not having the tax base to maintain their services. As of yet, I have heard of no announcement that there will be property tax credits given to people who relocate to rural areas for retirement within the province. That strategy being one of many actions taken by other governments to distribute the population. Also we must be careful in our terminology surrounding the whole issue of Water. I do not agree with water being seen as an economic commodity - it stands as a very special life giving thing in its own unique category. Nothing else can compare to it (except air). If we think of water as a collective responsibility for the entire well being of the planet and not as a "managed resource" for our own immediate consumption and wants, then I think the questions we think about surrounding water will lead to broader discussions and solutions, for example, how we produce our food. There are ways to farm that does not consume so much water and does not in any way harm the water - perhaps we should be promoting and subsidizing small organic farms where mulching replaces huge consumption of water and

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		composting replaces chemicals which contaminate the water. This one decision alone would bring value added great food to the local market place, make farming a viable economic venture, keep the small family farm vital, provide jobs in rural Nova Scotia, solve the "food security issues", and solve water issues. A truthful environmental, social and economic planning strategy for our province would have within it the intrinsic consequence of being the best water policies we could ever want. If the Big Picture is healthy and innovative and truly serving the well-beingness of all Nova Scotians and not a "global market agenda"; then all that would be left is to pass laws which make sure our values are reflected in them and stated clearly for those who have a more "predatorship" view of the natural environment of Nova Scotia.
I	N/A	**11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?** Bacterial and chemical contamination of both drinking water (which affects human health) and surface water (fresh and marine), as this affects many fish and wildlife species - Siltation of our rivers and streams, and the effects this is having on fish and shellfish populations **12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?** Monitoring, educating and adapting. First of all we need information and data on water quantity and quality, so that we know the state of our water resources. This required regular monitoring. The results need to be widely communicated to the public, so that people and industries who use the water supply understand their impacts on it. Once people understand their impacts on it, they can change their behaviours and activities to either maintain or repair the state of the water resources to a healthy level that will support generations to come. **13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?** Educate friends and neighbours on the topic; ensure my house is as water efficient as possible and that our behaviours have as minimal effect on water resources as possible.

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		14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why? This money should come from general tax funds, but a specific water tax should not be implemented. The funds should be distributed by the province to individual watershed authorities (these need to be established for every watershed in the province). These watershed authorities would then apply the funds to programs and projects addressing water issues pertinent to that particular watershed. Every watershed is different, and has different priority issues; therefore we need to act locally, not provincially. **15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.** Developers need to be educated about the value of wetlands. We need to work with developers to help them incorporate wetlands as assets into their developments. We also need to be reasonable in assessing what needs to be protected.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* That we're wasting it and filling in our marshlands. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Educate the population, get them involved. Entice people to change their habits (tax credits, rebates, etc.)Be concrete: front load washers, low capacity toilets, water meters on houses. Let us recycle grey water for our gardens. This practice is currently against the law. Give us info on what is happening elsewhere in Canada. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Front load washer, efficient toilet, shower heads. I would like to be allowed to recycle grey water. My toilet does not need to consume drinking water! I'm willing to help train people if you'll train me! *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need*

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		to finance it. Where should this money come from? How do you think the money should be distributed and used? Why? It will depend on how it's sold and if you manage to make the population responsible - start there. Set up a challenge on recycling grey water. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* Let us recycle grey water. This is crucial. Publish excerpts from current books on water, such as the Marq Diviliers book called Water (he's Nova Scotian, after all!) Set up legislation on wetland and waterfront usage.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* keeping it clean *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Living on a small lake Silver Lake I have seen the opposite. To stock a small lake that has no outlet and also have winter fishing I find that wrong. All the cigarette butts and who knows what. The fisherman spends all day there. We also see big motorboats on the lake What about all the Fish poop. I go swimming every day starting late May and now I can smell the bate that the fisherman are using on my body. It is not a pleasing sent smell. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I will do as much as I can. Starting with our lake and are hope full to get some answers this way. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Fund raising clean water In every town. Awareness and education Fencing. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* We have tried to get some answers about our lake but the runaround has been the same. It is not our department So we don't know where to turn. We have sent letters to Mark Parant and Ronald M. Chisholm *16. I would like the following question answered.* Can you stop stocking the lake and lots off the problem would not happen.

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I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Logging buffers around streams are inadequately enforced. There is a 'culture' that municipal water doesn't taste good. Old septic fields in cottage areas are not adequately monitored. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Charge users adequately for their water use (both residential and commercial) Ensure municipalities separate their storm water and sewers. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I already use a low-flush toilet and low flow taps/shower heads. I use a laundromat instead of doing (limited) laundry at home. My water is metered and I pay for it to the municipality. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Much of the money should come from users of water through surcharges. Why can't Department of Environment hire adequate qualified professional staff to manage a water resources management strategy?!? *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* I think the point needs to be made that the original 'damage' to wetlands in the province was done by the Acadians; this is obliquely referred to in the report. How much of this could or would we ever reverse? But it makes it even more important not to lose more. When there are opportunities to create large new wetlands (I'm thinking the wonderful marsh arising by the Windsor causeway), let's protect them.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* The concern is that our water will be diverted from its natural sources and that water (as it is now) will have to be brought in to holding tanks. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to*

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		remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future? The way the question is presented is difficult answer. Why would anyone in authority compromise the ability to provide those services in the future by providing for those needs today without thought for tomorrow? *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* We currently do exactly that. Since we are unable to use our well water due to poor quality and short supply, we use water provided through the local municipality trucked in to a holding tank. Since we do not have an inexpensive source of water, we take measures to use it with care. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* In answer to the first question, the money always comes from the people whether directly or indirectly. It either comes from revenues or expenditures. With the limited financial resources available to our government, it would seem that the best solution would be a user pay system. Financing any strategy is a delicate undertaking. We rely on those in power to do the best job they can at accomplishing this and also taking in consideration the concerns of the people. The second question is one that can not be informatively answered without detailed information.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Deforestation around small waterways, Filling-in of marsh land for development, Leeching of agricultural/industrial/mining by-products into waterways/ground water, and the effects of all aforementioned activities on sensitive watershed areas and ecosystems. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* We need to be strictly regulating industrial/commercial water usage and allowing alternative residential septic systems (i.e. composting toilets)

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		13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water? Water systems, if respected and not abused, are an unlimited resource, however, I mow my lawn infrequently, thus illuminating the need for watering. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* I think the money should come from industry, from forestry, mining, manufacturing. These sectors are getting away with what amounts to ecocide because Nova Scotia's environmental regulations are too lax. The money should be used to create effective laws and regulations protecting our waterways and watersheds and an active protection agency with the power to lay criminal environmental charges, heavy fines and lock up equipment of offending industrial/commercial operators. *16. I would like the following question answered.* How can we hope to create a country or province in which the need for un-ceasing economic growth does not over-power the true need for a healthy and thriving population and ecosystem if our country/province is run by business men from prosperous upbringings whose old-school business ethos aligns them more with corporate shareholders than their constituents?
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* - polluting the water we have - especially lakes and rivers - wasting the water we have *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* -ensuring that only the water needed is used -re-using water where possible -removing containments before releasing into environment

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		13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water? pass appropriate legislation -enforce legislation -pay the price for clean water *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* -those who use pay -government pays to ensure that all that is necessary to have safe water is in place and monitored *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* use media to promote effective and not wasteful use of water
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* I am against the following: Selling it to US, shipping it out of province, bottling it for sale, allowing raw sewerage to be dumped into lakes, rivers, streams and oceans, privatizing water supply. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* As above in number 11.Irrigation systems for farming can be encouraged as well as construction of underground aquifers. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* -don't water lawns -don't wash cars -rain barrels *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Those of us who have HRM water, pay a lot of surcharges already. Much of that money was squandered on other

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		things. I have no problems with people paying taxes to improve and maintain our water supple.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Climate change may affect source water - positive? Negative? No idea what long term effects, or strategies are. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Conservation, appropriate waste water disposal. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Continue trying to use appropriately. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Provincial tax - municipalities cannot shoulder more infrastructure costs - needs currently going unmet.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* I want to have clean water and have enough water for reasonable usage for home and livelihood. I am concerned also in keeping waterways clean and healthy to enable aquatic life. I feel there is a tendency for gov't and corporate officials to make short term economic decisions that adversely affect sustainable water supplies for all generations to come. I also feel citizens are not given adequate and true information regarding the effects of environmental undertakings on water supplies. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* First, we need to re-evaluate our needs. Obviously these have gotten to extreme to meet the reality of supply. I also feel that communities need to be empowered to look at their own viability and how to sustain the community and the environment in which the community thrives. We need to consider all the costs of whatever we do...not just the short-

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		term economic costs or gain. We can look at others who are already implementing more sustainable practices. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Whatever it takes. I am already very conservative and careful in using and consuming water and am conscientious in protecting water resources. I want to learn more and work with others to support a communal effort---which is definitely needed. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* There are many people who understand financial workings better than I do who have already proposed ways of making changes financially workable. Books have been written, financial experts abound...I believe the knowledge and capability are there....it's a question of how and for what people want to apply it. It is a matter of applying our knowledge and financial resources for the better, long-term good of the whole, rather than the profitable gains of a few. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* I appreciate that we are given the opportunity to get this process started. Now it is a question of sticking with it and making some changes happen. The real challenge is to put our feet where our mouth is and DO SOMETHING!
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Water is priced to low. People waste it or businesses using it get it too cheaply. We should price the resource at appropriate levels to encourage conservation and provide adequate income to balance costs of provision. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* See above. There is no long term strategy and we do not know how much we have or use, or will use or have in the future. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?*

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		I already do what I can. I do not water my lawn, and minimize my residential use. I try to conserve. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* The financing should come from the sale of the resource, only. We need an appropriate price to pay for the capital and operating cost. Water is too cheap. Taxes should not pay for water; it should be priced and sold to be balanced and efficient. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* We need to protect more aquifers and lakes by adopting a watershed approach to management. We are not managing the things that threaten our water resources in the first place. The US has good, not perfect, water laws that begin with point of discharge threats to the resource.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Pollution of streams, rivers, lakes, waterways because of industrial waste and also just the common littering that occurs. I agree with all the priorities in the report. There is also an aesthetic dimension. Our countryside is beautiful, including our waterways. This relates basically to civic pride, and secondarily to tourism dollars. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Development of new technologies. I think an important foundation or prerequisite for this is a school curriculum that features attention to ecology in general. This will create a generation of scholars, researchers, citizens who can think creatively about the question you pose. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* On a personal level, I will endeavour to pay more attention to personal, household use of water, e.g. not consuming as much. Also, will participate in community projects to clean up litter. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need*

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		to finance it. Where should this money come from? How do you think the money should be distributed and used? Why? I think the important investment is education - of coming generations in particular. So, for long-range planning, a curriculum budget should be established. In the short-range, there is a lot of value in showcase projects, of the sort mentioned in the paper. A few selected projects deserving of international attention would help to maintain public interest and pride - and also serve as a focal point for educational activity of schools, universities. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* Just a note of congratulation to the authors of this paper/report. It is very well put together and presented.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* acidifying lakes from acid rain destroying our fish populations (esp. salmon)- runoff from pavement and concrete surfaces in new developments (stringent buffer requirements should be imposed at a provincial level)- eutrophication caused by agricultural fertilizers and domestic cleaners- over consumption: public education is needed- insufficient sewage treatment and malfunctioning septic systems- industrial wastewater *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* I think the most effective ways to meet the water needs of today is economy while maintaining future supplies are to immediately: a) promote and fund consumption-reduction strategies, including: require grey water and/or rainwater systems in new developments; fund retrofits for these systems in existing dwellings and businesses; set industry standards for water consumption and enforce them; educate the public, especially through schools (cost-effective) b) ensure that water is sufficiently clean when it returns to the ecosystem by: protecting areas that naturally buffer watersheds from urban developments and agricultural operations (maintain natural filtering); adequately treating sewage and industrial waste; building/maintaining a network of vegetated surfaces in cities to minimize polluting storm water runoff in already-dense areas, make use of rooftops (provide grants/rebates to individual homeowners or business owners who do this). *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an*

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		unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water? I would definitely be willing to use rainwater in toilets, laundry, and even the shower. (Although I might want to add small amounts of lime to neutralize the rainwater slightly.) I would also be willing to put a little waterproof clock or timer in the shower and keep my showers to 5 minutes. I would certainly be willing to retrofit my plumbing to have my shower/bath water fill the toilet (if I could afford it/knew how). I am willing to let it mellow if it's mellow". I am willing to buy phosphate-free, biodegradable soap and detergents, as long as they work well. I do not mind keeping my washing machine on a low water setting and I would happily conform my dishwashing habits to whatever is recommended. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* I think the money should be distributed both to municipalities to buy/protect watershed areas and promote water conservation and to individuals in the form of retrofit grants. It might be a good idea to award municipalities money for a percent reduction in municipal water consumption. This leaves public education/conservation strategies in the hands of those who know the populace best. I think a province by-law should enforce septic pumping every 3-4 years, and the EHAP program should be expanded to make it more viable. Money for municipalities should come from the FCM (as this funding source increases). Money for individuals (retrofit grants and EHAP) should come from provincial taxes.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Mis-management of watersheds. Forestry and agriculture practices damaging and polluting surface and groundwater *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Educate public and all industry to practice water wise use and protection. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Cut back on my use of water- home use- lawn and garden use- be advocate for water conservation *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need*

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		to finance it. Where should this money come from? How do you think the money should be distributed and used? Why? Funding must come from public by way of taxes/unpopular as it may sound. Everyone benefits from clean, abundant water, therefore everyone should pay. Do not think individuals should in any way receive any funds - governments, municipal and provincial, must carry out any programs. Cash penalties should be considered for those wasting or polluting water resources. Government must act with determination now. **15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.** Water is the single most critical ingredient in our eco-system. We have taken abundant, clean water for granted and can no longer afford that luxury. Already we see signs of damage and quality deterioration in our fresh water resources. Education, leading to awareness, is key to saving this priceless resource - without which nothing can live. It is urgent that we give this matter more than "lip service" now.
I	N/A	*12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* research with industry and conservation *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* work with government *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* from public
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* that the water is plentiful and drinkable *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* educate others *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need*

Code	Name	Comments
		to finance it. Where should this money come from? How do you think the money should be distributed and used? Why? money come from taxes
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Spills & contamination of groundwater and rivers, lakes, etc- excessive unnecessary waste of clean water- clear-cutting, allowing clear cutting too close to bodies of water- the threat of bulk water becoming a commodity and being exported to US *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Educate people to conserve water and to keep it clean- no more sewer from public utilities (or private) contaminating bodies of water- metering of water use - different fee structure depending on quantity used *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* We have a slow producing well and conform our use according to production: short showers, collected rainwater for the garden *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Metering of water use - different fee structure depending on quantity used 15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet. Running out of time!
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* - Keeping it clean - surface and subsurface - Making it clean where it is impacted - maintaining public access to water.

Code	Name	Comments
		Our focus needs to be on conserving the quality of water - not quantity *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* We have to stop making decisions based on economic development and nothing else. We have watersheds where we MUST say - NO MORE DEVELOPMENT *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I would support financially (via tax dollars) programs that protect riparian areas in agricultural areas. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Money should come directly from users and polluters. Money should be distributed to areas where it will do the most good. Directly on the ground - we don't need money to go to research this problem.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* -Quality potable water for an increasing human population. -Respect for water resources is lacking, as noted by: - siltation (from development, recreation)- - lack of legislated green belts, i.e. SMZs in the agricultural, urban, and suburban environments - Recreational & household garbage deliberately thrown in lakes, rivers, streams. - ATVs driving through watercourses - sewage: untreated/treated inadequately - waste: humans in general seem to be oblivious to problems associated with their actions - development uncontrolled - slowly improving *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without*

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		compromising the ability to provide those same services in the future? -Redefine need, i.e. / society must adopt a conservation mentality towards all resources. There is a difference between needs and wants. - Technology must develop more efficient ways to use water or reuse water. - Society must become more "natural", i.e. / move away from the "NEED" to have large manicured irrigated lawns. - Landscape design & mgmt must re-examine here to capture rainfall and allow it to enter ground water, rather than runoff. - Government must work on education and also use legislation to have society reduce waste. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* - Increase buffers along waterfront properties to reduce runoff & siltation. - Practice conservation within the house: reduce shower times; purchase more efficient appliances (washer machine) as old ones pack it in. - Maintain efficiently working septic sys *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* - Users pay. This basically means tax dollars for infrastructure and municipal rates for home/business owners on systems. - The necessities of life = food, water, shelter. After that we look at play!!
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* - Untreated sewer going into lakes, rivers & oceans. - Too many contaminants going into our water system. - Clear cutting. - Insufficient bugger zones around lakes, streams.

Code	Name	Comments
		- Most of us don't know about our watersheds. - Insufficient giving to protect sensitive areas. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* - Water is Criteria for all decisions re land use and development - The health of the ecosystem be the primary consideration. All other activities decided on their impact on this. - More coordination between all levels of government so decisions are made within a big picture and not piecemeal. - More education & regulation around water use. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Learn about our water sources. - Be part of a group that monitors water systems. - Cut down on any use of water. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* - Taxes like roads & other infrastructure. - Pay according to use. - Penalties for contamination of water. 15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet. * In rural areas septic systems should be owned and maintained by municipality and paid for by tax base as are town and city systems. * All building codes need to include water efficient standards for plumbing futures. * Explore and implement grey water systems.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?*

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		Maintaining a potable supply to all residents! *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Conservation, management, control, accountability, responsibility. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Help educate others. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Create revenue generating activities within watersheds - whether it be forestry, energy, power, development (control) and allocate funds to strategy (portion of $ generated).
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* 1. That we will lose our water table. 2. If the wells are no longer safe and reliable, why are we not moving toward a community water supply? 3. I live in a subdivision of 100+ homes and everyone is on a well. This is in the community of Greenwood. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Build reservoirs in the South Mountain areas. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I have become water conservation minded" and am motivating my family to do the same, i.e. 1. Smaller baths and shorter showers 2. I don't water my lawn 3. Water flowers and gardens in the late evening and early morning hours only 4. Laundry loads are shorter and set on smaller water consumption

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		5. use of dams in toilet reservoirs (less water used when flushing toilets) *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* The money must come from both provincial and municipal revenues, and used on a per capita basis within each community as much as possible. Water metering is a good motivation to conserve, within the larger cities and towns which have water service to their homes. I used to reside in a large city and was motivated to save water to save costs. Persons on wells "sometimes" believe as though the water table is endless. 15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet. Why is the government just now beginning to act and follow up on this valued resource? There can never be enough education on this issue. Comment: There can never be enough education on this issue.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Amount of water being removed from aquifers. Sustainable development term being tossed around in regards to water - None of it is sustainable. No secondary or tertiary treatment for wastewater. No ground water replenishment basins for paved areas like Halifax. Sewer overflows, especially from sanitary sewers - NSE does not follow up or fine municipalities on these, they should. Leakage in water pipes. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* It can't be done. This question should be rephrased to be either minimize the impact on today's economy or minimize the optimizations made in the future. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Reply to things like this. Pay more for water if the money is used appropriately. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need*

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		to finance it. Where should this money come from? How do you think the money should be distributed and used? Why? New development should fund a substantial portion of the costs for maintaining resources they are damaging/using. Portion of municipal water bills going to NSE, provincial gov to relocated funds to water protection. IT should be used to implement new technologies to reduce water and resource (incl. Energy) consumption. Lost water reduction programs for municipalities. **15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.** Glad to see a strategy is being developed. **16. I would like the following question answered.** With development continuing and only a finite amount of water available, how is it possible, with the water levels in lakes, rivers and wells dropping, that this expanded usage of water will be sustainable?
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* My biggest concern is the pumping of water from the wellfield by the CBRM. There are six homes on our street and five have had new wells and a lot deeper wells since the pumping began. That, of course, is a local concern. The other concern is the washing down of driveways. No restriction on watering lawns. Taps without an automatic turn off at the YMCA and the list goes on. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* There has to be a concerted effort to limit the abuse that is all too evident. When you live in an area served by wells you become acutely aware. However, when you do not there is no inventive to conserve. The meters give the municipalities that opportunity. There has to be an average usage established and if you go over that the cost has to be prohibitive. When you abuse it should cost like gas. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* First of all I protect my own. I do not water my lawn or wash my car. We as a family conserve each and every day. I

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		am on a committee that deals with wellfield concerns. I feel if everyone just does what is required it will work. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Water should be very high on the list of issues for the Government of NS. Money for it of course comes from the taxpayer as does everything else. Business passes on costs to the consumer, government get their revenue from the people, or taxpayer. The taxpayer funds everything in the end and why would this be any different. 15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet. My only other comment is that we need environmental protection and at present that is sorely lacking. The DOE should be leading the fight for conservation. At present they rubber stamp whatever a municipality feels is fair. When a strategy is devised it must put limits on how much collateral damage is acceptable, when you decide to pump from a wellfield or aquifer. There are alternatives and the DOE has to be involved to find them. The citizens deserve a limit placed on municipalities and at present there is none. The CBRM can take out every well and replace it with deeper wells and the only concern is that it be potable. Not acceptable!
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* That we don't sell our water resources. That we protect the quality of our water and water-based ecosystems for future generations. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Prioritize drinking water for Nova Scotians. Ensure that industrial uses are state-of-the-art wtr conservation. Take a long-term view in policies, one that keeps ecosystem processes intact. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Use less water. Build structures differently (e.g. green roofs) or in different places (e.g. not too close to the coast). *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need*

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		to finance it. Where should this money come from? How do you think the money should be distributed and used? Why? If necessary increase taxes.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* That the public doesn't seem to take conservation of water seriously. People think that because we're an island we don't need to worry. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Make people realize that we need to conserve. Separating drinking water from water that can be used for watering the lawn or washing is necessary. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Pay higher rates for water usage. Install rainwater harvesting devices. Re pipe residents to allow for the use of grey water. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Higher costs to consumers. If people can pay to buy Evian they can pay more for tap water.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* That because of land use practices both from municipal planning for development and industrial activity, more impermeable surfaces are being build, chemicals being outputted into the air, soil, and water, and that the vegetation that would otherwise hold water so well as the ground itself is disappearing. Add to that the fact that people are withdrawing and wasting more freshwater than they really need, means we will face a shortage of clean and safe potable water for ourselves, other species, and generations to come. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without*

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		compromising the ability to provide those same services in the future? Stop giving in to big corporate interest. Stop selling our province to the highest bidder. Stop permitting big polluting industries like mines, gas development and forestry from continually expanding and creating the above mentioned problems. Ban mega-farms that use large amounts of water and discharge animal waste into the environment. Ban clear-cutting - just do it!! - ban it!! No more!! Enforce regulations that protect the water sources. Stop believing in the archaic economic model that gives money more value than life. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I'm willing to get rain barrels and collect rain water for use on property and other household chores. I don't put bad things in the water and the government should help the municipalities and organizations educate the population on those no-no's. I don't let water run for no reason. I try to reduce consumption. I use canoe and kayak when recreationing. I suppose local organization that work on protecting our water. Looking into getting composting toilet but province still imposes the presence of laws that make things difficult. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* The moneys should come from the revenue the government makes off the big industries, especially mines, gas and forestry. The big polluting industries should be charges an extra tax just for water, and only once they put in place recycling of water in their facilities, water consumption reduction techniques, and zero chemical discharges in water - should they be allowed a low or no tax rate. The money should go at protecting source water and treating sewage and enforcing regulations to fine those that pollute especially farmers, industries, and regular offenders. 15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet. This is not the first time the NS government has been on the lets protect our water bandwagon. You have failed in the past from lack of political will and cost. Your costs were based on treatment after the fact - band aid solutions. Stopping

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		the activities that pollute our water in the first place would reduce the need for treating water so much and reduce the cost to residents of being forced to buy into the municipal well system. Education and fining your population for activities that are harmful to water would also help. Putting a fine to water consumption for homes that use more than the average would help too. But big industry and massive farming are the big problems since their input of fresh water and their output of polluted water is huge. If you do not stop bad forestry practices we won't have any water left. We need the trees.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* 1. All the water should be protected from pollution. 2. Land-use practices both for business and non-business purposed to prevent destruction of adjacent water may have a penalty for destruction, but education of the public might make a better compliance if people know what practices destroy watercourses, etc. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* This question reflects conservation, protection from destruction of water bodies and streams, development of new technologies, municipal and provincial regulations which should ensure resources are used in moderation so that all together water supply and demand should be met adequately now and in the future. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Conserve: consists of water used in the home and outside the home. Using less the usual method of conserving plus using cisterns, rain barrels to hold water for non-drinking purposes. Protect: parking lots are a big source of pollution from motor vehicles dripping oil, rust protection, etc, and salt. Education of motor vehicle owners and using less salt would help. My conservation of water comes from using water in the required amounts only when necessary. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need*

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		to finance it. Where should this money come from? How do you think the money should be distributed and used? Why? Municipal water supplies already have a user fee attached. On-site services have no meter; usage is non-restricted. At this point in the water management strategy no findings have been made. There was a fee in the 1999 WMS for water users and funding stewardship boards. Currently, would companies that bottle water be charged more? It is easy to bill companies but difficult to bill people who use water for recreation, for example. A fee structure should wait for more details. 15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet. I own a wetland which has always had no development around it. I would like to see a mandatory sixty-foot buffer zone around wetlands for developers to observe. I believe a change to the Municipal Government Act would be necessary to make this zone mandatory. Municipalities could zone for wetlands to protect them from development, but not all municipalities in NS do land-use planning. This means all wetlands cannot be protected by land-use planning in NS. For forestry operations, the Forest Act is not applicable to a wetland that has no stream coming into or going out of it. Changes to this Act should be made for buffer zones around all wetlands to protect them. This would be done by DOE on private property and DNR on Crown Land.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Pollution of our water. Mining polluting water. Forest spraying polluting our water. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Low flush toilets; Innovative ways to use less water for industry or for industry to re-use water - closed loop systems. Treatment of sewage. There are systems that use plants and systems other than chlorine bleach which is super hard on the environment. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?*

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		Low flush toilet. Already have low water user washing machine. We take less baths. Have low water shower heads. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Not sure but seems industry pays too little for water they use. Rising cost may encourage less use. Citizens are already struggling financially because of huge increase in costs, so it is a challenge. 15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet. Water for Life! **16. I would like the following question answered.** Is the use of wells and septic systems less harmful than municipal systems?
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Are plastic water bottles safe? Are lakes safe to swim in? *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Planning infrastructure better
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* I am concerned that our government's preoccupation with economic development makes it blind to the downsides to unregulated industrialization on the environment. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* We can focus on keeping our water clean by reducing forestry spraying, residential pesticide use, over the bank" garbage disposal and protecting wetlands from development and contamination. Modern logging practices (clear cutting) seem to include significant loss of hydraulic fluid and diesel fuel into the forests and wetlands as well as disposal of petroleum

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		containers on site. Modern fishing practices seem to include dumping of plastic overboard, often petroleum containers with residues or wastes inside. These end up in coastal areas, including coastal wetlands. We need to start treating our wetlands and waterways with respect if we would like to have a clean and reliable source of water for the future. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I am willing to be conscious of the possibility of contaminating surface and ground water with chemicals and other petroleum products. I am willing to leave buffers around wetlands and waterways when cutting firewood. I am willing to use less water in the hot months when our well is low. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Money should be used to enforce existing laws protecting waterways and wetlands from damage and contamination. Money should be used to create more parks and wilderness areas to protect important waterways and wetlands. Money can be found within the existing budget by making this a priority.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Domestic water: agriculture overuse and contamination. Wetland areas as wildlife habitat: These are valuable habitat and too often are filled in for too little a good reason. There productive lands should be preserved as best as can be. Access to water for recreation: Coastlines and Lakesides are being purchased and developed into private residences. This is restricting access to the water for recreation by others. This development is not planned and hence not controlled. There should be a uniform province-wide policy for coastal and lake-side development. The plans should be such as to preserve wildlife habitat and access to all residence of Nova Scotia. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* In the case of agriculture which sometimes draws on aquifers to irrigate crops. A means of monitoring the level and quality of water in the aquifer should be developed. A farmer who draws down an aquifer more than can be replaces by

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		normal rainfall should not be allowed to take water away from neighborhood wells or the water needed to maintain healthy stream flow etc. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* We already conserve water domestically by restricting use for showers and waste disposal. We have forestry lands and have not cut it and it holds water while the areas around have been clear-cut and drained. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* No idea...depends on the circumstance. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* I see the filling of wetlands, swamps and marshes too often to make room for nearby development. These lands are too productive for wildlife to be taken away. Even a two acre plot of wetland can be important and other considerations should be taken before filling.
I	N/A	**I (W53):** *11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* The lack of awareness on the part of the citizens, industry, and the Government, of the primary importance of water in the preservation of life. Followed directly by the lack of concern to address this issue. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* The water needs of the economy and the health of Nova Scotian's will be severely compromised in future unless there is a clear recognition of the importance of good, clean water. Clean water has become a problem of immediate importance. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I, as an individual, am prepared to do whatever it may take to protect Nova Scotia's water. HOWEVER, I AM NOT

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		WILLING TO HAVE INDUSTRY GIVEN "A PASS" IN ORDER TO PROTECT "ECONOMIC FORCES". Industry has a long history of depletion of natural resources to satisfy those who are in positions to make the decisions. Farming, agriculture, other large undertakings, including golf courses, all are careless users of water. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Once a water resource management strategy is in place, the Government will have to fund the process to develop regulations and then will have to increase the staff to enforce these regulations. To a great extent, industry will be responsible to fund the oversight of the protection of water. There will be higher fees associated with the conservation of water. WHY? If we fail to understand the importance of clean water in our economy, we will shortly face the effects of the crisis on every aspect of our well being.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* I want to ensure that we have an adequate, safe supply both today and for future generations. I also want to keep it safe for other organisms that may benefit from it. I have been concerned about a number mining proposals that certainly pose a threat to water quality in this province. I have also been concerned about forestry practices that threaten water quality. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* I think that we need to stop thinking in the mindset of economy versus environment. Not only is our economy reliant on water - our very ability to survive here relies on fresh, adequate water for our own use as well as that of other organisms. Therefore, the protection of water quality has to be considered not in opposition to economic choices, but above/ before them. "If you build it, they will come." *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I am willing to use efficient appliances, etc, in the home, and ask questions about the manufactured products I buy, around how water was used, and to vote based around overall forward-thinking environmental and social policies around

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		water quality and protection. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* This money should come from the companies who seek to use our water in their manufacturing processes, from large agribusiness, and from government programs that dole out money around health, social well-being, environment and economy. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* Thanks for seeking input from private citizens. Good luck with the strategy.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Clean ocean water. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Comprehensive, pro-active planning. Identify priorities and goals for water quantity and quality and put meaningful effort and resources in place to make them happen. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Pay more taxes. Change my behavior to have less impact--show me the way! *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Direct users should pay more for the benefits and services they receive, and that includes industry, communities, and your average citizen. I think the money should not go to end of pipe fixes...we need to address water quality issues at the source! *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* As someone who fishes and spends a lot of time along the coast, I want to make sure that this water strategy doesn't forget about the importance of marine water quality. A clean ocean is a good indicator that the water flowing into it is

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		also clean!
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* My biggest concern is the number of homes on the Lahave River that don't have septic systems, including my own. (I have heard every fourth house although I don't know how accurate that is.) Unfortunately the cost for me is approx $20,000 as I have been advised I would also have to drill a new well if installing a septic system. I don't qualify for the EHAP because I make just above $40,000 however I am a single parent and there is no way I can afford to do this even though I really want to and would be able to manage the cost of the septic alone. Perhaps the income levels for EHAP could be raised? Also, if I do put in a septic, my neighbors on either side are still dumping into the river. I think there needs to be a strategy for converting all homes dumping on the Lahave River to septic. The plan would have to include financial help 9more than there is now) and enforcement. (i.e. if a home is sold a septic must be installed) A lot of people think this is the case anyway but are surprised when they find out it is not. Another concern I have is how people overuse water for unessential reasons (i.e. watering their lawns). Perhaps more education and restrictions around this should apply. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I have a front loading washer and try to limit my water use as much as possible. I would install a septic and well with some financial help. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Prioritize spending by what will have the most long term effects on the environment. I would pay extra taxes to see an effective water strategy with some results in my area and around the province.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* My biggest concern is wastewater treatment, as stated above I think we should invest more in it and have higher

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		standards. Kudos to the federal government for committing (verbally anyway) to national standards on this. I hope the province will do the same. As a middle income taxpayer I'm willing to pay higher municipal and provincial taxes to see those higher standards and to have a cleaner Halifax Harbour. But I think we can go further than that and, as a province, invest in more facilities such as the Bear River solar aquatic facility. These are cost effective, ecologically rounded facilities. They should exist across the province. I'd also like to see composting toilets in homes across the province. One more thing, I'm not knowledgeable about this but when I read about water problems on reserves in Ontario I just hope we're doing a better job providing safe, clean drinking water to our rural communities and native reserves. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* It's pretty simple; invest now in water conservation technology, like composting toilets, and solar aquatic facilities. It's a small investment with huge long-term returns. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I try to be conservation minded with water, but I could be better. I don't bother watering my lawn, for one thing, which I see as an incredible waste. Whenever my current washing machine goes I'll buy the most water and energy efficient replacement. Shorter showers. I also avoid the dishwasher even though there is one in my kitchen - I hand wash dishes as much as possible. And, again, I'm okay with higher taxes if that's what it takes to improve our water system. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Property taxes and income taxes. The money should be invested in water efficient and wastewater cleaning technologies and in wetland protection because wetlands are a natural water purifier.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* My biggest concerns are; protection of the water at source from contamination and secondly, controls to prevent people who have the power to make decisions for directing any provinces' water supplies to other countries for profit at the

Code	Name	Comments
		expense of the general population, whether in Nova Scotia or any other province or territory of Canada *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* I think the NS government could be doing more to implement programs which give the various water commissions greater 'visibility' in the general population. I.e. more PR. Also, they could implement financial incentives at the retail level in the form of rebates, for those residential low flush toilets & low volume showerheads etc. or they could partner with a retail outlet like Kent Building Supplies, which would be
I	N/A	*12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* In addition to low volume showerheads the commission could partner with local retailers of these items to offer them at a reduced price which gives the retailer favorable status as a conscientious corporate citizen and the general population has an incentive to purchase those items. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Reduce my waste of water use by some of the practices that were described in your booklet. Also, I am prepared to support government measures which are intended to conserve and protect the resource *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* The money for this should come from everyone who uses the resource. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* I was just finishing question 12 and describing options when I got a message to save what I was doing because the page was going to time out. So, I went to the bottom of this page and accidentally submitted what I was doing.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?*

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		The diminishing quantity and quality from large industrial uses. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Introduce a user pay system for all. This way the true cost of production can be included as part of the price of goods and services. The government's role would be to assess and enforce the cost to business of restoring the quantity and quality of water to a predetermined established standard. Disadvantaged individuals and families who cannot afford the cost increases should be subsidized. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Pay the true cost in both residential drinking water and the full cost in all goods and services. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Assessing, regulating and enforcing water quantity and quality standards should be the work of our government. All users should pay according to the cost of restoring the water to the predetermined standards. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* All resources need to be regulated on a user pay basis in order to be sustainable. The carbon tax is a model for the resource of air. *16. I would like the following question answered.* When will the government provide comprehensive statistics on the large industrial water users in the province?
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* I think it is vital to protect all source water and wetlands in Nova Scotia. As the province has agreed to protect a minimum of 12% of NS as protected areas, this figure should not be met by including water bodies in the area. 12% minimum should be land area, and there should be a goal to protect all NS headwaters and sourcewater, wetlands and other waterways from threats and development.

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		12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future? More conservation officers and financial penalties for damaging activities that degrade watersheds including runaway development, or forestry or motorized vehicular use in sensitive areas that increase siltation in water courses and bodies. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I will speak out to anyone I see compromising water conservation, word of mouth is extremely important. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Financial penalties for damaging activities that degrade watersheds including runaway development, or forestry or motorized vehicular use in sensitive areas that increase siltation in water courses and bodies. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* I would like the provincial government to be more proactive working with municipalities to protect water resources. Antigonish and Amherst are leading the way by protecting their water sources as wilderness areas, I would like to see this happen in all municipalities across NS. *16. I would like the following question answered.*
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* I am concerned about runoff into rivers from forested land that erodes after a clear cut, after agricultural harvesting, and the damage that runoff has on the watercourse. Also, the chemical runoff from both of the above industries and mining tailings are not intended to be in the water system and are damaging the health of marine species and people alike in ways that we may not realize. Also, the city waste dumped directly into the Halifax Harbour or even treated with primary treatment puts huge amounts of synthetic, dangerous chemicals into the ocean that is having effects on the marine organisms, some that we eat. We need to protect the bottom of the food chain because they can't stick up for themselves but sustain all life!

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		12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future? - Less dumping of unnatural products into the water. - Enforced riparian zones and wider zones. - Stop clear cutting. - Stop open pit mining. - Ban uranium mining. - Treat city waste to secondary treatment. - Enforce strict regulations about what can be dumped down the drain. - Stop bottom trawling. Protect wetlands. - Prevent development in pyritic slate areas. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* - Collect rainwater off my roof and use it. - Use greywater for toilets. - Use LESS water. - Eat all organic food. - Only buy FSC wood. - Use only recycled paper and toilet paper. - Only canoe or kayak, not use motor boats. - Travel by bike or public transit or train so fewer roads are needed. - Pay more tax! *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?*

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		Taxes, tax polluters, tax large water users, allocate those revenues to water conservation and water protection programs to enforce watershed protection. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* - To prevent water runoff from urban areas, buildings should be required to have rainwater collection systems and grey water recovery systems, and low flow toilets and showerheads. - Parking lots and slow speed driving areas and sidewalks should be built with grid concrete forms that have space for grass to grow and rain to percolate through. For a demo, visit the EAC.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* - Pollution - Shortages - Development (coastal, lakes) *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* - Greater price for water so that people will conserve. - Education – for water to conserve. - Protect waterways. - Wetlands (natural water filters) *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* - Big picture - Living within means *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* -Water tax.

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		- I'm sure the money can be found within government budget if it's a priority.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* - Loss of wetland habitat. - Bad coastal loss. - Water contamination. - Pharmaceuticals in water. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Protect water, prevent degradation, charge people who waste water *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Shorter showers, join a stewardship group, use rainwater for gardens, no bottled water. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* - Taxes. - Fines for violators. - Surcharge on bottled water! *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* How do you interpret with coastal strategy? When will you make developments (illegible)? How will you instate (?) taxes?
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* - Raw sewage being dumped in the harbour.

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		- Lack of water quality testing at salt water recreational beaches. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Protect the reservoirs *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Be aware of my consumption and try not to be wasteful. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* - Fines from violators. - Surcharge on bottled water. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* Set backs from water courses.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* That NS will have clean water in the future. That fresh water and coastal habitat will exist for species other than humans. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* - Protect water. - Preserve the water. - Have fines for offenders for polluting. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* - Pay higher taxes to ensure that the water is clean and will be so in the future. - Have standards/regulations for appliances to use less water.

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		14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why? - Money should come from taxes - Fines for offenders. - The money should go towards enforcement, clean up currently dirty water, protecting and preserving our water. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* DNR should include coastal and water issues in their voluntary planning. *16. I would like the following question answered.* How will you integrate with the other strategies?
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* - Mining effluent entering watershed. - Raw sewage entering ocean. - Clear-cutting causing sedimentation of rivers and streams and negatively affecting fish habitat. - No restrictions of distance from watershed where development can occur. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* - Protect watersheds from habitat degradation. - Limit excessive household use. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* - Rainwater collection to water gardens. - Fine violators who impact watercourses through development and alter habitat. - Short showers. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?*

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		Fines for violators. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* Please be sure to integrate water strategy and coastal management strategy. This needs to be seen, managed and protected as one system.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* We are not making adequate use of grey water - should be mandatory with costs for switching paid for by the govt. Taxpayers will benefit from strategies like green roofs, grass (??), cisterns, grey water collection/recycle systems, improving potable water quality without use of chemicals i.e. use of filters/UV systems. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Creativity. Staying on top of current best practices. Investing in research and prototypes. Providing building owners with resources and education to make changes both short and long term. Identify major water polluters and dine. Make stronger legislation for these. Legislate for low impact forest and mine (natural resource use). Stop clear cutting. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Moderate/minimize personal use. Lobby for changes to legislation. Share info and create resources. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Water costs, manufacturing, personal and industrial eco footprints have been skewed. We need to develop an accurate, real cost accounting system that reflects and makes responsible short and long term costs of water use.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* How efficiently it is being used. How it is treated after use and where it goes after use. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without*

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		compromising the ability to provide those same services in the future? Conserve water. Promote household water conservation. Investigate and implement water recycling. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Minimize water use at home. Promote efficient use of water. Use household recycled water in garden. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Taxpayers - people who use water. User pays system.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* - Contamination of ground water by chemicals sprayes to kill off young hardwood trees by logging companies. - Drainage of the water table by companies for bottled water - this should not be allowed anywhere in Canada. - As bacteria become resistant to chlorine - the probability of higher rates of infection with E.Coli. - Contamination of groundwater by individuals using chemical pesticides and herbicides in the garden. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Some kind of reusable rationing of water should be instituted. Anyone exceeding their water limit to pay a heavy fine, including companies. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I already - Use smaller waste tanks in the bathroom. - Do not water my grass - I grow perennials that don't need watering also. - Showers not baths.

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		- Do not leave taps running when cleaning teeth, washing face, etc. Adverts to promote above should be run on TV. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* I have seen the government's 2006-2007 statement of revenues and expenses. As they only spent a miniscule amount on the environment as compared to national defence - transfer payments to the provinces should be allocated a much larger portion for environmental issues of all kinds, including water. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* If you truly want to reach individuals and hit home that water is a problem you need to hit people where it lives. An advert campaign that bombards people with pictures of what will happen to their children and grandchildren if we destroy our water table will give them a lot to think about when it comes to water conservation. *16. I would like the following question answered.* No. Just get on with the job instead of talking about it. I am tired of doom and gloom with no obvious action with regard to the environment.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* The concern I have is who should pay. Please protect the landowners. Unlike what is happening in Lawrencetown, Annapolis County. The few landowners who own land in the watershed protected area don't seem to be getting considered for any sort of compensation for the limitations put on their land and the potential drop in property value because of a protected area designation from the adoption of a Land Use By-Law. The whole village should pay the cost of protecting the water, possibly by raising rates and forwarding some restitution to the landowners or as with agricultural land, tax exempt, not just the few who happened to purchase the land and must continue to pay tax on it. On top of that, the water utility is profiting from the sale of clean water.
I	N/A	*16. I would like the following question answered.* I have traveled the CB Island with great concern for the Bras D'Or Lake. Just outside Baddeck on the 105, there is a

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		gas station to service the trucks with their diesel fuel. In the pavement you can see how the run-off from the pumps has eaten the pavement away. I then look at eh direction the run off is going and it hurts. The spills from the filling of the trucks runs toward the Lake. To my untrained eye it appears that the Lake is being contaminated. I would like to see an inspection done of this pipeline site. It certainly appears to be in need of upkeep to prevent the wastes from going into the lake. Please advice me of what is going to be done.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Water should never be sold privately or transported out of the province. Water should managed regionally to ensure that municipalities etc have what they need. Water should not be removed from a system unless it is necessary so that ecosystems continue to function properly. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* We need to identify the carrying capacity of areas throughout NS in terms of business and residential water use and put the appropriate limitations on development to ensure that the water quantity and quality will be there when we need it in the future. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* Conduct studies that identify the limits for development and water usage throughout NS. For example, if the Valley is experiencing water shortage, then there should be a cap on the industry and activities that occur there. Charge customers more for "unreasonable" water usage to reduce strain on water systems.
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* 1. How it is being managed...or not being managed 2. That it remains a secure source of quality water 3. That it not be sold as a commodity to the highest holder

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		4. That there be no bulk water exports 5. Public Access be maintained or re-established! *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* 1. We may not be able to make this assurance; 2. Individual domestic needs must be paramount 3. eco-systems should not be placed at risk by commercial interests *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* 1. Conserve & limit domestic use (wash dishes by hand!) 2. Limit population densities to be able to accommodate water sustainability 3. Restrict water use - no private pools (non- public), lawn watering, etc. "social responsibility" with government imposed limits - laws & penalties *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* 1. Taxes - tax the wealthy (>$500,000 ann. Household income), tax urban usage of water at higher rate, punish excessive consumption with fines 2. Responsible social planning
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* 1. Supply of quality water sufficient to maintain ecological processes 2. Supply of water sufficient to meet demands of the human population 3. Keeping costal waters clean to preserve our Tourism industry 4. Making sure the most disadvantaged members of society always have access to clean water sufficient to their needs, at an affordable cost (if not free)

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		12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future? Encourage water conservation practices by individuals and industry *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* 1. Use less 2. Purchase and install fixtures and appliances that use less water (have already done this) 3. Encourage others to do likewise 4. Support organization and initiatives that teach water conservation *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* 1. Money comes from taxes (gov't) and fees for use (public with utilities) 2. Support ACAP, CEPI, etc. 3. Subsidize individuals retrofitting to better conserve and keep clean water 4. NGOs are an efficient way to reach a large # of people
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* My biggest concern is that we do not protect our pristine water ways and they cannot be protected as strongly as I feel is necessary. As a municipal councilor who serves on the planning advisory I was disturbed that we could not put strict restrictions on undeveloped lakes because the landowners around the lake have a right to the enjoyment of their property. These waters could be protected for future generations. Even developed lakes should have tight restrictions. How about only allowing certain activities (motorized vehicles) on a limited number of lakes and leave the majority of lakes for canoeing and camping etc. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without*

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		compromising the ability to provide those same services in the future? We have plenty of water but should not squander it. We have a marvelous opportunity to put strict restrictions on our lakes and waterways that don't really adversely affect our quality of life. In fact it will enhance it. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* 1. Use less. We are in an age when clean water is so abundant that we waste large amount of water frivolously 2. I refuse to buy bottled water. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* People hate to hear this, but it has to be paid for and that means the tax payer must pay. In certain cases user fees can be applied for those on municipal water. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* Our province should protect all of our water supplies. Future generations should be protected from the excess of our 20th (21st) century lifestyle. Motorized watercraft and other activities that are potentially damaging should be outlawed or at least restricted to a few waterways with the vast majority restricted to environmentally friendly activity. There is no excuse for not putting tight restrictions on waterways that are currently undeveloped. *16. I would like the following question answered.* Yes. Why are municipalities not allowed to put tighter restrictions on waterways within their jurisdictions?
I	N/A	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* I would like to see greater public awareness and more government resources for maintaining water quality and quantity in NS waterways. We have never been without a clean and plentiful water supply. But now we need to recognize and understand this cannot continue without a concerted effort by government, business and public. I believe such understanding will allow for change. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to*

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		remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future? Science cannot forecast how much of a single pollutant or what combination of pollutants will render an individual ecosystem toxic. Nor can it forecast how many alterations to a waterway will render it dysfunctional; unable to detoxify and support life with vitality. We could easily and unwittingly lose what we have. Therefore, I would like to see first priority given to strenuous application of the 'precautionary principle' to issues of water quality and quantity. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* - I feel it is appropriate to pay HRM for my water usage, especially when I see efforts made to improve water/sewage services. - Try to pay attention to what leaves my residence through the drains, street run-off and land-off. Examples: 1) Avoid use of chemical fertilizers, herbicides, insecticides, and rodenticides. 2) Have significantly reduced use of harsh chemicals in cleaning products. Use environmentally friendly dish detergent and microfiber cloth to wash my car. 3) Have eliminated use of personal car products with strong chemicals. 4) Have brought use of antimicrobial cleansers and medications to an absolute minimum. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* I believe adding the cost of maintaining water resources to municipal and provincial 'taxes' is appropriate. It is an incentive to reduce use in metered areas and can be a constant reminder of the 'value' of our water resources if noted and charged separately. Because NS has so much coastline, I assume the federal government would have responsibility too. I see policy and public education as a provincial matter. Cost to rate/tax payers and distribution of funds might be determined by the work required in a watershed. Businesses should be given significant tax incentives to operate in an environmentally responsible manner.

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		15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet. I have recently retired from teaching with experience in special education and elementary education. While teaching, I helped coordinate the creation of teaching material about local wildlife and habitat. The material stressed the importance of caring for water resources because 1. It was for a coastal community in BC with a large number of migratory water birds and 2. Grant money for the project came from a water management initiative in neighbouring Washington State. This sparked an interest in me which lead to completion of the "Watershed Management Certificate Program" through the Institute for Resources, Environment, and Sustainability at UBC in 2003. Presently, I would be interested in working in the following areas: researching water management strategies in other provinces/states/countries, and developing educational materials for the general public or the school system. Please keep me in mind should an opportunity arise. *16. I would like the following question answered.* Please notify me of relevant govt publications available to the public and of public meetings in my area.
I	N/A	**Note: Voluntary Planning submission available upon request.**
M	Cape Breton Regional Municipality	The major concerns expressed were : 1. Proper assignment of resources both financial and human. 2. Greater public consultation and education of the scope of the problem and the effects of failure to properly deal with the issues 3. Elimination of overlapping provincial policies that address the issue of water resource management differently 4. Do not download the issue to local government , nor develop policies or practices that impact on local government without providing the financial resources to effectively address the requirement 5. Policy must be comprehensive in nature so that water from all sources is address equally 6. Land use planning must address the issues of development in flood plains, coastal, along/near water courses, preservation of wet lands and other such water related matters
M	Municipality of the County of Colchester	Some comments that come to mind include: **1.** No one level of government or department has sole responsibility for water. Management on an ecosystem or watershed basis will require an integrated approach and more importantly, will require an

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		agency to champion the cause. A champion agency can remind other jurisdictions that their core activity might have an indirect impact on water quality. **2.** DNR is undertaking a similar process through Voluntary Planning. While it is nice to see the 'silos" are thinking about sustainable as a strategic direction; is there coordination and understanding of common and mutual goals at the top? For example, a local developer is incurring considerable cost and time delay in the development of land with a small wetland that was not of concern when the previous owner clear cut the woodlot. So a concern of DEL was not a concern for DNR. **3.** As a municipality one cannot help wonder what new requirements will be placed on local government and at what cost once the water strategy is complete.
M	Municipality of East Hants	**Water Security and Land Development** Unfortunately, many land owners are ill informed about the importance of protecting wetlands and shorelines. Developers wish to obtain the greatest economic value from their lands; which could be at the cost of the lands natural systems. Therefore, it may be a responsibility of municipal governments to develop Municipal Planning Strategies that designate important water resource management zones. These zones would include wetlands and shorelines. Development and removal of vegetation would not be permitted to take place in these zones. Approaches in water conservation and wetland protection that could be considered as part of planning regulations around water resource management zones include: • Leaving topsoil and vegetation in place and using machinery that is less harsh on the natural landscape. • Prevention of blasting and bulldozing on sited where these operations could damage water courses from runoff of bulldozed and blasted lands or possibly the fracturing of rock which could result in the drainage of aquifers and ground/surface water resources. Landowners should be encouraged to work with the natural topography of the land. • Leaving a large proportion of trees standing and include clauses where a large percentage new native vegetation has to be planted per acre. **Building Technologies** One possible method of conservation is through the use of building technologies to cut the amount of water

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		consumed by Nova Scotians. If 70% of Nova Scotians are going to be living within a 90 minute commute to the HRM by 2026 then the building Code Act should be strengthened to include regulations that will ensure that new home construction will use items such as low flush toilets, showerheads and other water conservation technologies. Another possible option would be to increase infrastructure/ building permit fees or taxes for residents and businesses that do not make use of water conservation technologies or practices. The use of rainwater cisterns should be encouraged. Water collected can be used for watering lawns and gardens, washing vehicles and even household uses, such as flushing toilets, washing dishes and even bathing. Tax breaks may be given to residents who embrace these water conservation methods. **Economic Development and Water Resources** ova Scotia's Economy should be able to continue to rely on the province's water resources, as a long as businesses in the province follow the examples of the two pulp and paper plants mentioned in the discussion paper. Each company operating in Nova Scotia should have an invested interest in their water supply. Regulations may be adopted that require businesses using water for their operations should be of the same quality of water or better than the water they started with. A method of getting business to adopt this principal is by offering companies tax incentives and industry awards. Another method of ensuring clean water is by using an auditing system. Surprise inspections for water testing could be useful in identifying companies that abuse water resources. These companies could be mandated to improve their systems, pay fines, and have staff attend training sessions on water management. **Information Useful for Municipal Purposes** A section of the water for Life booklet mentions climate change and the potential for flooding, storm surges, sea level rise and saltwater intrusion, all of which could be detrimental to potable water supplies, for private dug wells and municipal water services. As well, these effects could become potentially hazardous for the preservation of wetlands. It would be beneficial to municipalities if mapping was available to staff members showing the predicted rise in costal sea levels and storm surges and the potential increase in precipitation for Nova Scotia would also be beneficial for predicting possible flood risks. Once this information was available to municipal governments, Municipal Councils could become

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		proactive in their approach to protecting potable water supplies and environmentally sensitive wetlands. **Municipal Responsibility** It is important to take seriously all strategies proposed under the Environmental Goals and Sustainable Prosperity Act. Like all strategies under the act, the strategy for water resource management should be reviewed and embraced by Municipal Council and staff. If necessary, municipal planning documents should be amended and adopted to support the strategies outlined in the Act. It is also important that municipal governments educate their residents through information mail outs, public meetings, and through the education of youth through our school system. As well, it is important that municipal governments should lead by example, by using water saving technologies and following water conservation practices.
M	Halifax Regional Municipality	**Goals** - The Strategy should define measurable outcomes for water resources, and provide an action plan and resource needs to accomplish the stated outcomes. - Ensure that the adopted water resource management strategy effectively deals with water quality and water quality in an integrated approach. - Realizing this is just the start towards a Water Resource Management Strategy for Nova Scotia, we believe it is important to identify key considerations such as climate change impacts, energy and transportation opportunities as well as related efforts already underway by other levels of government, community and the private sector. - Further, to continue to apply integrated systems thinking to the sustainability of our fundamental resources such as water. **Development** -The province should develop provincial water quality objectives for lakes and rivers - key locations should be prioritized for early development. **Increase knowledge (inc public) and data of water state** -The province should develop models of total phosphorus for specific water bodies for which objectives have been

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		developed, in order to model and predict future state. - Conduct a province-wide inventory of all lakes to assess the existing or pre-development background levels of phosphorus and nitrogen. Develop and/or adopt a suite of mitigation techniques to be employed by developers or other responsible parties for lakes found to be above natural background levels. - Publicly counter the myth of Canada's (and Nova Scotia's) water abundance – in terms of renewable supply, we (Canada) are tied for third place (with Indonesia, the U.S., and China), behind Brazil and Russia, in the list of countries with the largest renewable water supplies. Renewable supply accounting counts only the surface water flows and groundwater recharge that occur, NOT the total volume of surface water available within a country's borders. - Work with Environment Canada to improve public-sector accounting for water quality and quantity – across the province, for both surface waters and groundwater. - Work with Environment Canada to increase the number of hydrometric stations across the province; ensure that the network density (of these stations) meets, at a minimum, or exceeds international standards. - Invest in water research, and advocate for a national water strategy. - Inadequate baseline data exists for detailed delineation of aquifer extents, capacity and quality. While NSDoE has recently expanded the groundwater monitoring network in HRM by a few wells, there is a greater need for geographic coverage and more quality measurements. - There is inadequate baseline and ongoing monitoring of surface water quantity and quality. The province should enter into a water quality monitoring agreement with Environment Canada, and devote adequate resources to establish and maintain a comprehensive water quality monitoring network across HRM and the province. Biological productivity and diversity should also be tracked over time. - Update and expand all provincial floodplain mapping. - Establish an annual water education campaign on and around World Water Day March 22). - Provide critical education for key decision makers and stakeholders, including municipal councilors, municipal planners, and developers, at a minimum.

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		Enforcement/ Implementation - Adopt legally enforceable water quality standards (not 'voluntary standards'). - Increase municipal water pricing to better reflect the true cost of water supply and treatment, including operations, and the maintenance and capital costs of associated infrastructure. Canada's average municipal water pricing, at $0.31/cubic metre, lags far behind most OECD countries, based on a 1998 survey, in which averages elsewhere range from $0.40 (at a minimum) in the US to $2.16 in Germany. - Require holders of water use permits to publicly report actual use, in addition to permitted use. - Finally resolve the ownership, operation, maintenance, liability and other outstanding issues regarding freshwater dams across the province, in consultation with affected and interested parties. - HRM needs the authority to determine if as-of-right developments have adequate (quality and quality) groundwater resources if used as drinking water supplies, prior to allowing development to proceed. - The province should mandate undisturbed buffers around all waterbodies above a certain threshold size, to prevent clearing and development to the water's edge. A certain proportion of the buffer zone around each waterbody should be publicly owned. - The province should implement more stringent controls on runoff from land clearing and construction at the source. - The province should implement more stringent controls on runoff from agricultural activities at the source. - Extend floodplain legislation to make tributaries and feeder brooks subject to its control. - Adopt or substantially support an ongoing, systematic monitoring program that includes biological, chemical, and physical parameters to provide baseline and post-development assessments of ecological conditions. - Adopt and disseminate clear timelines and frameworks for achieving ecological integrity. - Legislate Total Maximum Daily Loads (TMDL) for pollutants in stormwater as per US EPA regulations. - Make all water-related guidelines (e.g. NS TIR Sedimentation and Erosion Control Guidelines) mandatory. - Add construction activities as an undertaking under Part IV of the Environment Act. - Create mandatory provincial standards for the adoption of municipal by-laws regarding sedimentation and erosion, within

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		municipal jurisdiction. -Create a provincial Daylighting Policy to support the reversion of buried piped systems and culvert systems back to natural, open-water systems. Make funding available to municipalities and/or regulated water commissions to undertake these works. HRM's daylighting policy is available at: http://www.halifax.ca/environment/PolicyonRiverDaylighting.html - Work with federal government to enable municipalities to develop more comprehensive by-laws regarding the sale and use of pesticides within their jurisdictions. - Put a much greater emphasis on conservation of water resources and prevention of pollution from entry into water supplies. - Clearly distinguish between urban and rural issues (i.e. Stormwater pollution in urban areas, leaking septic beds in rural areas). - Incorporate Best Practices as developed and used in other jurisdictions. - Address private wells as an extremely important component of sources of drinking water. The provincial drinking water strategy overlooked private wells because it does not have regulatory jurisdiction over them, but knowing about and protecting aquifers that supply these wells is a function that only provincial government can undertake. In addition, the use of wells and aquifers, their availability and quality, can have an impact on regulated municipal water services and vice-versa, so this component must not be overlooked a second time. - Adopt ecological integrity of aquatic resources as the overarching goal of the strategy - not drinking water, not water for economic pursuits. These goals will be achieved if ecological integrity is preserved. **Regulations** - Develop strong groundwater regulations, and support them with much more related policy, research, monitoring and enforcement capacity. - The province has responsibility for discharges to surface water, and surface waters are provincial property. There is frequent confusion over mandates and authority when discharges occur (siltation is the most common issue). The

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		Strategy must clearly define regulatory and legal roles and responsibilities, and identify for the public who the responders are for discharge incidents. - Identify and address areas where legislation and policies overlap, where there are gaps, and where conflicts exist (e.g. between the Environment Act and the Municipal Government Act). **Financing** - For water works financing, ensure that the pricing formula balances four criteria: efficiency, fairness, economic equity and sustainability. Quoting the source (attributed to Steven Renzetti): "Getting the prices "right" should help to encourage efficient water allocation, improve water quality, provide adequate revenues to water suppliers, and encourage innovation and conservation." - Use full-cost accounting to establish a monetary value for water and to set water use fees. **Conservation** - Encourage municipalities to adopt a wide range of approaches (potentially temporary and voluntary) to water conservation, such as lawn watering restrictions **Watershed-Based Protection** - Develop more source watershed-based protection plans for aquifers that supply drinking water to approximately 40% of Nova Scotia's population, distributed across the province. - Develop a program through which watershed management plans will be developed for all watersheds throughout the province, and a highly collaborative, cooperative, transparent, accountable governance framework to manage the plans. **Wastewater/ Stormwater** - Performance of septic systems of varying ages should be studied and assessed, to establish those areas with inadequate septic performance due to unsuitable soils or system age and design. In line with improved performance requirements for municipal wastewater treatment systems under the CCME Municipal Wastewater Strategy, performance for old or malfunctioning septic systems should be regulated and improved by the province, including regulatory control on system use and maintenance by the owner.

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		- Extend municipal authorization to control stormwater flow through amendment to the Municipal Government Act. - Concern: Change in Surface Water Supply and Quality for Communities' Health and Economy, from precipitation (i.e. Seasonal Patterns and Run-off Rates). Section 4.2.3 Water Resources, pages 52 & 53 Issue: - Potential for increased variability in the quality and quantity of municipal water sources. - Possible increased variability in water supply, affecting energy production (hydropower), and agriculture. - Variation in rainfall and run-off intensity may impact management of water supply and water control dams. - Potential for increased incidents of aquatic pollution associated with runoff and flooding. -Concern: Change in Ground Water Supply and Quality for Communities' Health and Economy, from Precipitation (i.e. Seasonal Patterns and Run-off Rates). Section 4.2.3 Water Resources, pages 52 & 53 Issue: - Potential for increased incidents and distribution of environmental and waste contamination primarily related to well-head management. - Changes in temperature and precipitation likely to alter recharge to groundwater aquifers, causing shifts in water table levels and water supply. **Climate Change** - Systems Approach to Sustainability: On page 18 of the Discussion Paper it references other ongoing strategies, i.e. Energy, Climate Change, Natural Resources, etc. We are very pleased to see the Province moving forward on these important issues. - We highly encourage the Province through comprehensive stakeholder discussions and feedback to take a systems approach to sustainability, i.e. integration of clean air, land, water and energy components. In essence demonstrated links to the various clean air, land, water and energy strategies and actions and incorporating meaningful stakeholder feedback. - It is also recommended that each sector include demonstrated performance measures that are publicly reported

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		annually, i.e. **Annual State of the Environment Report.** This includes public reporting on water quality. - These types of measures will help show Nova Scotians progress being made towards the commitments in Bill #146 Environmental Goals and Sustainable Prosperity Act. Climate Change Impacts: The greatest challenge facing every province, town, and city is sustainability. The greatest sustainability challenge is climate change. - HRM in partnership with the Province, Federal Government and the private sector has put in place Climate SMART, an integrated systems approach to climate change mitigation and adaptation. - A number of plans and tools have been developed and all are available on-line at: http://www.halifax.ca/environment/getinvolved.html. - One of the tools developed is the HRM Climate Change Risk Management Strategy which includes sector specific considerations, priorities and recommended actions. One of the sectors is water resources. -Concern: Change in Temperature Section 4.2.3 Water Resources, pages 52 and 53 Issue: Warmer waters will result in increased pathogens, new pests and diseases. -Concern: Change in Surface and Groundwater Supply and Quality on Agriculture from Precipitation (i.e., Seasonal Patterns and Run-off Rates). Section 4.2.3 Water Resources, pages 52 and 53 Issues: - Projected climate change likely to alter snow and rainfall patterns, resulting in less frequent, but heavier, precipitation earlier than present (April rather than May). Intense, heavy rainfall leads to more runoff and less groundwater recharge. - Longer and warmer summers likely to result in more drought and greater need for irrigation. - Longer and warmer summers and droughts likely to increase the demand on ground water and surface water resources to support agriculture. Concern: Change in Water Quality through Salt-Water Intrusion from Sea Level Rise and Extreme Events. Section 4.2.3 Water Resources, pages 52 and 53

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		Issues: - Possible increased incidents of salt-water intrusion in coastal aquifers affecting potable and agricultural/ horticultural groundwater supplies. **Energy** - Page 10 of the Provincial Discussion Paper talks about using water in new ways to create energy. This is a key systems approach consideration. We want to develop renewable and sustainable energy opportunities and at the same time protect and sustain our water resources. HRM Regional Council in December 2007 endorsed the HRM Community Energy Plan. This plan takes a holistic and comprehensive approach to energy sustainability, use, security, affordability, accessibility, etc. It is available on-line at: www.halifax.ca/environment/energyplan/index.html. The HRM Community Energy Plan includes 40 priority recommendations including: - *Goal 6 - Increase Energy Security and Diversify Energy Supply* - *Community Action 5* - Assess feasibility for mini (run-of-the-river) hydro electric plants; examples - Musquodoboit River at Crawford Falls; Middle and Upper Musquodoboit; Sheet Harbour at Malay Falls; Half Way Brook and Little West River. - *Community Action 7* - District Cooling opportunities utilizing large bodies of water, i.e. Halifax Harbour Water Cooling for buildings; geo-thermal/ cooling opportunities with large lakes; etc. - *Corporate Action 4* - Co-sponsorship of renewable energy projects with other Nova Scotia municipalities that have better access to renewable resources, i.e. tidal projects in West Hantz, Kings and Colchester. - These are examples of identified renewable energy opportunities utilizing our water resources; however a systems approach would put them through a sustainability filter from the get-go. In essence, ensure these renewable energy opportunities are captured in the water resource management strategy discussions as well as any sustainability/ environmental impacts. **Transportation** - Although fully articulated in HRM's Transportation Plan, the HRM Community Energy Plan also identifies energy saving and emission reduction opportunities through use of water transportation.

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		- *In Goal 2: Increase Transportation Choice and Efficiency - Community Action 1* - it recommends expanded ferry service, i.e. Bedford. - Other water transportation options exist throughout Nova Scotia where significant emission reductions are possible. However, and as noted above in the Energy comments, a systems approach would put them through a sustainability filter providing direction on the most sustainable approaches overall. **Resources** Adopt some, all, or the best parts, of any of the following recent approaches to a water ethic: • The Dublin Statement (1992) United Nations: The Dublin Statement and the Report of the Conference. Dublin International Conference on Water and Environment: Development Issues for the Twenty-First Century, 26-31 January, Dublin. • The Canadian Water Resources Association's Sustainability Principles for Water Management in Canada (1994) – June pamphlet, www.cwra.org • UNESCO's Principles for Ethical Water Use (2004). Source: Brelet, C. 204. Some Examples of Best Ethical Practices in Water Use. UNESCO, France. http://unesdoc.unesco.org/images/0013/001344/134430e.pdf - HRM has developed a Water Resources Strategy report specific to municipal issues, which may be of interest. The report, and details on implementation of the recommendations, is available at: http://www.halifax.ca/environment/waterresourcesstudy.html - The HRM Climate Change Risk Management Strategy also contains sections and chapters specific to Coastal Zones; Communities, Infrastructure and Transportation; Human Health; Fisheries and Marine Resources; Forestry; Agriculture; and the Environment. HRM is recommending that the above climate change related concerns and issues be included in the Water Resources Management Strategy discussions. **Discussion Paper Questions - HRM responses** *1. Water is making headlines. On the news, in schools and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?*

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		Coastal inundation & potential saltwater intrusion into coastal aquifers. Water availability - groundwater supplies for private wells affected by aquifer depletion. Water quality: impact on urban receiving watercourses from the effects of urban runoff & stormwater flows. Drought, flooding, and increase in local mean sea level due to impacts of climate change. *2. The province of Nova Scotia is committed to sustainable development. What are your ideas about how we can ensure that development is undertaken in a way that does not put strain on the water available for the area or the surrounding natural environment?* Ensure that development does not occur in areas that cannot support either: 1. Further demand for input water sources, or 2. Further impact from the effects of human activities (e.g., sedimentation, eutrophication, volume withdrawal, heat pollution, etc. Recycling water. Currently, in most if not all of the province, most municipal water supplies are drawn from surface waters, treated, distributed, used by a variety of end-users, treated again, and then disposed of in either freshwater or marine receiving waters. Relying on the rainwater capital, particularly in a period with a growing population base, will necessarily increase the demand on our water resources, possibly beyond their sustainable capacity. The NS Municipal Government Act (MGA) does not currently permit municipal development approvals for un-serviced subdivisions to be contingent on the adequacy or quality of groundwater for wells. In order for sustainable development to take place the MGA could be amended to include this provision. Halifax Regional Municipality has been experiencing a large amount of growth in areas that are reliant upon groundwater resources for well water supply for the past two decades. Today, approximately twenty-five percent of the population of HRM lives in rural areas. The Municipality has no legislative authority to require developers to verify if the groundwater aquifer is adequate to service a proposed development or if the development will over burden the aquifer and interfere with the groundwater supply of existing developments. Furthermore, there are no requirements at the provincial level to

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		assess the cumulative impacts of large scale subdivisions and high water use activities on ground water aquifers and to regulate the amount of development to ensure that it is sustainable. As a result, development is drawing down substantially on groundwater aquifers and we understand that this situation is expected to worsen in the future as a result of the impacts of Climate Change. Legislation is needed to allow local Municipalities to require developers to submit hydro- technical studies to verify the amount of groundwater availability to service a proposed development without imposing impact on surrounding properties serviced by groundwater supplies. Municipalities should also be given legislative authority to regulate the amount of development that may occur in light of those findings and the province should manage a monitoring program to assist local municipalities to characterize the groundwater aquifers serving the various areas of its municipality. The Province should also advise municipalities of the rate of development that those groundwater aquifers may sustain. HRM's Regional Municipal Planning Strategy (RMPS) contains policy to consider the extension of central water systems to areas experiencing water quality and or quantity problems. In addition to consideration of the need for central water and the financial and technical feasibility of extension, the policy stipulates that the required study for such an extension must demonstrate that there are no other alternative means of rectifying a water problem without resorting to a central water supply. This policy has been adopted to prevent further impacts of central water to areas that are serviced with on-site septic systems and to prevent rapid growth and development in areas that have limited services. The Province should introduce a program to help homeowners identify solutions to groundwater problems without having to resort to requests for a central water supply. A Provincial Program as such should also contemplate financial assistance to homeowners to construct alternative systems as a means of resolving water supply issues. A program as such could potentially cost the province of Nova Scotia less than investments in infrastructure to service communities with central water which may hydraulically overload older septic systems and cause further environmental damage.

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		The Province of Nova Scotia should introduce a program to undertake a comprehensive and on-going assessment of the functionality of on-site septic systems. HRM applauds the Province for introducing the Environmental Home Assessment Program to educate Nova Scotians about the benefits of maintaining their septic systems and for providing financial support to low-income homeowners to repair malfunctioning systems. The program however, should be expanded to take a more active role in identifying system problems before massive groundwater contamination issues arise; particularly now as the on-site septic system infrastructure throughout Nova Scotia begins to age. Impervious surfaces associated with development increase stormwater runoff levels and environmental impacts to nearby watercourses. Watersheds with greater than 5% levels of impervious surfaces have been shown to be harmful to fish habitat. The Province could institute MGA regulations to permit municipalities to require new developments to adopt measures to reduce imperviousness. HRM's Regional Plan does not envisage pristine receiving water conditions for aquatic life in all water sheds within HRM, but it does indicate that land use planning should be conducted on a watershed basis. Overall, our strategy is to allocate growth to urban areas to prevent impact on those watershed where we may be able to achieve higher level standards of care. Targets for impervious surface coverage may vary, with different objectives for different watersheds that may tolerate more impervious surface coverage than others. Overall, there should be strong policy aimed at reducing the impact of development through the implementation of low impact development approaches. Parks and open space provide pervious surfaces in otherwise impervious urban landscapes. The MGA allows for municipalities to require parkland dedications of up to 10% of the open space (or its cash equivalent) of a new development where the subdivision of land takes place. Most properties redeveloped for increased population densities in urban areas are not subdivided and therefore no parkland is obtained. The MGA could be amended to allow municipalities to require parkland dedications of land and/or funds from new developments with increased densities.

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		HRM's Regional Municipal Planning Strategy (RMPS) established a requirement for riparian buffers in new developments. Although this was a major step forward for HRM the initiative may not be adopted by other municipalities without provincial support. Municipalities are enabled to control the cutting of trees in relation to development but we are unable to prevent the clearance of a site before a development application is applied for pursuant to the Municipal Government Act. The Forestry Act also requires the retention of riparian buffers for forestry purposes but the developer can clear the riparian buffer of its vegetation after the land area is no longer used for forestry purposes and before a development application is made to HRM. We understand that the Legislature is considering adopting new legislation which will allow Municipalities to adopt a by-law to regulate the cutting of trees on private property. This legislation is limited though to properties that may be subdivided into 4 lots or less in urban areas and 11 lots or less in rural areas. This will not enable municipalities to ensure that the riparian buffers are maintained before a development application is applied for on properties that are smaller than these proposed cutoffs. The NS Strategy could include measures to address this issue. Also, the MGA could be amended to establish minimum riparian buffer standards for municipalities. The NS Building Code does not include requirements for water saving devices in new building construction. The Code should be amended to require fixtures such as dual flush 3/6 litre toilets and low flow showers. *Nova Scotia's economy relies on water: to provide food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, and to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Measure and/or estimate the use of water more closely. Follow the lead of the Environment Agency of England and Wales, which has committed to regulate all water abstraction over 20 cubic metres a day. They require most licensed abstractors, as a condition of their license, to measure the volume of water they take and submit that data to the agency. Introduce a web-based reporting system to reduce costs, unnecessary administration, and increase convenience for abstractors. Implement, through the NSUARB, a scheme of full-cost water pricing, so that consumers pay the full value of the water

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		they use. Eliminate, through the NSUARB, discounted rates for bulk water withdrawals by industry or other users. Implement, through the NSUARB, a scheme of water use fees for non-essential water uses - e.g. spas, commercial car washes, etc. Prohibit the commercial sale or resale of fresh waters drawn from Nova Scotia lakes or groundwater sources, other than by registered utilities. Invest in water recycling. Existing wastewater facilities in municipal environments could potentially be upgraded to produce high quality recycled water that could be used for industry, to water gardens and playing fields, as well as various agricultural producers such as wineries. The Australian government committed $34.5m to such a plan in April 2008. The responsibility to protect and conserve Nova Scotia's water resources rests with NSDoE. However in HRM, NSDoE does not have sufficient funding or staff to enforce existing *Environment Act* regulations to ensure the ongoing sustainability of our water resources. The Province should increase funding and staff levels to adequately deal with the environmental pressures of HRM's growing population and levels of development. Other provinces such as Ontario have taken a more proactive approach to dealing with the impacts of new development through legislation affecting municipal governments. Ontario has protected specific wetlands and aquifers through amendments to its *Planning Act*. Nova Scotia could adopt similar provisions in the *MGA*. While provincial initiatives such as the Environmental Home Assessment Program can provide valuable support to

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		homeowners, as a purely voluntary program it is limited in its effectiveness. Although NSDoE is responsible for monitoring water quality the department does not have the resources to track the individual or cumulative impacts of malfunctioning septic systems. In order to address this issue NSDoE could consider partnering with federal agencies involved in water quality monitoring. For example, estuaries throughout HRM have been closed to shellfish harvesting for several years due to unacceptable levels of fecal coliform. Environment Canada's (EC) shellfish monitoring reports often cite malfunctioning septic systems as probable causes for these closures. The reports include maps indicating possible pollution sources. EC has no jurisdiction to inspect or regulate septic systems whereas NSDoE does. The two agencies could partner with EC monitoring and NSDoE regulating. Improved estuarine health outcomes could benefit both agencies in fulfilling their mandates. The Province of Nova Scotia should adopt an incentive-based program to encourage industry to develop Clean Technologies for production. Examples of Maritime Paper Products are encouraging but may have been developed in response to HRM's Pollution Prevention Program to prevent impact on HRM's Wastewater Management System. Clean Technologies should be promoted by the Province as a win-win situation for both industry and the environment and the Province should also invest in these technological alternatives/advancements as a leader for the Province. *What are your ideas about how we can provide landowners with the ability to develop their land while ensuring the conservation or restoration of wetlands and their natural functions?* Offer an aggressive conservation grant program that delivers a tiered system of incentives for increasing levels of maintenance, support, and enhancement of onsite wetlands. While it is important to provide landowners with development opportunities, some lands are naturally constrained by the presence of environmentally sensitive features such as wetlands and should never be developed. NSEL should map and protect significant wetlands. Landowners should comply with NS wetland regulations. NSEL does not have the funding or human resources necessary to adequately protect wetlands in HRM. The NSWRMS should include provisions to

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		increase staff and funding for site inspections, enforcement, and prosecutions. *Emergencies disrupt our lives and change what people, businesses and communities require to continue with their daily routines. During an emergency, such as a drought, who or what should have priority access to water?* Citizens for potable water purposes, and agricultural producers who provide food for local sale (ahead of producers of products for export). *People need information about water resources to increase their knowledge and make informed decisions. What kind of information about water do you want or need?* - How much water is typically used by different user groups: individuals, households, different industries, institutions? - Sources of water for consumption (potable and otherwise), and available volume. - Cost of water service provision. - Cost of water as paid by users (i.e. established user rates by class and volume). - Available water conservation measures (e.g. low-flow showerheads, toilets, sink aerators, under-sink hot water tanks, composting toilets, rainwater cisterns) should be promoted and/or required. - Cost of measures, explanation of how to employ, and the value of the savings. - Develop a suite of realistic estimates for how much water people should require to fulfill basic household and personal functions; promote these as targets for individuals and homeowners to reach. *We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Funding should come from a mix of public and private sources. Public funds for infrastructure and water quality research, monitoring, assessment, and reporting; private funds for the water delivered (e.g. to registered Water Commissions). Funding must be established at satisfactory levels so that the strategy can be sustained indefinitely. The need to protect our water resources is not a new provincial responsibility. The need to protect this resource is critical and should be factored into provincial spending priorities.

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		Everyone (individuals, communities, businesses) can contribute to the conservation and protection of water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water? - Employ water-saving practices in the home and workplace. – Reduce water consumption to reach and exceed consumption performance targets (i.e. consume less water than the targeted maximum).
M	Kings County	*The province of Nova Scotia is committed to sustainable development. What are your ideas about how we can ensure that development is undertaken in a way that does not put strain on the water available for the area or the surrounding natural environment?* - Protection of wetlands, flood plains, streams and rivers provincially - Stronger enforcement mechanisms - Stronger local planning regulations that are consistent across the Province of NS - No exportation of potable water – protect water supply for Nova Scotian's - Making more use of our wastewater - National building code require recycling of water - Enforce regulations especially DOE - Areas where groundwater is poor be mapped and identified so people know where it is before they build - Make sure there is adequate water quality and quantity before Building Permit is issued - Require permits to draw on groundwater - Regional evaluation of groundwater aquifers at provincial level - Control/regulation of water use for aesthetic purposes (watering lawns) *Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, and to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide these same services in the future?* - Conservation - Investments in technologies that are environmentally sustainable - Including the services that the environment provides as economic inputs – for example wetlands provide

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		stormwater management. If artificial wetlands are created then these is a cost to developers - Groundwater resources of the province should be mapped so that industry knows where they can get water from - Tracking of how much water is withdrawn from groundwater from utility users (small users) - Rural users are better conservers of water than those on central services – perhaps more education to change attitudes *What are your ideas about how we can provide landowners with the ability to develop their land while ensuring the conservation or restoration of wetlands and their natural functions?* - integrate natural functions into the development planning - Risk assessments for vulnerable areas *People need information about water resources to increase their knowledge and make informed decisions. What kind of information about water do you want or need?* - Education programs in schools - Information regarding enforcement - Central water users – information about where their water comes from and conservation measures - On-site water users needs different information - Industrial users also have different needs - Metering all water usage so that it can be tracked, including agricultural users - Be careful about conservation education programs – more paper will not be effective. TV ads are better. *We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* - Developers - Government - Business - Enforcement fines - Individuals

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		- Revenue from water utilities How to distribute: - Provide to municipal government to distribute - More enforcement Need to fix the attitude that people feel entitled to central water if there is a problem with water. *Everyone (Individuals, communities, businesses) can contribute to the conservation and protection of water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* - Engage in environmentally proactive measures for water management - Require Council direction for specific actions *Emergencies disrupt our lives and change what people, businesses and communities require to continue with their daily routines. During an emergency, such as a drought, who or what should have priority access to water?* - Water utilities - Fire Departments - Hospitals - Seniors facilities - Schools - Agriculture facilities necessary for feeding people
M	Municipality of the District of Lunenburg	The Councilors and staff of the Municipality of the District of Lunenburg have received the Department of Environment's Discussion Paper referenced above. The following are the Municipality of the District of Lunenburg's comments with the respect to same: 1. Overall, the Municipality supports this initiative and agrees that water is an important resource. Measuring need to be put in place to protect our water resources. Measures offered for consideration: I) Logging activities need to be considered. Clear cutting occurs resulting in increased runoff and decreased water retention. This action impacts on water quality and riparian zones. II) The benefits of the on-site sewer systems versus central systems in rural areas needs to be explored

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		more. Central sewer systems gave resulted in water not being returned to the ground water supply. III) It was noted in the report that the goal of the Environmental Goals and Sustainable Prosperity Act is to provide primary treatment (at minimum) to all waste water discharges by 2017. There are a number of straight pipes to our rivers and lakes in the Municipality. The waste waster discharged from these pipes is not treated. The Department of Environment is aware that these exist; however, there is difficulty in forcing this problem to be rectified given the financial burden a homeowner can experience as a result. Municipalities do not have the financial resources to rectify this problem. Replacing these straight pipes with central collection systems is not a feasible or sustainable practice in a Rural Municipality. The Province needs to provide financial incentives to encourage property owners to install a functioning septic system. 2. There is a significant amount of water exported out of Nova Scotia. Although the Municipality does have some concerns about the impact of this on water quantity, the Province of Nova Scotia should establish a surcharge on this export of which the funds could be used to funs water protection efforts. In addition, the Province should establish a limit on the amount of water being exported to ensure water resources for future generations. 3. Any Strategy developed must be clearly defined as a plan of action over a set implementation period. Each action needs to be linked to a department or agency responsible and o identify the resources that are available to effectively implement that action. It is imperative that there be adequate resources for the implementation of this strategy. 4. Any new regulations that result from this strategy should be provincial regulations and enforced by the appropriate provincial department. Municipalities do not have the resources to take on the added responsibilities that could result. 5. In the Municipality of the District of Lunenburg, there are three watersheds. The Municipality recognizes the importance of protection of drinking water at the source. The costs to protect these water supply watersheds

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		has and will continue to increase, particularly giving that they are often in populated areas with established road networks. A lack of resources has impacted on the ability to adequately protect these water supply watersheds. In summary, the Municipality supports the establishment of this long overdue strategy given the increased scarcity of clean, reliable water for human consumption, industrial processes, recreational opportunities and the natural environment. The Municipality does wish to emphasize the need for this to be a provincial initiative with the resulting actions being implemented at the provincial level. Any proposed involvement by Municipal Government needs to be clearly communicated to Municipalities, with an opportunity for input to be provided.
M	Town of Amherst	In February we received an invitation from Mark Parent, Minister, Nova Scotia Department of Environment and Labour, to provide written feedback concerning the discussion paper "Towards a Water Resource Management Strategy for Nova Scotia". We have until June 1 to provide comment to the Minister. One of the most critical issues facing municipalities today is the protection of their water supplies to ensure they are available to serve current and future generations. With proper source protection in place, significant financial, human and policy resource expenditures become unnecessary. In Nova Scotia today we have a few municipal water utilities with full source water protection strategies in place. At the same time, we have a significant number of utilities where their strategies are still in progress. There are a variety of reasons why source water protection strategies have not been completed by all of Nova Scotia Water Utilities: 1. Conflict with land owners in water shed / groundwater recharge areas. Landowners include businesses, residential property owners, farm and wood lot owners. 2. Conflict with a neighbouring municipality where the watershed / groundwater recharge area is located outside the boundaries of the municipality operating the water utility. In this case, the neighbouring municipality is often petitioned by its own taxpayers who see the source water

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		protection as infringing upon their rights as property owners. This resistance from its taxpayers makes it difficult for the rural municipality to support water supply designation or to proceed with necessary municipal planning strategy and land use bylaw amendments as required to complement the source water protection strategy of the water utility, and to come into compliance with the Provincial Statement of Interest Regarding Drinking Water contained in the MGA. The ultimate situation in source water protection occurs when the water utility owns the total watershed or groundwater recharge area. In reality this is not usually possible. Source water protection is often applied based on the protection zone theory, where the inside zone, i.e.: that area containing the reservoir or deep wells, has the highest degree of protection, while the immediately adjacent lands have medium degrees of protection and the outside areas, which include the balance of the watershed or recharge area, have restrictions which impose the least impact upon land owners. At the very minimum the water utility should own this inner zone with the most stringent regulations that result in restrictions on the private landowners use of his property. The Nova Scotia Municipal Government Act contains language defining certain activities as having a Provincial Expression of Interest, i.e.: source water protection. Today this language has little practical value and needs to be enhanced to assist water utilities who are attempting to proceed with designation of their water shed / groundwater source or the application of land use restrictions under the planning strategy / land use bylaws. When the water shed / groundwater source is in an adjacent municipality, and if the Province of Nova Scotia is truly committed to assisting water utilities protect one of their most valuable resources, then you have to do more to assist our water utilities to deal with the resistance of neighbouring municipal units. During the implementation of any water protection strategy there will be situations where land owners dig their heels in and refuse to cooperate with the utility. Among the ways to deal with these landowners are: 1. Purchase their lands. This is possible only if the utility has sufficient financial resources to do so and arrangements can be made with the landowner to part with his property.

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		2. Trade for lands of equal value. This can be an attractive alternative to the landowner but can get expensive for the utility. While the Province should be commended for their efforts in aiding municipalities in developing their source water source protection strategies, the Province can do more to help the water utility resolve the landowner conflict in the above suggested methods by: 1. In the first case, the Province could provide long term loans at subsidized interest rates to help the water utility purchase these lands. *2.* In the second case, the Province could partner with the water utility to trade suitable crown owned lands with the landowner. In working with water utilities in these cases the Province could require that any lands acquired by either the utility or the crown would be designated as protected wilderness areas, thus creating a win/win for both the Province, the water utility and the former land owner. 3. Enhance legislation to support the governments "provincial expression of interest" regarding source water protection in such a manner that will give firm direction to all municipalities who become involved in this process.
M	Town of New Glasgow	**Watershed (Forbes Lake):** The Town of New Glasgow has two watershed areas of particular concern and for different reasons. First, the Town of New Glasgow draws its water from Forbes Lake, a designated watershed approximately five miles from the Town. This watershed has an amazing history, in that the forefathers of New Glasgow selected this surface water supply in 1907 out of fear that the water supply at that time, the East River of Pictou, would become contaminated with both human and industrial waste from industrialization along the East River. It was felt that the relatively pristine waters of Forbes Lake would be much safer to control. Chlorine was not available at that time and was only added to the water supply in 1945 as a primary disinfectant. The Town of New Glasgow has actively managed the Forbes Lake watershed area as a municipal potable water source since that time. In 2003 the water supply became a designated water supply, the first activity based watershed

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		designation under the new Water Resources Protection Act. The Province of Nova Scotia, along with all the municipalities in Pictou County, participated in a study to determine potential potable water sources to service the upriver town areas of Pictou County. At that time, several engineering studies confirmed that Forbes Lake had the most potential to serve the upriver towns. The Town of New Glasgow has actively managed the watershed area through the activity based designation. With a primary watershed size of 721.92 hectares, of which the Town owns 376.9 hectares, and a secondary watershed of 704.93 hectares, of which the Town owns none, the Town is concerned about the extent to which activity based control will be adequate to manage a watershed of this significance. While the Utility would like to secure more lands within the watershed area, the financial reality makes this impossible. The Utility has therefore determined strategic areas of high environmental sensitivity within the watershed and is relying on activity based control to manage the remainder. While it can be stated that Nova Scotia has an abundant supply of water, there are only a few select locations which can provide a sustainable water supply to the urban areas, as is the case in Pictou County. The Utility therefore would urge the Province to allow greater control in rural areas where land use planning does not exist so that utilities can place higher controls on potable watershed areas than those currently available through activity based controls. **Sustainability:** With regard to the issue of sustainability of water supply, I wish to indicate that the Town of New Glasgow Water Utility has been completely metered since 1985. In 1985, the Utility was using approximately 2.2 million gallons of water per day, and had approximately 3200 customers, from large industrial users at Trenton Works, Nova Scotia Power, and Maritime Steel, to residential customers. Today the New Glasgow Water Utility serves over 6500 customers and has an average daily demand of 1.8 million gallons while continuing to serve its industrial customers. The Utility has followed a multi-barrier approach to protect the water supply and has actively encouraged its customers to conserve water wherever possible. The resulting loss of demand initially caused increased pressure on the Utility to raise its water rates. It also created opportunities for the Utility to expand its customer base, as it now serves a

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		greater area both in the Municipality of the County of Pictou and the Municipality of the Town of Westville. The Utility has done so while maintaining its water rates in the lowest quartile of all surface water utilities in the Province of Nova Scotia. Over the long term, the Utility attempts to do full cost pricing and reflects the cost of infrastructure maintenance fully in its rates. **Watershed (East River of Pictou):** The second watershed of concern to the Town of New Glasgow is that of the East River of Pictou. The East River has a very large watershed area, and serves as the receiving water for sewage treatment plants located upstream of the Town of Stellarton's water treatment plant. It also contains numerous combined sewer overflows within Stellarton, New Glasgow, and Trenton. It is also the main receiving water body for the East River Environmental Control Center, which treats all of the sewage for New Glasgow, Stellarton, Trenton, and portions of Pictou County. The East River travels through the heart of downtown New Glasgow and is a key recreational site for both residents of New Glasgow and tourists to our community. There is a marina located at the George Street Bridge in New Glasgow, which together with hosting local boaters also receives numerous visitors by water throughout the summer months. The health and sustainability of the East River is therefore of vital importance to the Town of New Glasgow. The Town of New Glasgow, together with the other municipalities of Pictou County, has participated in a receiving water quality study for the East River of Pictou. The study has made numerous evaluations concerning the quality and quantity of water in the East River. Of particular concern to recreational uses along the East River are the coliform counts which prohibit certain recreational activities, such as swimming and contact with the river. During dry weather the coliform counts in the East River drop below those required for contact activities, while during and after significant rainfall events combined sewer overflows greatly elevate these numbers. All towns within Pictou County have taken significant steps to reduce combined sewer overflows. In future, coliform levels will continue to drop. The Town of New Glasgow, together with the other municipal units in Pictou County, have taken a long term approach to reducing combined sewer overflows within the East River. We note however that there are considerable background counts within the East River watershed area that will restrict the ability of the water to

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		attain maximum recreational usage. The issues of agricultural runoff to the East River, together with malfunctioning onsite sewage systems, also contribute to coliform counts within the river. We would urge the Province to consider taking a more aggressive approach to protecting watershed areas, especially when high municipal use of these watersheds is present. In the case of the East River, the Town of Stellarton uses the river as a primary drinking water source, and New Glasgow has high recreational use associated with the river, as well as an active recreational fishery. New Glasgow continues to be concerned about the overall quantity and quality of water in the river, especially after large runoff events. While the Town is in the tidal estuary of the river and sees a normal high and low tide, it is alarming to note that sometimes the low tides appear to be getting lower and the high tides higher. With the effects of climate change, the Town suspects that the East River will continue to see extremes. Naturally the Town is concerned, as portions of the Town lie within a flood plain area which was identified years ago and protected through zoning requirements. However, what should be considered is the impact on upriver activities on these issues. Should there be constraints placed on the amount of forestry activity within the watershed area until regeneration allows for greater retention of water? In general, manmade alterations in runoff patterns may become accentuated by extremes in climate and cause increased flooding within already recognized flooding areas. In conclusion, the Town of New Glasgow is very much concerned about current and future watershed management issues as they pertain to our Town. We urge the Province to promote the use of water conservation techniques for all municipal watersheds for potable water uses. We urge the Province to make mandatory the use of water metering and leak detection to ensure that we manage our scarce water resources most efficiently. We also look for enabling legislation to allow water utilities whose watersheds are in rural areas the ability to institute land use planning techniques to provide greater control over lands within these designated watershed areas. We further urge the Province to continue to place controls on agricultural runoff so that it does not contaminate our rivers, especially those where potable water treatment uses exist. We ask for tighter controls on onsite sewage systems in these watersheds, where a malfunctioning system could result in sewage entering these water systems. We encourage the Province to place limitations on uses within watersheds that will negatively impact the runoff characteristics within the watersheds.

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M	Town of Yarmouth	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* 1. The exporting of our water resources2. Maintaining quality and quantity supplies of potable water3. Standards for protected water supply areas across NS (provincial standards/provincially enforced), as many water supply areas are located outside the municipal unit they serve (similar to NB).4. Maintaining a potable water supply to all Nova Scotians that is accessible and within their means economically. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Development of our water supply infrastructure in a sustainable fashion. Through education - that water is a valuable resource that requires protection - minimize waste. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Minimize waste at home - better infrastructure (toilets/faucets). *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Partnership and cost sharing programs (personal and business) - no additional tax should be placed on water. Funding should come from general revenues. Water needs to be accessible to all Nova Scotians- distributed to a provincial agency to implement and enforce standards for all protected water supply areas- cost shared infrastructure programs with water utilities- monitoring and testing of water quality.
M	Municipal Councilor	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Abuse/lack of protection of riparian zones by water courses: streams, rivers, lakes, bogs, and coastline. Lack of attention and assistance to those on home water systems. Barriers to, and assistance for, water testing for rural wells for seniors and those on low income or unaware of need. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without*

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		compromising the ability to provide those same services in the future? Does all water need to be purified to drinking water standards when large volumes are for other uses? Can household or building systems be designed to use grey water before it goes into the sewage/waste water system? Can we design multiple water systems? *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Water is a public resource and affects public safety. To that extent, public money should ensure a safe effective accessible water supply. Industry and agriculture should fund economic development to a larger extent with some public assistance. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* 1. There are clear links between a water resource strategy, forest resource strategy, and coastal management strategy. These cannot be addressed in isolation of each other.2. Inland fish habitat has been lost due to acid rain. It would be wonderful to have trout, salmon, bass, etc back in our rivers and lakes in greater abundance.3. Low income cut-off for financial assistance programs should be raised to at least two individuals on CPP, OAS, GIS4. NS should monitor all drinking water sources, not just municipal or public systems but private wells as well with mobile well water testing and financial incentives/assistance for corrective measure. Remove barriers to water testing.
M	CAO: Incorporated town	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* 1. Conservation2. Inter-municipal cooperation (the lack thereof) 3. Cost of maintaining water infrastructure and building new infrastructure4. Adequacy of fine protection5. Risk due to single water line across the causeway 6. inability to fix ownership of causeway as a structure despite repeated attempts *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* 1. Conservation2. Identification of water losses and action3. smart growth policies *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an*

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		unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water? What it takes.- better grey water management- different toilets and shower heads- rain gardens- water conservation public education- water conservation built into inter-municipal agreements- aggressive action to identify and investigate potential sources of infiltration (roof drains, sump pumps, etc)- tougher stance with those who don't care if sewage lagoon spills into the Annapolis River *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Towns pay for the following provincial areas of responsibility: corrections, education, roads (no indexing to keep up with costs).This money is paid by property owners and should go into infrastructure. In addition to this, the federal government and provincial government should be contributing a lot more to infrastructure which benefits all of us *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* We have a water utility in name only. It is supposed to be the Town Council. However, in reality, the water utility consists of 3 members of staff. We are happy that there is an NSURB overseeing our efforts.
M	Municipal Business	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Biggest concern is funding all the water initiatives the province continues to roll out with no support (financial) to implement. Some of the initiatives have been too rigid and do not consider size/population-based solutions that would be more cost effective to implement. A lot more municipal consultation is required prior to implementing strategies to make _reasonable_ financial requests. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* NS has an abundance of water supply and should be using this to fuel the economy. This would require people trying to find new ways to market the resource and use it wisely by our current customers. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?*

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		There are many ways within home to conserve water, such as monitoring leaks regularly and fixing promptly, general conservation, no watering lawns, filling dishwater before using, etc. Low flow toilets, water conservation on small scale by everyone makes a huge difference. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Municipalities are running the systems for the most part; therefore, they should be given the financial support to run them to an acceptable level. They can not currently generate enough revenue, so clearly more provincial or federal funding will have to help out this process. Also, more reasonable strategies should be looked at on more of a case by case basis to see if we can deliver the same end product using less expensive techniques. This would require more work by the province in conjunction with municipalities but could result in significantly less financial strain for both. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* The drinking water strategy has been extremely difficult for a lot of municipalities to implement both with financial and personnel shortages. There has been some very critical and important improvements from the strategy but they may well have been achieved much easier and I don't believe enough review was given to alternatives. If other water strategies are to be rolled out" by the province in the near future it will cripple a great many municipalities and out of sheer frustration they will have to run out of compliance for short-long periods of time. I do not believe this is in anyone's best interest but this is the result of too much change too fast.
O	Engineering Department of the Municipality of East Hants (These comments are from the staff of the Engineering	**Water Quantity and Quality** In our area, groundwater availability is an issue that needs to be addressed. Water shortages of private supplies, such as dug wells, are a common occurrence. Currently, provincial regulations do not require developers to assess whether there is sufficient water to supply new developments. If a developer proceeds without conducting a hydrogeological assessment, often the result is a dug well that requires the service of a water hauler during the dry periods. Changes in regulatory framework which allow municipalities to require hydrogeological studies for unserviced subdivisions would be a useful tool. Residents could also be encouraged to utilize storage tanks where their dug or

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	Department and are not intended to represent the views of the municipality.)	drilled supplies are supplemented with hauled water. We have initiated a leak detection program and an education-based water conservation program to maximize consumption of our treated water, and to best utilize water withdrawn from the river. This will also create additional capacity within our system. However, there needs to be more education regarding quality and quantity concerns in rural areas. All property owners should be more informed about concerns in their area as well as the consequences of poor water management decisions. They must understand that activities conducted on their land can impact the watershed and the health of others. It is extremely important that users understand that water is a provincial resource and not theirs to abuse. Basically, a broader understanding of the need for conservation and stewardship is needed. Rebates should be offered for homeowners and small and medium-sized businesses, industry and public institutions to help them invest in upgrades that conserve more water (low flow toilets and fixtures, high efficiency washers). One option may be to require New developments to install such devices, or to offer tax incentives to homeowners who consume below a stated limit. Alternate conservation measures should be encouraged, such as collecting rain water and using grey water for irrigation. If all water users were required to pay a fee for water (including those in rural areas) it would allow for a value to be placed on water, and may result in an appreciation for the amount of water used. A system whereby all large users are metered would identify users that are withdrawing more than 23,000 L/d and require a water withdrawal approval. Fees collected for water consumption could be re-invested into watershed management programs, whereby watersheds with large numbers of users would receive more funding to manage the load on their supply. This may discourage development or industry in overstressed areas. Water quantity data is essential to water management. Currently there are no active continuous hydrometric stations monitored by either Environment Canada or NSE within our area. Previously the Shubenacadie River was monitored but this is no longer being done. MEH has been maintaining the data collection for our own operational purposes however, it is necessary that this is conducted by either the provincial or federal government to ensure quality

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		control consistent with other hydrometric stations. As well, we do not have good information on water allocation by NSE. If information on water availability and allocation were available, we would be better prepared in issuing approvals for new developments or expansions to existing buildings. We believe there is an overall need to better document and log the total volume withdrawn from any water supply from the various permitted users. **Watershed Management** All watersheds should be protected by the province and activities within the watersheds which pose a risk should be identified and monitored. The activities designated within watersheds must be determined by a singular provincial entity, such as Nova Scotia Environment. To effectively deal with watershed issues, the province should provide funding to employ watershed managers or stewards. This money should come from general provincial revenue as well as monies collected from the consumers of the supply. All aspects of the watersheds should be monitored and managed. This would allow for decisions to me made on watershed or sub-watershed scale. Activities involving education, best management practices, etc should be funded through fees collected from water users. Fees for water use should remain in the watershed from which they were collected. This method would allow for higher stressed watersheds to have more remedial activities. This would also ensure that there is on-going sustained funding and interest, which is crucial in watershed management. Having a manager responsible within the watershed would ensure that the commitment is there to educate, manage, monitor and enforce activities. A common difficulty is that watershed boundaries are not consistent with municipal or other jurisdictional boundaries. This is problematic when trying to control activities within a watershed. This issue would likely be resolved with the implementation of the watershed managers and applicable legislation. The managers would work with municipalities, landowners and industries to address activities within the watershed boundary. Effort needs to be taken to control growth to areas that are sustainable. There needs to be a more holistic approach to development that considers the available water quantity, quality and the impact of development on the

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		watershed and the environment. In an emergency situation priority access to potable water should be given to people, health care (hospitals, seniors homes), essential services and food production and processing.
O	Ecologist/ Biologist	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Land use practices are still tolerated that create water problems. We cut too many trees, plough to the rivers edge and wonder why banks fall in and rivers flush quickly. We need a coordinated approach to land use that explains the need for riparian zones to land owners who own 70% of the land base. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* We need much more conservation of water. NS still has programs to assist farmers to drain land. We should be putting water back on the land. Across Canada 20 million hectors of wetlands have been drained, mostly for agriculture. That's more than the land area of NB, NS & PEI. Slow the water; don't flush it to the sea. We need to protect our water much more than we currently do. The science is there to support this view - it's just being ignored. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I minimize my imprint on the land and my water use. Have invested money and time over 30+ years to restore the forest and water ways here. Someone clear-cut upstream from us on heavy clay soils that were wet and they silted in much of the aquatic restoration. No one, NSDoE&L, NSDNR, or DFO would stop the operation - that went on in heavy rains for 31/2 months. What are governments doing to conserve & protect NS's water if they will not enforce their own laws.**14? We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?** There will never be enough money. We all need a healthy environment, and private (and owners need to understand that

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		working landscapes need to be healthy too. They should be willing to keep/ restore health landscapes. Education about current poor land use is key.
O	Mi'Kmaq ecologist who has worked on aquatic systems	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Contamination / pollution - Streams and rivers are the 'blood' vessels of the earth and everything we spray or deliberately place on the plants and soils will eventually make its way to water bodies & water courses unless it is broken down before hand (but many chemicals are not). Of particular concern is the level of chemical application (direct & indirect) related to transmission lines, agricultural fields, road ways, industrial development without consideration of the tradeoffs for water quality, health, wildlife and future generations. Another concern is how we deliberately manipulate or alter water bodies, water courses & wetlands so that they cannot provide the ecosystem system services, like filtration, that we rely on for survival. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Most people do not understand the tradeoffs or compromises that are made we using water. Education regarding those tradeoffs is key so that Nova Scotians can make informed decisions. Further, our government needs to be committed to the preservation of water quantity and quality over the long term for the well-being of all Nova Scotians, not just those associated with industry or development *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I reduce the amount of water I use in my home by limiting shower times, washing only full loads of laundry. I also try to remain aware of the things that I am releasing back to the environment by watching what I put down my drain, using only biodegradable soaps and detergents wherever possible, spreading my wash over several days instead of having a single laundry day. I will admit however that I am a gardener and water my garden - However, I water in ways that reduce evaporation such as using soaker hoses and use rain water from barrels, and try to use plants that survive well

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		on the natural levels of moisture available in my location *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* First, corporations that impact water quality and quantity must pay fees to help reduce their impacts. Those fees could be put into rehabilitation, training, research, education, development of new water friendly technologies of water issues. As a tax payer, I would be willing to pay slightly higher taxes for the benefit of water, although I admit that I am already feeling a high tax burden.
P	NA	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* The province does not have the capacity to deal with the issue. Expectations far exceed resources. A little knowledge is dangerous. Too many decisions are based on misinformed societal concerns while professionals are ignored. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* We need to know approximately how much water we have and allocate it in a manner that meets the needs of society. We need to understand what those needs of society and not over-react to the vocal minority. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* Water management should not be a conservation issue in NS at the provincial level. Water management at a local level might be a conservation issue but people might choose between the services they expect from water. Do we want it only for drinking? Or are fire flows important? Do we need to treat water used for uses other than drinking? E.g., waste disposal, fire flows... Would a grey water system with individual drinking water systems be more economical? *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Water should be treated as a resource. Above some basic access, water should be seen as a privilege not a right.

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		Above the basic access the user pay principal should be used. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* Water management is in the mess it is today because we continue to use academic models and a jargon held over from the 1920s. We need a concise and practical definition of the term "watercourse" and the other terms. We need a change of attitude at NSE. Our water resource leader must assist with solutions not just be a regulator. We need leadership. Water needs a higher profile not buried in a regulatory agency where the highest level of management is at a manager's level. We need to accept that we all have an impact on water resources and the environment, that there is some acceptable level of that impact and that there is no such thing as zero risk. Cooperation among agencies would help. Intra-provincial fed/prov prov/municipal prov/NGOs. Build relationships.
P	coastal water quality, preserving marine ecosystem functions, including resilience	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* I think we are long overdue in having a subdivision or ecovillage with waterless toilets so that the wastewater treatment system has only to address greywater because we are also careful to produce 'good quality' stormwater (pick up after dogs, cover farm manure piles). **Water Resource Management Strategy** Information about water to inform our decisions; I suggest we start with the water cycle diagram and compile progressively more detailed system (causal loop) diagrams of particular aspects of our relationship with water, e.g., what phase are we in - rapid growth and exploitation, consolidate, conservation, release, reorganization? There must be other approaches too, but, to take this system diagram idea a little further, diagrams could provide clues about stabilizing elements, leverage points and destabilizing components, as well as interactions with larger (climate change regionally) and smaller scales (municipal water supplies). We can then make decisions that are more informed in terms of change, resilience, and rigidity. Finances - where should money for implementing a water resource strategy come from? How should it be

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		distributed and used? As well as from general revenues, monies may come from water charges. Also costs may be recovered from outside-the-box biomimicry scrutinies of present practices. Monies could be allocated from a systems-level perspective. What am I willing to do to conserve and protect Nova Scotia's water? I am willing to extend my use of waterless toilets, and offer community groups ways to protect aquatic ecosystems from the eutrophication syndrome. **2. Economic prosperity** **2.1 sustainable development** One priority is to build topsoil's with a higher organic matter content. Such spongy soils both hold more water so that plants can continue growing through longer droughts without irrigation and are less erosive. **2.2 economy reliant on water** Water needs of the economy: - To produce food; Our need for local food is expected to grow. Let's aspire to organic agriculture. Please see my suggestion under sustainable development. - To play outside; The water quality necessary for water-contact recreation requires that we avoid releasing untreated waste water. In fact separating and treating feces (and their associated pathogens) without mixing them with water is being done now in many places. - to provide habitat; Waste water loaded with nutrients and released into streams, lakes or coastal bays leads to eutrophic aquatic ecosystems and degraded habitats. - to produce energy; - to manufacture products; - to extract resources; - to drink; **3. Ecosystem integrity** **3.1 biggest concerns** My biggest concern is that we generate too much wastewater and overwhelm receiving ecosystems with it. For example, we mix two resources, sanitary wastes and potable water, and make a pollutant. In central serviced areas, we transport

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		this pollutant over considerable distances and then expend more energy and resources toward separating the two again. Early separation and treatment locally would be better bio- mimicry. What might it cost? We need to develop comparative costs for alternative approaches, where they are not available. **Note diagram 1:** This diagram illustrates benefits (but not costs) of separating black water from greywater. **Not diagram 2:** To complete this diagram we need columns for pathogens and pharmaceuticals. Then we could see whether the tentative conclusion of this diagram as it is carries through to pathogens and drugs; that is, would our water quality challenges be markedly eased if black water (feces and urine) were treated separately? I do have a reference indicating that bacteria and viruses are at much lower concentrations in grey water than in black water. **3.2 develop lands while ensuring conservation of wetlands** Look for amenities provided by wetlands – e.g., salt hay, water frontage aesthetics, cranberry crops. **4. emergency and hazards preparedness** **4.1 priority access to water** If we develop a world-view that includes surprises, tipping points (non-linearity), ongoing change and co-evolution, e.g., complexity science, then we can build adaptability and resilience into our access to water.
P	Coastal engineer and oceanographer	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* We need more data and research into the effects of human impacts on river and watershed systems. This will allow government to make decision for water use planning. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Careful planning and management. Research and studies into effects of impacts before major construction projects or changes to a watershed. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?*

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		Reduce home water use. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Financed by provincial taxes, maybe matched or supplemented by federal and provincial grants. Also tax incentives for industry to reduce/reuse water. Distributed by watershed needs - maybe some critical issues need to be addressed in a given watershed.
P	professor, hydrogeologist	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* My biggest concern is that we do not have proper resource assessments and sufficient monitoring. Without this information it is difficult to allocate water and provide baselines for shifts in water quality and quantity. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* We need to know how much water we can use sustainably. This requires more investigations and monitoring to support the permitting process. More monitoring is also required to ensure that pollution is not occurring. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* I am very willing to become involved in water resource assessments and monitoring. I currently teach water resource courses at STFXU and represent the International Association of Hydrogeologists in Nova Scotia. I will continue to provide outreach through these means in the future and hope to become more involved in community outreach. *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* Funding must come from the provincial budget on a steady basis. Money should initially support water resource studies and further hydrologic monitoring. University researchers should receive funds to support this where appropriate. Funding should be made available to the Dept. of Education to support curriculum development as well. *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.*

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		The United Nations recently rejected the idea of water as a fundamental human right, but in my opinion it is clear that governments must facilitate access to water where realistic and therefore is responsible for its proper management. It is important that the government take the lead on this issue and fund water management appropriately. Current environmental efforts seem to be focused getting the private sector involved. These programs, such as the EcoTrust initiative and many programs from the Natural Sciences and Engineering Council of Canada are flawed in this respect because there is little incentive for industries to support research on water resources because water does not have an appropriately high value in this province. Technological solutions may exist for water resource issues but many of the issues we currently face could be addressed by existing technologies. Perhaps the most fundamental issue is that many people do understand the value of water and this needs to be addressed. This will not be easy to accomplish considering the pitfalls of placing an actual dollar value on water. Raising the cost of using water in Nova Scotia may not make sense for our economy due its effect on industry and the effect on our citizens, particularly those who are economically disadvantaged. More education on water is needed for the citizens of Nova Scotia to emphasize the value of water. Greater efforts must be made to educate the general public on water resources. The public consultations for the development of the water strategy represent a good step in this direction. Further efforts should be made to ensure that more material on water resources is incorporated at all levels of our public education system. Despite the importance of the environment, most students receive very little formal education in environmental science prior to university and this must change. If people understand the importance of managing our water resources and what is required to achieve proper management, this will enable our government to provide support on an ongoing basis. If we do not understand our water resources, it will be difficult to educate the public about them or convince them that we need to protect them. If we proceed down this path, it is imperative that the Province of Nova Scotia support water resource management programs at a much higher level than they have in the past. This support must be continuous and this is apparent when the history of water resource evaluations and groundwater monitoring are examined. There is a large gap between the mid 1980s and the early 2000s where there were no significant resource evaluations conducted and much of the observation well network was dormant. Many opportunities were lost in these years and in many cases expertise

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		was lost within Nova Scotia Environment because of a migration of technical personnel to the consulting industry. Resource evaluation studies of sufficient detail are lacking in many areas of Nova Scotia and this problematic because it is difficult to manage what is not understood. While we will never complete understand all aspects of the hydrologic system due to the vagaries of the environment and our interactions with it, our knowledge level lags behind some other jurisdictions, as do our monitoring efforts. For example, our monitoring well network's size is small compared to Manitoba and Saskatchewan, which have similar needs for water with their similar populations while having much simpler geological settings. Our level of monitoring is simply insufficient to support water management at the aquifer or watershed scale. In fact, it is not obvious if we even understand the distribution of aquifers in Nova Scotia in many areas. This lack of baseline information means significant commitment is required to conduct these studies. There have been strides in this direction over the past few years with the expansion of the groundwater observation well network, the release of the water well database, the hiring of a hydrogeologist by the Department of Natural Resources and increased efforts to work with researchers at our province's universities and I applaud these efforts. These resource assessments should be integrated with monitoring efforts and the process should be iterative to account for changes in conditions, both natural and anthropogenic. This iterative approach will allow for adaptation to these changes. Such a commitment will involve a strong and consistent level of financial support for water resource management in the province.
P	hydrogeologist	The following comments are submitted both as an individual and as a water professional (Hydrogeologist) currently living in HRM, on municipally-supplied water and sewer services. However in the past, we have lived where only on-site services (drilled well for water) were available. The province is making big strides in furthering knowledge about water sources/resources and in developing management and protection strategies for municipal supplies, and in education for private well owners. Many of the issues are well known and are in the process of being addressed. The following points are put forward as important issues for consideration in the management and protection of water resources, mainly groundwater: 1. **Rising sea levels**: Areas most susceptible to effects of predicted sea level rise should be mapped, with mapping made available on the web. Appropriate controls on development should be put in place in susceptible areas, with long term

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		mitigation effects for approved developments. 2. Emergency water supply planning: The strategy document asks, 'During an emergency, such as a drought, who or what should have priority access to water?' All Nova Scotians deserve access, but recognizing that this may not be practical, there should be supplies/emergency centers identified across the province within a certain 'accessible' distance for everyone, with the number of such supplies compatible with the population of the area. Such supplies should have sufficient quantity and suitable quality for the possible number to be served. In many areas, existing municipal supplies and/or registered supplies (e.g. schools, recreation centres) and/or unregistered public supplies (e.g. fire stations, EMC stations) may be used if they have been tested for quantity (72 hour pump tests) and sampled for general chemistry and metals and either meet, or can be treated to meet, the Guidelines for Canadian Drinking Water Quality (for at least the parameters in the Guidelines for Monitoring Public Drinking Water Supplies). In the case of large scale manmade disasters, such hurricanes, earthquakes, volcanic eruptions, and wars/nuclear fallout, surface waters are initially at more immediate and higher risk than groundwaters. Lack of power is also highly probable. There should be contingency plans in place to deal with this issue, e.g. Filtration media to remove radioactive parameters, standby generators with fuel that are tested and run regularly, wind or tidal power backup where available, at strategic locations throughout the province. A risk evaluation should be performed to identify the most susceptible supplies first and potential alternatives should these become unusable. For emergency water supply planning, there should also be some discussion/agreement with bottled water suppliers in Nova Scotia and other Maritime Provinces to determine how much could be available in case of an emergency. 3. What kind of info do you want or need? For planning, management, to meet water needs today without compromising ability to provide these same services in future, and for consulting purposes, the following would be an ideal 'wish list': a) Access to real time data being collected on groundwater levels, surface water levels and discharge, water quality data, climatic data, etc. It is recognized that such data may not have had QA/QC checks completed. b) Analysis and interpretation of data (such as that in a) above) in tabular and chart form, and timely reports with regular

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		updates, readily accessible and available. For example: - Streamflow: max/min/means, low flow curves, flood frequency curves; - Precipitation: long term trends, hourly data, daily averages/max/min, intensity/duration charts, etc. - Water quality data: trends, interpretation. c) More quantitative information on surface water/groundwater interaction, including hydrology/hydrogeology of wetlands. d) Refinement of parameters of the hydrologic budget, especially the groundwater component, based on aquifer properties, changes in storage £tom observation well data, baseflow analysis, etc., for different regions and watersheds in the province. e) Approvals should be readily available on the web (as in Ontario) rather than having to make requests through the FOIPOP process. If one is doing work in an area, one needs to know what other water users are in the same area/watershed, how much is being withdrawn, location, type, quantity of any water/wastewater discharges, etc. f) Mapping and associated detailed information should be readily available on locations of point and other sources of potential contamination e.g. old dump sites, existing landfills, manure storage areas, salt storage facilities, bulk petroleum product storage, and old sites for disposal fiom specific incidents (eg. Arrow and Kurdistan spill and cleanup materials), salvage yards, cemeteries, major routes for salt application, etc. g) Aquifers compromised by natural sources of contamination should be identified and mapping available. Provincial scale maps are available now for arsenic, uranium and radon. Other parameters could also be considered, such as saline formation waters, sea water intrusion, high sulfate waters, fluoride, nitrate, etc. Developmental controls should be considered in areas subject to sea level rise and flooding. h) Information and location of municipal and registered public water supply locations should be available on the web, as well as any water quality data. I) Water quality database for surface water and groundwater, giving both point source data and longer term data with all where available. This could also include the use of background water monitoring data from landfills and other sites where background groundwater and surface water data is available, to be integrated with other data (municipal, registered,

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		private without compromising the privacy of the individual) held by the province. j) Water well database: The upgrading and availability on the web of this database has been a significant step forward in availability of data. However, it suffers from the lack of ability to search by name, the reason given as Federal privacy legislation. Many of the records (-60% of the database) have no civic address, and of the remainder, an unknown percent of the addresses are not 'findable' (just community or a highway number, etc.). Even though searching by name is not always successful (name would be the person who had the well drilled, not necessarily the current owner), it is another tool which aids in finding logs for homeowners with well problems, real estate transactions, water quality surveys, contamination issues, and many other uses. The privacy legislation relates to personal information about individuals. The well data should be viewed as a piece of property or resource information, which does not move when the person moves and is thus not personal information but rather information attached to the particular location where the well is completed. Other property information in Nova Scotia can be searched by name (Property on Line). In discussions with other provinces, each one differs in the way well log data is handled. In some provinces, names are not released but the logs are attached to the property. In others, names are released, especially to stakeholders such as consultants and drilling contractors. Ontario's water well sustainability report identified the lack of ability to search by names as a serious issue/impediment. k) Cistern water quality and use: There are many coastal properties being sought and bought up in Nova Scotia. Islands and peninsulas, as well as low areas along the shore, have a potential for sea water intrusion in drilled wells and insufficient quantity or seasonal shortages in dug wells. In some areas of Nova Scotia underlain by Windsor Group bedrock and/or impermeable clay till, cisterns are often used to augment well water supplies (e.g. Elmsdale/Enfield area). One option for water supply in such areas has been cisterns. The government information booklet on cistern water supplies should be updated, and also the cistern software produced some years ago by Centre for Water Resources Studies. The latter needs at least precipitation data updated, and would benefit from other enhancements. Data on water quality from cisterns is limited, and mainly focused on inorganic chemistry. I believe that monitoring in

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		selected areas of cistern performance (water quantity, water quality including various organics, and problems encountered) would be beneficial. 1) Access to information on the web: NSE should create a subscriber list so that when new or updated material or legislation comes out, notification is sent. This is currently being done by the Environmental Assessment branch of NSE as well as many other government departments. **Some more specific issues are discussed briefly below:** 4. **Abandoned Wells and Well Decommissioning**: There are a large number of abandoned wells in Nova Scotia which have not been identified and/or properly abandoned. Since there is no requirement to report such wells, the magnitude of the problem is not definitely known, but is thought to be significant. This is a national issue, as identified in a program on CBC's National several years ago called 'Old Wells in Canada' (I have a video copy if anyone would like to borrow it for viewing). Examples of a number of abandoned well accidents have been compiled by Well Wise Resource Centre (Appendix 1). In Nova Scotia, the presence of abandoned wells may be known from driller's logs if they knew another well was present or abandoned it. Often, such wells become known more by chance during site investigations, well surveys, remediation activities, contamination issues, etc. There is no consistent mechanism of locating and dealing with abandoned wells at present. Another reality is that most homeowners are not willing to pay the cost of abandonment for something they cannot use, even though NOT doing this may compromise the integrity of other wells on their own or neighbouring properties. The Well Construction Regulations require decommissioning of wells which are not being maintained or not to be used in future. Many owners will say that the well will be used in future as a loophole to avoid the cost of decommissioning (e.g. for dry or salty or other wells). There should some regulatory mechanism to tighten up this loophole. In the USA, many states have well abandonment programs which offer homeowners technical and financial assistance. Such programs are more likely to result in more reporting and more properly decommissioned wells, and a higher rate of compliance with the intent of the Regulations.

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		The issue of abandoned wells is not confined to water wells. There are hundreds of abandoned monitoring wells and mineral exploration boreholes that are not properly abandoned or not abandoned at all. Some are overflowing, often deeper more mineralized water, which could locally impact fresh water resources. In other cases, past practice was to haul the casing and assume well collapse, which did not always occur. There needs to be much more stringent regulation and enforcement of well abandonment of ALL types of wells in order to protect water resources. This applies mainly to groundwater, but surface water impacts may also occur. Another type of well not being properly abandoned is geothermal. This geothermal well issue is discussed separately below. 5. **Geothermal/heat pump wells:** There are a large number of different types of applications. One example is aquifer thermal energy storage (ATES) where an aquifer is the thermal store and the heat transfer medium is the groundwater; wells are alternately used; to obtain and recharge water from the system, depending on operating mode. Others include op6n and closed loop systems, either horizontal or vertical. In many vertical closed loop systems in HRM, the rock or soil is the thermal store and the heat transfer medium is a heat transfer fluid in a borehole heat exchanger. The heat transfer fluid is normally a solution of water and antifreeze agents in closed loop systems to lower the freezing temperature of water. Where applicable and permitted by the regulatory authority, chemical inhibitors may be added to protect the solution's biological and chemical integrity and to prevent corrosion of piping. In terms of groundwater, applications may be heating, cooling, or both, e.g.: • Withdraw from one well and discharge to waste (surface water, storm sewer, constructed pond depression, near surface bed similar to on-site sewage, etc.) • withdraw from one well and reinject into another well (specific case of previous scenario) • 2 well system where water is withdrawn and injected in one direction during cold season of the year, then flow reverses during the hot season (Sussex Hospital in NB has this type of system) • closed loop in which the borehole is grouted it, no water is withdrawn or injected, and heat is obtained from the aquifer

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		Some of the potential environmental issues, depending on the system, may include: • volume of water to be disposed of - issue of overloading hydraulically at times; issue that injection tests not required under present legislation (pump tests = removal of water under the Well Construction Regulations); field experience has indicated that water pumped out cannot usually be reinjected at same rate, but can solve partly by overdesigning return well to make sure that it has a higher capacity than the supply well. When colder water is reinjected (in heating applications), viscosity is higher, thus aquifer will probably not accept water as readily when cold water rather than warmer water is being injected (cooling applications). In many areas of NS, low hydraulic conductivity and transrnissivity of the aquifers may be limiting for reinjection, which would necessitate either discharge to a field/dry well or to surface water, etc. • Injection causes increase in head; potential effects on groundwater flow patterns/gradients, increased pore pressur6: effects on any nearby buildings/structures, etc. • change in quality of water: main issues most likely to be the temperature change (warmer or cooler), which may cause precipitation or dissolution of certain minerals (precipitation may cause plugging o1 return wells over time), and • possibility of some increases of metals as the water passes through the distribution system (depending on materials) possibility of thermal breakthrough over period of time (I believe this happened at Sussex) • Closed loop systems: heat exchanger is buried and exchanges heat directly with the surrounding soil; exchanger filled with water and antifreeze mixture at time of installation and system is sealed. Potential for leakage not known; potential agents: ethanol, methanol, ethylene glycol, propylene glycol, salts (calcium and sodium chlorides), etc) Where a system with a return well is utilized, the performance of the return well is influenced by factors such as isolation from I he supply well and other production wells, heat pump discharge volume, specific capacity of the return well, degree of injection head, screen design (if applicable), groundwater gradient, water quality, well construction codes. There is a need to require pump testing of return wells, possible with an injection rather than a withdrawal test.

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		In summary, there are a number of different scenarios related to recovery of energy from the earth or the groundwater. Much of the information has been developed for institutiona/cornmercia1 scale rather than residential scale. There needs to be a guideline or regulation for dealing with this issue to deal with installation, well construction, testing required, contingency plans for leaks, and other related issues. As noted above, there are currently hundreds of such wells in HRM. There are many wells currently being installed or planned, both open and closed loop and other types, especially with the federal government and HRM actively encouraging and supporting earth energy, green energy, sustainable energy (there are many terms used). Such wells and the interpretation of the definition of a well need further attention ASAP in the Well Construction Regulations or elsewhere. Such wells are not adequately covered by the regulations (old or new), although there is a CSA standard. Appendix 2 contains excerpts from the CSA standard, and identifies some environmental issues, but note that CSA states that this section is not mandatory. Appendix 2 also contains a brief summary of advantages and disadvantages of ground source heat pump systems from Pennsylvania Dept. of Environmental Protection. Although construction methods may differ between geothermal and potable water wells, the geothermal wells (irrespective of type such as closed or open loop) are still penetrating potential aquifers and may cause issues such as grout migration, surface water entry, etc. Therefore such wells should have to be constructed by a certified driller/digger that should have training and knowledge in the issues to the aquifer and other wells in the area. If the driller is certified, there is some recourse if the wells create issues in a particular area. The government of British Columbia requires that certified drillers be used to construct such wells. In HRM, the majority of installations are closed loop due to the relatively low yield of the geologic formations. Such wells do not fall under the Well Construction Regulations at present. Wells for open loop systems with return wells theoretically do, but there is much confusion in the industry as to requirements. There needs to be adequate regulation and certification for wells for heat pump purposes, closed or open loop. Obviously, given the current concerns with drought and shortage of water, wasting of the return water should be avoided, i.e. not discharged to waste. Research should be conducted on whether such water could be used for drinking

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		water or other purposes. One of the concerns would be metals and any other components which could be added during contact with the distribution system. A zipped file is also attached with a few selected items from the internet on these wells. 6. Aquifer yield testing: The new Well Construction Regulations require either basic yield testing (usually 1 hour at end of drilling), or longer term testing (usually 72 hours) for groundwater withdrawal approvals. This leaves a huge gap for small industrial/ commercial/ institutional users who do not require an approval but definitely need more than the basic yield test. I believe that the requirements in the previous regulations for 72 hour testing of all non-domestic wells should be reinstated. There are too many cases where smaller users either increase use gradually or overpump and may affect other users in the area. In fractured rock, which underlies much of Nova Scotia, well response can vary dramatically with time, especially if fracture dewatering occurs. From an enforcement point of view, the new regulations make things easier, but are a disservice to potential and actual users, and there will be problems. **In addition to the above, the lack of testing in the 'gap' causes a big loss of information needed for groundwater resource evaluation and management purposes, and for assessing water use and allocation.** Even if not in the Well Construction Regulations, the 72 hour test should be required somewhere in legislation. Step tests should also be required. Some of the reasons for conducting yield tests are to determine aquifer properties, to determine maximum practical sustainable long and short term yields of a well or wellfield, and effects of these yields on water quantity and quality of the production and nearby wells; and to identify boundary conditions. Examples of additional information that can be obtained or predicted based on properly designed tests include predicted pumping levels/drawdown resulting from the sustainable yield, recommended pump settings, specific capacity, well or screen efficiency, design criteria for production wells, production well spacing, well interference drawdowns, directional anisotropy, hydrogeologic boundary conditions, whether equilibrium is reached or not, interaction with surface water (including fresh to saline water, both chemically and/or loading effects), sustainable basin yield, recommendations for observation or monitoring wells, baseline

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		geochemistry/water quality (bacterial and chemical), changes in water quality during pumping, including constraints (e.g. salt water intrusion), evolution of chemical quality with time or location in the aquifer. All this information is critical to proper management and protection of water resources. If the pump test is not of sufficient duration, critical information may be missed. I would suggest that test duration should not be based only on volume to be used, but rather on objectives of the test, type of aquifer, location of suspected boundaries, degree of accuracy necessary to establish aquifer properties, and rate of pumping. I have seen many 72 hour tests where the water level either reached equilibrium or started to draw down more rapidly in the last 24 hours of the test. Also, in fractured bedrock, which is common throughout most of the province (about 213 of mainland Nova Scotia), effects of fracture dewatering are often significant, and may be missed with too short a test. The lower yielding wells are often the most sensitive to changes in pumping rate, and the most difficult to determine a good safe yield estimate. One of the foremost texts today on pumping test analysis is Kruseman and deRidder, Analysis and Evaluation of Pumping Test Data. With respect to duration of the pumping test, they state (underlining mine): The question of how many hours to pump the well in a pump test is difficult to answer because the period of pumping depends on the type of aquifer and the degree of accuracy desired in establishing its hydraulic (characteristics. Economizing on the period of pumping is not recommended because the co: of running the pump a few extra hours is low compared with the total costs of the test. Besides, better and more reliable data are obtained if pumping continues until steady or pseudo-steady flow has been attained. At the beginning of the test, the cone of depression develops rapidly because the pumped water is initially derived from the aquifer storage immediately around the well. But as pumping continues, the cone expands and deepens more slowly because, with each additional metre of horizontal expansion, a larger volume of stored water becomes available. This apparent stabilization of the cone often leads inexperienced observers to conclude that steady state has been reached. Inaccurate measurements of the drawdowns in the piezometers - drawdowns that are becoming smaller and smaller as pumping continues - can lead to the same wrong conclusion. In reality, the cone of

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		depression will expand until the recharge of the aquifer equals the pumping rate. In some tests, steady-state or equilibrium conditions occur a few hours after the start of pumping; in others, they occur within a few days or a few weeks; yet in others, they never occur, even though pumping continues for years. It is our experience that, under average conditions, a steady state is reached in leaky aquifers after 15 to 20 hours of pumping; in a confined aquifer, it is good practice to pump for 24 hours; in an unconfined aquifer, because the cone of depression expands slowly, a longer period is required, say 3 days. As will be demonstrated ..., it is not absolutely necessary to continue pumping until a steady state has been reached, because methods are available to analyze unsteady-state data. Nevertheless, it is good practice to strive for a steady state, especially when accurate information on the aquifer characteristics is desired, say as a basis for the construction of a pumping station for domestic water supplies or other expensive works. If a steady state has been reached, simple equations can be used to analyze the data and reliable results will be obtained. Besides, the longer period of pumping required to reach steady state may reveal the presence of boundary conditions, previously unknown, or in cases of fractured formations, will reveal the specific flows that develop during the test.' In terms of cost, a rough estimate is that a 24 hour test (33% of duration of 72 hour test) will still cost more than 50% of a 72 hour test. Equipment, setup, tear down, recovery are still the same; the main difference is one person's time, and equipment rental (e.g. generator) if applicable. On the other hand, the cost savings apparently achieved may be much more costly over the long term if the shorter test does not reveal boundary conditions, change in water quality, etc. I have seen many cases over the years where expensive mistakes have been made due to factors such as fracture dewatering and sea water intrusion, which have not appeared during 24 hour pump tests. In summary, I would recommend that the previous regulation for 72 hour pump tests be reinstated. 7. **Casing length**: There should be provision in the regulations for either minimum casing length greater than 20 ft (6.1 m) and grouting for wells under certain hydrogeological conditions and uses, and/or the delineation of special management areas or special management zones in which all wells are required to have a minimum casing length

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		greater than 20 ft (such as 40 ft), with the casing grouted in place (full annular space grouting). The purpose of such requirements is to protect the public and reduce the risk of a public health issue, and also to provide a level playing field for industry. Examples of where such conditions should be applied include, but are not limited to: • Fractured bedrock at or near surface, especially if the overburden is permeable. In this setting, the risk of contamination from surface water, road salt, on-site sewage disposal, oil spills, etc. is higher, especially in denser developments on individual on-site services such as subdivisions, where there may be a higher concentration of wells and contaminant sources, and thus a higher risk for public health issues. • Where wells are used for commercial, industrial, agricultural, public, central, municipal, registered (schools, restaurants, multi-unit apartments and condo complexes, etc.), or as backup or standby for such purposes. This is consistent with the NSEL GUDI screening protocol for municipal wells, which looks for wells with at least 40 ft of casing grouted in place. • Where wells are in a high risk zone, such as near or downgradient from manure piles or spreading areas, road salt storage areas, etc.; where wells have been reconstructed or replaced due to contamination (e.g. bacteria, road salt). Areas and developments which require more stringent well construction should be identified by NSEL in conjunction with industry. Many contractors feel that there are certain subdivisions where more stringent requirements should be in place. However, unless there is a regulatory requirement in place, there is not a level playing field for industry or adequate protection of the public. In some areas, such as where a risk of sea water intrusion exists, the minimum casing length may be sufficient. 8. Grouting: Over the long term, especially in the post-Walkerton era in which we live, I believe that all wells (including private wells) should have full annular space grouting sooner rather than later. The older regulations did not have a minimum; the new regulations have 1 m (3ft). 9. An issue on a smaller scale considered to be detrimental to aquifer management and protection is homeowners

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		being able to construct their own wells or even doing work in their own wells. Although the older Well Construction Regulations allowed an owner to construct their own well, it was not really obvious. The new regulation< make it clear, but also emphasize owners constructing their own well and are thus an c pen invitation for misuse, especially by developers. Although it is clearly spelled out that people must follow the regulations, in practical reality it is almost impossible to ensure that the general public know this, and to enforce it. If an advertising campaign is prepared to inform the public, it brings the issue more to the forefront and there will be more people attempting to construct their own wells than there are now. Justifications have been sent to NSEL in the past by industry for requiring anyone doing work in a well to have a Certificate of Qualification. Accessing and/or constructing a well means accessing the aquifer into which that well and others nearby are constructed, and thus accessing a provincial resource. In the past, some (very few) people constructed their own wells. These were usually hand dug wells which were rocked to the surface. Almost all these wells had bacterial counts and allowed the entry of surface water into the well and aquifer, and many have old wooden covers which later deteriorated and allowed debris, small animals, and occasionally people to fall in. Dug wells are considered as confined spaces, and for anyone to enter them for sealing, repair, etc., they should have confined space training. The requirements should be verified with the Labour people in NSEL so that such requirements can be made clear to individuals constructing, modifying, or working in their own well. Homeowners for the most part have no training in health & safety issues, little knowledge about well construction, geology, hydrogeology, and water quality. This is a definite step backwards in construction and management of wells in Nova Scotia, and a slap in the face to water well industry contractors who work hard to keep up to date and are now required to show proof of continuing education to maintain their certification (also required in the on-site sewage industry). There is a concern with property transactions when the homeowner has constructed the well, especially if there are any issues requiring well repair or reconstruction. NSEL can require a certified person to fix problems within a certain time frame, but again, this would be difficult to enforce for a private homeowner. Personally, I would not want to purchase a property where the well had been constructed by an uncertified homeowner.

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		In addition, there should be a requirement that anyone opening a well for any reason or working within a well (other than their own) should have a certificate of qualification as a pump installer. The justification for this has been sent to NSEL previously by industry. There are many cases where real estate agents, property managers, well-meaning neighbours, etc. are entering wells for various purposes with no knowledge of proper procedures, correct disinfection agents, potential problems, or the Environment Act and regulations. This can cause problems to a particular well, but it must also be remembered that such people (this includes persons accessing their own well also) are accessing a provincial resource, and accessing a potable water supply which can impact the consumer's health and well-being. The new Well Construction Regulations allow anyone to enter a well basically, with no qualifications. In summary, in this day and age, especially in the post-Walkerton era, it is unacceptable to have uncertified, unqualified persons constructing wells (or even accessing them for pump installation and repair). It poses a health and safety risk to the individual constructing the well, a risk to the aquifer, a risk to the user, etc. Note that homeowners are not allowed to install their own on-site sewage disposal systems, which represents a serious inconsistency in government regulation of and attitude towards on-site services. 10. **Source of financing for protection of water resources**: This is a difficult question. Although some could be through increased taxes, this avenue should be minimized as much as possible since people are heavily taxed now, and facing higher costs of power and fuel. One avenue may be to increase user fees for water use, depending on the volume being withdrawn. Federal/provincial, public/private and other types of partnerships could also be considered. It is most likely that a number of sources will be needed. **APPENDIX 1** The following 2 articles are from the 'Click to read article' links in the first 2 examples of Abandoned Well Accidents from Well Wise Resource Centre (following this page): **1. Cayuga, Ontario, Canada** Girl, 8, survives fall down Cayuga well Feb 19, 2008 04:30 AM

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		CAYUGA, Ont. A near tragedy on the inaugural Family Day had a happy ending yesterday after an 8-year-old girl survived an 18-metre plunge down a well. Victoria Spidel spent nearly an hour partially submerged in the frigid water, hanging onto a pipe, before she was rescued by a Haldimand County firefighter. Police say Victoria and her 12-year-old sister were playing on a rural property just west of Cayuga, south of Hamilton, when she jumped on top of the concrete lid covering the well. But the lid crumbled to pieces, pitching her into the well. "The fire department did an amazing rescue," said OPP Const. Paula Wright. "They lowered a firefighter in a wetsuit down the well using a ladder as a counter lever. The firefighter was able to grab her and both police and fire (officials) pulled them to ground level." The girl was treated for a broken arm and hypothermia. Jackson Hayes and The Canadian Press **2. Hamilton County, Ontario; Canada** Man Runs From Deputy, Falls Into Well The Hamilton County Sheriffs office said a man running from a deputy ran the wrong way. He fell into a well during the incident early Saturday morning. Deputy Gene Myers stopped a suspicious person in the 14000 block of Mt. Tabor Road at approximately 12:29 a.m. During the stop, the suspect, Robert Hickey Jr., became aggressive and a struggle took place between him and Deputy Myers. Hickey broke away from the officer and ran into a wooded area, where he fell into the well. The Sale Creek Volunteer Fire Department and Hamilton County EMS responded to the scene. Mr. Hickey was removed from the well by the Sale Creek Volunteer Fire Department. He was then transported to Erlanger to be checked for any injuries. The suspect was released from the hospital and transported to the Hamilton County Jail charged with assault on an officer, failure to stop, halt and frisk and evading arrest. posted October 20,2007 - Chatanoogan.com

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		Note: Full Appendix 1 and 2 available upon request.
P	On Site Sewage Disposal System Installer	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Water and water resources have always been important and deserve respect and protection. I feel, in general at least in the rural areas, people are aware of the importance of our water resources. My biggest concern is the fact that too many rules and regulations imposed on us by government are poorly thought out and serve only to create jobs in the civil service and to protect the jobs of the people in the various government departments as well as sucking as many dollars in taxes out of us as they possibly can. *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* Move away from our concentration of people and business in small areas of the province. Every problem being faced now is a result of our concentration in central areas. Encouraging people to stay on the family farms and in the rural areas where dwellings are not so densely located. By doing this, the land and our resources are not being over used and have a better chance of recovering naturally. *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* My intention is to continue as I have been doing and have been taught by my ancestors. We have never wasted water in our home and will continue this practice. We own two wood-lots which are being farmed by using only selective cutting practices as I was taught by my father and grandfather who were the previous owners of the woodlots *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* This money should come from the existing department budgets. Personnel are already being paid in the department of environment, fisheries, and natural resources. Rearrange their duties so that they are actually doing something worthwhile instead of trying to create problems to justify the existence of their jobs. This does not need to be established as a cash cow for the provincial treasury because as in the past, it will not yield positive results.

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		15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet. As I have stated on this report, the government consists of a bloated bureaucracy, many members of which accomplish very little or nothing at all that is a positive result to any of our problems. Government policy of bleeding the tax payers of Nova Scotia to support such a regime is causing or contributing to the problems that are supposed to be addressed here in. As one example, previous to the spring of 2007, a faulty septic tank could be replaced by a certified septic installer without a permit from Dept. of Environment because we were preventing a potential pollution problem. Government policy changed this. Now the homeowner is required to buy a permit and hire a QP to tell them they can replace their faulty tank at an additional cost of hundreds of dollars. As a result, many of these faulty tanks are not being replaced as before because people cannot afford the extra cost. If pollution occurs, it is because of government policy. As everyone knows, healthy forests are essential for a safe and healthy water supply. Another example of government policy causing problems in this are is the clear-cutting of forests by the larger forestry companies who are often financed by various government programs. This policy causes over cutting of our forests and at the same time penalizes the private wood-lot owner who practiced selective cutting because wood markets are over supplied and the small wood0lot owner has little or no market for their wood products. Anyone who has doubts about what I have written, please contact me and I will give them visual proof. In conclusion, if government wants positive results from this initiative, they have to stop taking from small and giving to the big as has been done in the past. Don't pass regulations that only serve to generate tax dollars. And use existing resources to achieve the best possible results. If our MLA's travel in their districts talk with ordinary people and take these ideas back to the legislature, I feel positive results can be achieved.
P	NA – School for Resource and Environmental Studies, Dalhousie University	I want to concentrate my remarks on two areas. First, we need to apply an integrated water and land management approach, and to focus on what I consider to be the non-negotiable priority of maintaining life-supporting systems, such as water systems. Second, we need to do this by moving towards a hybrid approach between centralized, government-led management and an engaged community/stakeholder, participatory approach, wherein governments, communities, citizens and stakeholders are all part of the entire decision-making process. Given the imperative, uncertainties, complexities and risks of maintaining life-support systems, and the social values entailed, it is not appropriate or fair to

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		leave it to a relatively small group of experts or decision-makers. -- Mark Parent, recognizes the need for a participatory approach in his introduction to the document, **Towards a Water Resource Management Strategy for Nova Scotia** (p. 3). He states: Although the department is taking the lead, the work calls for a **collaborative** effort. Water is an important concern... we will **be working together** .... [It] will bring forward some complex issues .... We look forward **to working cooperatively**.... -- The four key issues discussed in the document hint at life-supporting aspects of water and the need to prioritize these. The first are related to: **1) Human Health** – wherein "safe, secure **water for consumption** is mentioned. I would like to see the priority firmly on **drinking water and water needed to produce food**, as opposed to, for example, for recreation; **2) Economic Prosperity** refers to the sustainable and **prudent use** of water resources. I would suggest **we need to prioritize basic needs over luxury wants as the most prudent**; and **3) In Ecosystem Integrity –reference is made to** conserving and protecting ecosystems and biodiversity: these constitute our ecological life-support system. Arguably, each of these is also of critical importance for the fourth key issue: Emergency and Hazards Preparedness. -- The document goes on to discuss **valuing** and **conserving** water, and moving towards a **shared responsibility** for water. These are paramount. First, w.r.t. values: engineering technology and biophysical science-based approaches alone are not sufficient for sustaining water resources. Rather, many of the most significant challenges and opportunities are in the socio-political-economic realm. Many of these require being clear about our values and defining common values, such as for potable water and life-supporting ecological and agricultural systems. Second, conserving water: we can not simply manage so as to **provide for** current and growing demands for water. We need to **reduce** the demands by focusing on conservation. Third, shared responsibility: we all need to be involved in the problem definition, the decision making and implementation,

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		as it is our shared future that is at stake. -- The document asks several questions, each of which are relevant to these priorities of life-supporting systems and life-requisites such as clean water. For example, it asks: **How can development occur in a way that does not put strain on the surrounding natural environment?** -- First, we need to ensure development does not affect headwaters of watersheds, wetlands, and other key water-related systems. • Prohibit mining and other developments, such as the gypsum quarry expansion on the Avondale Peninsula, which obliterate key hydrologic features. This proposed quarry is situated on the headwaters for all of the watersheds in this peninsular agricultural community. • Restrict or prohibit potentially polluting activities that degrade or destroy water quality. For example, prohibit gold, uranium and other mining that could contaminate water with toxic substances, such as cyanide, and acid rain drainage. -- Mining is of particular concern for water quality: legislative reform is needed to prioritize water protection over mining, which produces primarily luxury wants or wealth to a few, and jeopardizes common life-requisite resources. -- We need to actively protect waterways, waterbodies, wetlands and headwaters: • 12% of NS` lands for protection is, however, nowhere near enough; rather, more like 65% is required to accommodate critical ecological structures and processes. -- Buffer zones along waterways and wetlands are also necessary. Indeed riparian zones that have already been cleared should be restored. -- Another question asks, **How can we ensure that the water needs of the economy are met today without compromising the ability to provide those in the future?** -- First, we need to make sure that the needs of the economy are, indeed “needs”, rather than mere “wants”. Water is finite and necessary to sustaining life. Many economic pursuits are counter to sustainability and are not linked to providing the basic necessities of life. It is time to make the distinction, and prioritize uses for water and land that focus

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		on provisioning society with basic necessities. -- Water conservation could be encouraged, mandated, and in some cases, legislated: • Use of water is increasing. The withdrawal of surface water from some Annapolis Valley rivers exceeds the capacity of the watershed to supply it, resulting in a net loss. • Groundwater drilling depths are increasing, now with 150+ feet required now in some areas of Hants County, where it used to be only about 80-100 feet. • Priority access to water could be for drinking and for agricultural irrigation for food security, as these are basic life requisites. • We could prohibit the use of potable/drinkable water for all functions for which grey water would suffice: flushing toilets, washing cars, watering lawns, etc. • Adopt full cost accounting: o Water should cost significantly more than it does. It is more precious than gold or oil. Bulk/large volume users should not get a reduced rate. o While full cost accounting will help to conserve water, reducing the demand, it will also help to finance the water resources management strategy. o The money generated could be used to help build local capacity for integrated water resources management, to protect water source areas, to restore and enhance degraded water systems, such as riparian buffers, and to implement more-efficient and cleaner technologies. -- The document importantly goes on to state: **Government is only one part of the equation in managing water resources. Water is a shared resource that is affected by each and every one of us. We all must accept responsibility for the water we use and for making decisions about how we use it and protect it for future generations.** -- This is true for us both as individuals and as societies. -- However, today's is a challenging context for societal responses

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		• responsibility for water management has been devolved to local communities (municipalities) • without corresponding investments in financial and human capacity • Technical expertise is generally increasing. However, this is not sufficient to reduce conflict, engage citizens in processes that inform policy design, increase regulatory buy-in, achieve effective governance or enhance socio-economic sustainability • Thus, greater understanding and integration of human values are needed, as is • increased local capacity for sustainable integrated water and land-use management 🗁 Transformational, participatory approach is important. • Community engagement is required in all stages of decision-making, from problem definition to decision making, to implementation, to monitoring. • Decisions should be values and vision based. • Efforts should focus on building networks, • On cross-sector coordination of policies and activities, and • On cooperation, accommodation and compromise, and • Recognize the unavoidable nature of conflict and its important role of in knowledge creation. 🗁 The processes and structures necessary to increase capacity include • An enabling/supportive legislative environment at Federal, Provincial, Municipal levels, • Increased communication, collaboration, participation among governments, including First Nations, and stakeholders and citizens • Adequate information, and human and financial resources at all levels, including local • Multi-stakeholder involvement at all stages. 🗁 A key component of water sustainability is legislative reform. • We should move to prioritize water protection over mining and other non-essential human developments.

Code	Name	Comments
		• Integration/coordination of multiple land and water use policies are critical to reduce conflicting and overlapping mandates and policies • roles and responsibilities of all government departments, community groups, and stakeholders need to be clarify and mandated, and • Enforcement of existing regulations should be increased. • Federal and Provincial government leadership is crucial, to provide a broader, integrating and coordinating framework. Finally, we need to remember to focus on the priorities/non-negotiables. • Specifically, we should maintain and restore water-related ecological life-support processes and structures; • Particularly for o drinking water o water-related agricultural capacities and economies (food security), and o aquatic and other ecological communities
P	as a retired water educator and writer about water	*11. Water is making headlines. On the news, in schools, and everywhere around us people are talking about water. What are your biggest concerns when it comes to water in Nova Scotia?* Protect what we have, understand future needs and uses. - Un-monitored water extraction for bottling for export - Lack of accountability, coordination of all government departments who have jurisdiction over water - Dvelopment with environmental assessments - Municipal governments with too much power and too little sense - Loss of wetlands - Loss of access to water and shoreline - Stewardship, conservation culture. - Lack of policy and planning at the watershed level and especially no control over municipal government- lack of

Code	Name	Comments
		planning *12. Nova Scotia's economy relies on water: to produce food, to play outside, to provide habitat, to produce energy, to manufacture products, to remove sewage, to extract resources, to drink. How do you think we can ensure that the water needs of the economy are met today without compromising the ability to provide those same services in the future?* - Educate children combined with recreation and active living - Put an immediate stop to extraction for water bottling until better monitored and understood - Encourage drinking municipal tap water- ensure access to coastlines - Protect wetlands- educate the public on conservation, xeriscaping, stewardship, water issues - Put enough money to get the job done - Plan how climate change will impact water resources- integrated resource management models with water at the centre - Learn from other jurisdictions who are already ahead of NS *13. Everyone (individuals, communities, businesses) can help to conserve and protect water, but this means recognizing that water is not an unlimited resource in Nova Scotia. What are you willing to do to conserve and protect Nova Scotia's water?* - Use enviro friendly cleaning products - Use less water - Protect water on my property - Educate others - Xeriscaping in my garden ** VISION – every Nova Scotia has access to clean water and has developed a stewardship, conservation ethic *14. We need to protect our water resources, and this costs money. Once we have a water resources management strategy in place, we will need to finance it. Where should this money come from? How do you think the money should be distributed and used? Why?* - Tremendous money could be saved by better government coordination - Users who extract large amounts of water for profit should be taxed royally - Big water users need to pay more, especially if it's business-related *15. Use the space below for further comments and ideas you may have or to answer any of the other questions posed throughout the booklet.* All planning re water needs to take climate change into account – water shortages could become a fact of life. Planning

Code	Name	Comments
		for an uncertain future is key. - Communities need to plan together at the watershed level, respecting differing values and future needs. This needs to include a mediation process so when there are conflicts. - This needs to be supported by committed, coordinated governments at all levels. Make laws and regulations easier to enforce and monitored better. Safeguarding ecosystems & aquifers is a priority. Water is a right of all. Profiteering of water should be strictly regulated. Public needs education and awareness of stewardship and conservation action steps to protect and steward the water resource. *16. I would like the following question answered.* How much water is being extracted from Sugarloaf in Antigonish? How is that being monitored? How many extraction permits for water bottling are in the province? What other kinds of extraction permits are given?
P	Tyagrissen Consulting Limited	**A copy of "Analysis of Agricultural Water Supply and Management Issues in Nova Scotia," is available upon request.**