

Section 3

WATER

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WATER

3.1 Overview and Recommendations



Source: Bruce Litteljohn

3.1.1 Throughout Canada and around the world, the quality and availability of water are central to our environment, our livelihoods, and our quality of life. Why should Canadians be concerned about water? There are plenty of reasons:

- Less than half of Canada's fresh water is available for use. Sixty percent of our fresh water flows north toward the Arctic, while 90 percent of us live in a narrow band along Canada's southern border.
- Industry, agriculture, and people use a lot of water, and their activities can seriously affect water quality. Each day, Canadians consume twice as much water per person as the average European.
- Many substances find their way into the waters of the basin and then into our food and water. Some of these become more concentrated and toxic over time.
- Regional population growth, climate change, and large-scale removals of water for export could jeopardize the availability of renewable fresh water for future generations.

These issues are important for all Canadians, especially those living in the world's largest freshwater basin—the Great Lakes and St. Lawrence River basin.

3.1.2 The quality of drinking water in the basin is one of the chief environmental concerns of people living there. Chemicals, phosphorous, and other pollutants have been contaminating the Great Lakes and the St. Lawrence River since the early 1900s. Some are released directly into watercourses from industrial and municipal sources; some are from non-point sources (no single point of entry) such as farmland, and some are from faraway sources, deposited through the air. Many of these contaminants can accumulate in sediments and later can become suspended again in the water.

3.1.3 Fresh water is becoming one of the world's most sought-after resources. Although the Great Lakes have an abundant supply of fresh water, it is not an infinite supply. In the past, and today, there have been a variety of proposals to remove or divert water from the basin. The demand for water is also growing in the basin itself. The availability and the management of fresh water are becoming one of the greatest environmental, social, and political challenges of the 21st century.

3.1.4 The federal government needs a variety of scientific information to carry out its responsibilities. This includes information on water quality—such as the presence of and trends in contaminants in open waters and drinking water. It also includes information on water quantity—such as surface flows, water levels, and groundwater.

The federal role and mandate

3.1.5 At least nine pieces of federal legislation establish a host of responsibilities for the federal management of fresh water. A number of agreements, policies, and programs further articulate those responsibilities.

3.1.6 Six federal departments play an active role in the government's commitment to a safe and secure water supply in the basin. Environment Canada, as the lead, is the most active. Other departments are Fisheries and Oceans, Health Canada, Natural Resources Canada, Agriculture and Agri-Food Canada, and Foreign Affairs and International Trade. These departments have a large collective commitment to the basin.

3.1.7 Under the *Canada Water Act*, the Minister of the Environment can enter agreements with provincial governments to restore and protect water bodies of national interest. The Act also authorizes the Minister to undertake research and collect data to develop comprehensive management plans for nationally significant waters, in co-operation with provinces that have an interest in those waters. If agreement cannot be reached with the provinces, the Act requires the Minister to develop and carry out those plans without them for federal, interjurisdictional, and international or boundary waters.

3.1.8 Provisions of the *Fisheries Act* prohibit the discharge of harmful substances into waters used by fish. The *Canadian Environmental Protection Act*, administered by Environment Canada and Health Canada, mandates the federal government to protect the environment and human health from the use and release of toxic substances, pollutants, and wastes. Health Canada is responsible for protecting Canadians against risks to health and the spread of disease by water, among other things. It plays a key role in developing guidelines for the quality of drinking water.

3.1.9 International treaties such as the Great Lakes Water Quality Agreement between Canada and the U.S. establish specific obligations, as do the federal government's agreements with Quebec and Ontario and its own Great Lakes and St. Lawrence River ecosystem initiatives.

3.1.10 The federal government adopted the Federal Water Policy in 1987. Its objective is to encourage the efficient and equitable use of fresh water in a way that can meet the social, economic, and environmental needs of present and future generations. The policy establishes goals and strategies for water management, and a series of commitments. A commitment to realistic water pricing—charging the real value of the resource and its delivery—has been a long-standing feature of the federal position.

What we audited

3.1.11 We looked at how well the federal government has met its commitments and applied good management practices and whether it has established good governance structures. Specifically, we looked at federal efforts to reduce water contamination by industrial and municipal effluents and to clean up contaminated sediment (Subsection 3.2), particularly in 17 areas of concern around the Great Lakes (Subsection 3.3).

3.1.12 We examined the federal government's role in safeguarding drinking water (Subsection 3.4) and its performance in monitoring surface water and

the quantity of groundwater in aquifers. We also looked at what it is doing to curb large-scale withdrawals of water for export and at its activities to encourage more efficient use of water by Canadians (Subsection 3.5).

3.1.13 We then assessed the federal government's performance at a broader level. How has it planned for its activities in the watersheds of the basin (Subsection 3.6)? How does it set priorities for fresh water and how has it carried out its 1987 Federal Water Policy (Subsection 3.7)?

What we found

3.1.14 Overall. The federal government and its partners have been active in the basin for several decades, with some positive results. Federal and provincial regulations to curb toxic emissions from industry, investments in sewage treatment plants, and actions to prevent the bulk removal of water from the basin are all examples of actions that have made a difference. But the job is far from complete: recent trends show that some aspects of water quality in the basin may be deteriorating.

3.1.15 With this in mind, our overarching concern is the ambiguity of federal commitments. We often saw federal departments doing things without having clearly articulated what they wanted to achieve. Cleaning contaminated sediment, getting areas of concern delisted, promoting realistic water pricing, and protecting public health by ensuring that people know when it may not be safe to drink the water or eat the fish—all are areas where the federal commitment is unclear. Indeed, federal departments often define their role as supporting the priorities of others rather than their own.

3.1.16 The government does not have some of the basic information it needs to develop priorities and action plans. For example, it has no overall picture of the many contaminants in the basin or the contribution of groundwater to the basin. Consequently, it is involved in many remedial actions with no way to determine which are the most important and what they will contribute.

3.1.17 Contaminants. Ongoing federal commitment and action over the past 30 years to ensure that industry reduces its contamination of the basin have helped to improve water quality throughout the basin.

3.1.18 Effluents from municipalities, however, remain a serious source of contamination. Municipal systems that are not properly designed to treat the range of substances found in effluents allow them to flow into our waters without adequate treatment. After 30 years of improvements, 40 percent of municipal effluents of the cities we considered continue to receive only primary treatment. This progress may not be sufficient to realize the federal government's objectives.

3.1.19 The federal government's approach to effluents from municipal treatment plants and outfalls has been strikingly different from its approach to industrial effluents. It has not used its regulatory powers, but instead has focussed on providing financial support to municipalities. Environment Canada has been working with the provinces recently to develop a national strategy on municipal wastewater effluents.

3.1.20 Contaminated sediment. Contaminated sediment is the legacy of years of government inaction while industrial plants and municipalities released high volumes of untreated or poorly treated effluents directly into the basin's lakes, rivers, and streams. It has been present in all areas of concern and at dozens of sites along the St. Lawrence River. The federal government has conducted studies of contaminated sediment and has assisted in the cleanup of some sites. However, it has neither clear commitments nor a long-term game plan for remediating contaminated sediments. Many sites still await action.

3.1.21 Areas of concern. In 1985, the International Joint Commission and the Canadian and U.S. federal governments, the Ontario government, and some state governments in the U.S. identified 42 geographic areas of concern along the shores of the Great Lakes; another was added to the list in 1991. These were areas that were severely degraded. Twelve were in Ontario, and five others along connecting rivers were shared by Canada and the U.S. The federal government has been active in setting up structures for action in areas of concern. It has generally managed its cleanup fund well in assisting projects in areas of concern, although a clearer rationale is needed for financing actions in the future.

3.1.22 Of the 17 areas of concern identified in Canada in 1985, 16 are still on the list. The federal government has not decided what it wants most to accomplish in areas of concern. It is not clear how or when it plans to restore the remaining areas of concern and see them delisted. The federal government needs to provide greater leadership and support—setting priorities, clearly linking proposed actions to criteria for delisting, and brokering co-ordinated action by other governments and organizations.

3.1.23 Drinking water. Generally, the state of Canada's drinking water is considered good, but recent events have shaken the public's confidence. Drinking water is primarily a provincial responsibility. Since 1968, Health Canada has played a key role in the development of drinking water quality guidelines to protect Canadians' health. But it does not know the quality of drinking water across the country or whether the provinces are applying the guidelines.

3.1.24 Monitoring and planning for water quality. Environment Canada is meeting its basic obligations to monitor water for the presence of contaminants listed in the Great Lakes Water Quality Agreement. The federal government's understanding of changes in water quality, however, is based on a limited number of substances that are known to be harmful to human health. Many substances are not monitored at all.

3.1.25 The federal government, with its partners, needs to do much more to understand the risks to water quality in the Great Lakes and the St. Lawrence River and to focus its efforts more effectively. The presence of critical contaminants is generally known, but not always their sources. Almost 14 years after the federal commitment to develop lakewide management plans, most of them are still in their early stages of development. The plans that do exist for the basin tend to be weak. It is not evident when the plans

will be completed or whether the government will use them for strategic direction of its own and others' actions to restore the Great Lakes.

3.1.26 Bulk water removal. The bulk export or diversion of water is a major concern of Canadians. The federal government has taken steps to carry out a strategy on bulk removals of water, in collaboration with the provinces. But we note that the government took more than a decade to take action after its 1987 policy commitment. The strategy was not yet complete by the end of our audit, and it is not clear whether it will be enough to prevent large-scale exports of Canada's fresh water.

3.1.27 Groundwater. Groundwater aquifers are the prime source of drinking water for 28 percent of Ontario and Quebec residents. In 1987, noting that knowledge of groundwater in the basin was incomplete, the federal government committed to improving its understanding of groundwater aquifers. However, it has gained little understanding of groundwater in the basin since then. Its knowledge has remained fragmented and incomplete.

3.1.28 The Federal Water Policy. In 1987 the federal government released its water policy. But the policy was set adrift because funds and specific departmental responsibilities were not allocated. It became unclear which of the five strategies or 25 policy statements and related activities in the water policy were still priorities. Through the years, the government has lacked a consistent and clear strategy for updating the Federal Water Policy. The timetable for updating the policy and the associated departmental roles and responsibilities, whether as part of a national strategy or not, is unclear.

3.1.29 Its 1987 Federal Water Policy committed the federal government to promoting and applying realistic pricing and user pay principles. The federal government has not effectively implemented its policy to reduce domestic consumption of water through demand management and realistic pricing. The design of its funding programs does not specifically encourage water pricing as stated in its water policy.

What we recommend

3.1.30 Our findings show that the federal government needs to decide its priorities for fresh water and clarify its commitments to achieving them. Working with its partners, it needs to develop realistic, scheduled plans with clear accountability; stick to its plans; and provide open and transparent information on results.

3.1.31 Environment Canada should reassess its role and clearly articulate its responsibilities and commitments for freshwater management in the Great Lakes and St. Lawrence River basin, and clarify the commitments expected from other federal departments, especially but not limited to the following:

- completing the actions needed for delisting areas of concern;
- remediating contaminated sediment in areas of concern and elsewhere in the basin where it is a significant environmental concern;
- developing lakewide management plans for the Great Lakes; and
- promoting the concept of "a fair value for water" as stated in the Federal Water Policy.

3.1.32 Environment Canada, enlisting the participation of others where possible, should develop clear action plans to carry out its commitments for management of fresh water. It should develop initiatives to implement these plans, especially for the following:

- remediating contaminated sediment, with the provinces and industry, where possible;
- promoting realistic water pricing, managing water demand, and treating municipal sewage (this could include support from funding programs administered by the Treasury Board Secretariat or other federal departments); and
- improving water quality in the Great Lakes and St. Lawrence River basin through lakewide management plans or other comprehensive management plans, as specified in the *Canada Water Act*.

3.1.33 The federal government should develop the information needed to manage fresh water, as follows:

- Natural Resources Canada, together with Environment Canada, should develop enough knowledge of groundwater in the basin to understand its contribution to the availability of surface water—in particular, knowledge of key aquifers, their geology, potential yields, and current withdrawals.
- Environment Canada should develop enough information on the key contaminants in the Great Lakes and St. Lawrence River basin, and on their sources to set priorities for action.

3.1.34 Health Canada should clearly articulate its responsibility for protecting human health in the basin from potential contaminants in drinking water. As part of this it should undertake, in conjunction with the Federal–Provincial–Territorial Subcommittee on Drinking Water if possible, a review of the status of drinking water quality, including its adherence to the guidelines for drinking water quality; the public's access to information on drinking water quality; and the need for nationally enforceable drinking water standards.

(See Summary for departmental responses.)

3.2 Contaminants: Out of the Pipe and Into Our Water

The issue

3.2.1 Chemicals, phosphorous, and other pollutants have been contaminating the Great Lakes and St. Lawrence River basin since the early 1900s. Many of these contaminants are released directly into our watercourses. Industrial effluents and municipal sewage, discharged into the Great Lakes and the St. Lawrence River, accumulate and persist throughout the basin. They also contaminate nearby sediment that can later become suspended again in the water.



Industrial effluents and municipal sewage accumulate and persist throughout the basin.

Source: U.S. Environmental Protection Agency

The federal role

3.2.2 The federal government shares responsibility for restoring and protecting the basin's ecosystem, including human health. For more than 20 years it has focussed on reducing pollution in the basin, and it has committed to help clean up industrial and municipal effluents and contaminated sediment.

3.2.3 Provincial governments play a major role, given their responsibility for regulating industry. They are also responsible for setting municipal effluent guidelines and standards. Ontario and Quebec have made it a priority to reduce point-source pollutants (those with a single, known point of discharge). Responsibility for regulating some industries is shared between the federal and provincial governments.

Our audit questions

3.2.4 What are the federal commitments to reducing point-source pollutants and the sediment these pollutants contaminate? What has the government done? How effective has it been?

The story

Federal actions have helped to reduce industrial effluents

3.2.5 The *Canadian Environmental Protection Act* and the *Fisheries Act* give the federal government the power to require reductions in releases of toxic or harmful substances. The Great Lakes Water Quality Agreement, the Great Lakes 2000 program, and the Canada–Ontario Agreement Respecting the Great Lakes Basin Ecosystem committed the federal government to addressing the quality of water in the Great Lakes, particularly in 17 areas of concern in Ontario. In 14 of these areas, a main cause of water contamination is industrial discharges. In Quebec, the St. Lawrence Vision

2000 program committed the federal and provincial governments to work together to reduce industrial effluents.

3.2.6 We examined the progress reported by 54 industrial facilities identified as priorities in remedial action plans for the 17 areas of concern in Ontario. We also examined reports by St. Lawrence Vision 2000 on the progress of 86 industrial facilities in Quebec that the program had identified as priorities in its first two phases. We examined company information from Great Lakes 2000 and St. Lawrence Vision 2000, the data reported to the federal government under the National Pollutant Release Inventory, and changes in water quality identified by Environment Canada.

3.2.7 The federal and provincial governments regulate many toxic substances in the main industrial sectors along the basin. In the early 1990s, for example, both levels of government introduced regulations in the pulp and paper industry to control emissions. The industry has reduced its releases into water of dioxins and furans, two highly toxic substances, by over 90 percent. Other industries have also reduced their emissions of substances listed as toxic by the *Canadian Environmental Protection Act* and by regulations of Ontario and Quebec. Large industrial facilities generally treat the chemicals in their wastewater before it is released into watercourses. The federal government monitors the presence of dozens of these industrial pollutants in the Great Lakes and the St. Lawrence River and has seen a consistent reduction in their concentrations throughout the basin.

3.2.8 Industry has made a significant investment in cleaner plants throughout the basin. Fifty out of 140 companies in our analysis have reported investing a total of at least \$1.5 billion over the past decade in more environmentally friendly plants and industrial processes, partly to comply with more stringent regulations (see case study, Improving environmental performance). The federal government, under the Great Lakes 2000 Cleanup Fund, has invested about \$700,000 in Ontario's industrial sector (excluding contaminated sediment); its Community Interaction program in Quebec has not funded any industrial improvement projects. The federal government has introduced, and increasingly relies on, voluntary measures and sector agreements to reduce toxic emissions. Previous audits by this Office and by Environment Canada have raised concerns about the effectiveness of such measures and agreements.

3.2.9 Ongoing federal commitment and action over the past 30 years to ensure that industry reduces its contamination of the basin have helped to improve water quality throughout the basin.

Treating municipal sewage—still a long way to go

3.2.10 Significant amounts of contaminants come from municipal sewage treatment plants. Treating sewage plant effluents is primarily the responsibility of provincial governments and their municipalities.

3.2.11 On average, almost seven and a half million cubic metres of wastewater from 60 of the largest municipalities in Quebec and Ontario flow directly into the basin every day. This wastewater includes both sewage and waste from

Did you know?

- Amount industry has spent to improve environmental performance in the basin: **at least \$1.5 billion**
- Percentage reduction of dioxin in Lake Superior from 1990 to 1999: **95**
- Percentage reduction of 1,2,4 trichlorobenzene in the St. Lawrence River from 1991 to 1995: **73**
- Percentage reduction of phenanthrene in Lake Ontario from 1988 to 1993: **between 92 and 98**

Improving environmental performance

Regulations affect the pulp and paper mill industry

Bowater Inc. (formerly Avenor Inc.) operates a pulp and paper mill in Thunder Bay, Ontario. The mill discharges effluents into the Kaministiquia River directly upstream of the Westford turning basin. Until 1990, Bowater was one of the key sources of water pollution in the Thunder Bay Area of Concern.

Pulp and paper regulations introduced by the federal and Ontario governments in the early 1990s were a key reason for the mill's action on surface water emissions. The company reports that it spent over \$69 million in the past 10 years to make a number of improvements at the mill. These included the following:

1990—Construction of a secondary treatment plant (phase I) for the treatment of kraft mill effluent.

1994—Conversion of kraft mill to elemental chlorine-free bleaching.

1995—Construction of a secondary treatment plant (phase II).

1998—ISO 14001 certification of its environmental management system.

These changes considerably improved the mill's discharges to surface water over the past 10 years. For example, in 1990 it discharged about nine parts per quadrillion of dioxins and seven parts per quadrillion of furans a day. Discharges of both are now below detectable levels, representing a reduction of over 90 percent each.

thousands of small industrial facilities that use city treatment facilities. In some cases, the water flows directly into the waterways without treatment. Even if it is treated, not all sewage treatment plants are equally effective. Generally, plants with only primary treatment leave biological and chemical impurities that flow into the watercourse. Secondary treatment will generally remove the biological impurities but will do little to the chemicals that flow into the sewer system. Tertiary treatment tends to remove most types of impurities and can return the water to close to its original condition.

3.2.12 Our audit examined the reports of municipal treatment plants of 40 cities in Ontario and 20 in Quebec. The cities have populations over 48,000 and sewage effluents that drain directly or indirectly into the Great Lakes or the St. Lawrence River. We looked at federal contributions to improve municipal infrastructure in these cities.

3.2.13 The federal Great Lakes 2000 Cleanup Fund and grants from the Canada Infrastructure Works Program have contributed to improving sewage treatment. For example, in areas of concern the Cleanup Fund has contributed more than \$6.5 million toward studies and pilot projects to optimize the efficiency of sewage treatment plants and minimize the environmental impacts of their effluents.

3.2.14 The federal, provincial, and municipal governments shared the costs of the Canada Infrastructure Works Program. The program was used for initiatives such as improving roads, building community centres, and improving municipal sewage treatment plants. It did not have criteria for specific environmental objectives such as improving sewage treatment plants to meet tertiary treatment standards. Through this program, the federal

Did you know?**Ontario**

- Amount of sewage, in cubic metres, generated each day by 40 cities in the basin with populations larger than 48,000: **4.2 million**
- Amount the federal government contributed in infrastructure grants to sewage projects in 23 cities: **over \$31 million**
- Amount provincial and municipal governments contributed in infrastructure grants to the same projects: **over \$106 million**
- Percentage of sewage at each treatment level in 1999–2000:
 - **primary 6.5**
 - **secondary 24.5**
 - **tertiary 68.9**

Quebec

- Amount of sewage, in cubic metres, generated each day by 20 cities in the basin with populations larger than 48,000: **3.3 million**
- Amount the federal government contributed in infrastructure grants to sewage projects in 8 cities: **over \$26 million**
- Amount provincial and municipal governments contributed in infrastructure grants to the same projects: **over \$56 million**
- Percentage of sewage at each treatment level in 1999–2000:
 - **primary 82.4**
 - **secondary 17.6**
 - **tertiary 0**

government contributed over \$31 million between 1994 and 1999 to sewage projects in 23 of the 40 Ontario cities in our audit. In Quebec, the Canada Infrastructure Works Program provided over \$26 million to upgrade sewage projects in 8 of the 20 Quebec cities we looked at.

3.2.15 After the federal government signed the first Great Lakes Water Quality Agreement in 1972, many Ontario municipalities began to improve their sewage treatment plants. As a result, over 68 percent of the sewage from the largest Ontario municipalities receives tertiary treatment. Quebec municipalities started more than a decade later, and more than 80 percent of the sewage from the largest municipalities receives only primary treatment.

3.2.16 After 30 years of improvements, 40 percent of municipal effluent of the cities we considered still gets only primary treatment. This progress may not be sufficient to realize the federal government's objectives. Many small and medium-sized businesses empty their effluents directly into municipal systems. Municipal systems that are not properly designed to treat the contaminants in those effluents allow them to flow into our streams, rivers, and lakes without adequate treatment.

3.2.17 The federal government's approach to effluents from municipal treatment plants and outfalls has been strikingly different from its approach to industrial effluents. It has not used its regulatory powers, but instead has focussed on providing financial support to municipalities. Environment Canada has been working with the provinces recently to develop a national strategy on municipal wastewater effluents.

Commitments to clean contaminated sediment are unclear

3.2.18 Contaminated sediment is the legacy of years of government inaction while industrial plants and municipalities released high volumes of untreated or poorly treated effluents directly into the basin's lakes, rivers, and streams. Contaminated sediment has been present in all the Ontario areas of concern and at dozens of sites along the St. Lawrence River in Quebec. Contaminants such as mercury and dioxin accumulate in some sediments and are picked up by various organisms. Some of these contaminants become more concentrated and their effects magnified as they move up the food chain, making some types of fish unsafe to eat. Contaminated sediments also greatly restrict the uses of the nearby shoreline. Moreover, as they are stirred up and become suspended again in water, they may release low levels of toxic substances that affect the basin's water quality.

3.2.19 The estimated costs of removing and cleaning the contaminated sediment in the Canadian areas of concern range from tens of millions to several billion dollars. The costs aside, there are scientific and technical questions about how to dig up the contaminated sediment and what to do with it once it has been raised. Some have argued for natural recovery, suggesting that, left alone, over many years the contaminated sediment will be buried under new, cleaner sediment. Others argue that this would leave a permanent legacy of sites unusable for recreational development such as marinas or beaches.

Did you know?**Ontario**

- Number of areas of concern where contaminated sediment was identified: **17**
- Number of areas of concern that still have contaminated sediment: **15**
- Number of areas of concern where Environment Canada is focussing on contaminated sediment: **6**
- Amount spent under Great Lakes 2000 Cleanup Fund to address contaminated sediment: **\$18.5 million**
- Environment Canada's 1994 estimate of the amount of contaminated sediment, in cubic metres: **over 450,000**
- Amount of contaminated sediment remediated, in cubic metres: **over 60,000**

Quebec

- Number of sites identified with contaminated sediment in 1989–90: **40**
- Number of sites identified as priorities in 1993: **16**
- Amount spent under St. Lawrence Vision 2000 to address contaminated sediment: **\$1.3 million**
- Amount of contaminated sediment in the St. Lawrence basin: **unknown**
- Amount of contaminated sediment remediated: **unknown**

3.2.20 There is no doubt that dealing with the legacy of contaminated sediment is complex, and the federal responsibility for cleaning it up is not clear. Under the Great Lakes Water Quality Agreement, the federal government committed to ensuring that remedial action plans for areas of concern, all of which had contaminated sediment, would be developed and implemented. What about contaminated sediment that is outside areas of concern? What is the federal role there, when industry and municipalities do not accept responsibility for cleaning the sediment and liability for the contamination cannot be established? Without answers to these questions, it is not clear to Canadians what the federal government is committed to achieving.

3.2.21 Some areas of concern are getting attention. Environment Canada has completed research to identify the characteristics of contaminated sediment in six areas of concern—the St. Lawrence River at Cornwall, Hamilton Harbour, St. Clair River, Detroit River, Toronto, and Marathon in the Peninsula Harbour. In some of those six, it plans to clean up the contaminated sediment and is preparing strategies to remediate the sites. It has carried out a number of pilot projects at Hamilton Harbour over the years. Environment Canada has also developed and demonstrated innovative technologies for cleaning contaminated sediment, and it maintains a database on that work. To date, the federal government has spent more than \$8 million in Ontario from its Great Lakes 2000 Cleanup Fund on sediment studies, technology assessments, and related work.

3.2.22 At least \$10 million from the Cleanup Fund has been spent on pilot remediation projects and actual remediation of sediment. At least four areas of concern have had some sediment removed: Collingwood Harbour, Thunder Bay, the Niagara River, and Toronto. The federal government will have contributed over \$5 million to assess and remediate sediment contamination at the Northern Wood Preservers Inc. site in Thunder Bay by the time that work is completed (see case study, The importance of committed partnerships). It is conferring with industry on the St. Lawrence River in Cornwall and at Hamilton Harbour to agree on what should be done about the contaminated sediment there.

3.2.23 Overall, little of the contaminated sediment in the areas of concern or elsewhere in the Great Lakes has been removed or otherwise remediated. Environment Canada identified priority sites in 1993, based on levels of contamination, but its action depended on partnerships, sources of contamination, technical feasibility, and other factors. Environment Canada has not developed plans that identify for each of the sites what needs to be done, who will do it, what its own role will be, or how to share the costs of abating and controlling the contamination of sediment.

3.2.24 The St. Lawrence River awaits action. Environment Canada has studied contaminated sediment in the St. Lawrence River since the early 1970s. Its studies have helped to identify contaminated zones and determine the quality of sediment in the St. Lawrence River and its three lakes (Lac Saint-François, Lac Saint-Louis, and Lac Saint-Pierre), as well as the ports of

The importance of committed partnerships

Cleaning up contaminated sediment in Thunder Bay

Over the past two decades, contaminated sediments have been found near Northern Wood Preservers Inc. in Thunder Bay harbour—for example, polycyclic aromatic hydrocarbons (PAHs). These are persistent and toxic and can accumulate in organisms. The International Joint Commission, Canada, and Ontario designated Thunder Bay harbour as an area of concern, in part because of this contaminated sediment. Government agencies, industry, and the public joined in developing a remedial action plan that identified goals and initiatives for the remediation of the harbour. The Northern Wood Preservers Inc. site is a key element of this plan.

Environment Canada and the Ontario Ministry of Environment and Energy (today the Ministry of the Environment) established cleanup criteria. The primary criterion was based on the sediment's toxicity to organisms most likely to come into contact with it. Sediments at concentrations of more than 150 parts per million (ppm) total PAH resulted in severe toxic biological effects. Consequently, Environment Canada and the Ontario Ministry of Environment and Energy recommended that those sediments be isolated or removed from the lakes. They also recommended that sediments between 30 ppm and 150 ppm total PAH be isolated. In a 1996 study, the Ministry found that sediments below 30 ppm total PAH appeared to have no toxic biological effects. It therefore concluded that these could be left in place to remediate naturally.

The key to remediating the contaminated sediment at this site was an agreement signed in 1997 by Environment Canada, the Ontario Ministry of Environment and Energy, and three companies involved: Northern Wood Preservers Inc., Abitibi Consolidated Inc., and Canadian National Railways (today Canadian National). Each company committed \$1.5 million to the project, the Ministry committed \$1.5 million, and Environment Canada committed \$3.3 million from the Great Lakes 2000 Cleanup Fund. The Cleanup Fund spent another \$465,500 on sediment studies.

In 2001 the five parties signed another agreement (as the original agreement had required) when the total costs passed \$9.3 million. By 31 December 2000, the parties had spent a total of \$14.7 million. The total cost of completing the project is estimated at \$20 million, with the federal government's share more than \$5 million.

Montreal, Trois-Rivières, and Quebec City. It has done at least nine studies of sediment in eight zones of prime concern that our audit covered. It has also examined the impact of contaminated sediment on beluga whales in the St. Lawrence River.

3.2.25 In 1989 and 1990, Environment Canada identified 40 contaminated sites along the St. Lawrence River and another 25 sites that might have been contaminated. In 1993, it identified 16 sites as priorities. The federal government has not updated its inventory of sites since then.

3.2.26 Though much studied, little contaminated sediment in the St. Lawrence River has actually been cleaned. Some has been removed in the course of dredging to maintain the St. Lawrence Seaway and harbour facilities. In Montreal, three companies, the Port of Montreal, and Environment Canada are negotiating an agreement to address the contaminated sediment in Sector 103 of the Port of Montreal. Plans are also being developed with local industry near Valleyfield, Quebec, to remove contaminated sediment from nearby waters. As we concluded our audit, however, neither of these efforts had led to any formal agreements or action.

As in Ontario, Environment Canada has no co-ordinated plan or framework for the abatement and control of contaminated sites in Quebec.

3.2.27 The federal government has neither clear commitments nor a long-term game plan for addressing contaminated sediment.

Conclusion

3.2.28 Overall, we concluded that the federal government has shown a commitment to encouraging industry to reduce toxic emissions, but less to encouraging municipalities. It has demonstrated only partial commitment to remediating contaminated sediment.

3.2.29 Along with the provinces, the federal government has been effective at encouraging industry to reduce its emissions. It has funded programs that helped municipalities improve their sewage treatment, among other things, though it has not directly encouraged them to do it. It has conducted studies of contaminated sediment and assisted in the cleanup of some sites. But it has made no specific commitment, set no priorities, and developed no plan of action to clean up contaminated sediment.

Our audit objectives and main findings

Holding the federal government to account		
① Has the government fulfilled its commitments?	Commitments	Results
	Develop and implement abatement, control, and prevention programs for industrial discharges.	<p>The government's regulations under the <i>Canadian Environmental Protection Act</i> and the <i>Fisheries Act</i> have led to at least \$1.5 billion in investments by industry to reduce effluents.</p> <p>Its regulations have significantly reduced some industrial discharges.</p> <p>It does not have an overview of what remains to be done for industrial effluents.</p>
	Develop and implement abatement and control programs for municipal discharges.	<p>The government has contributed over \$60 million for upgrades of sewage treatment infrastructure; however, much remains to be done.</p>
	Develop and implement abatement and control programs for contaminated sediment.	<p>The government has spent close to \$20 million on various studies and activities, but most contaminated sediment has yet to be addressed.</p> <p>Its commitment to address contaminated sediment is unknown.</p>

Our audit objectives and main findings

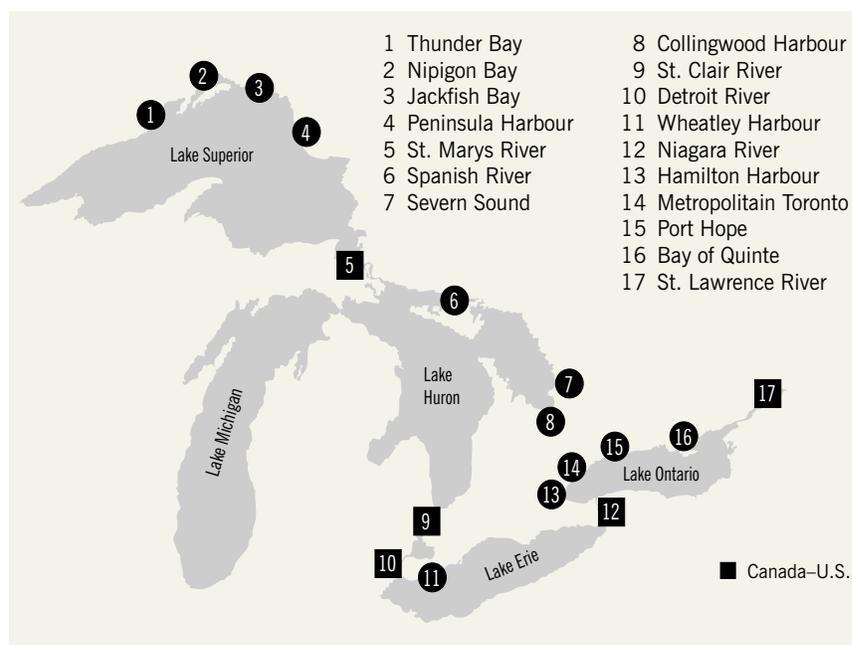
Assessing the government's performance		
2 Has the government applied good management practices?	Strengths	Weaknesses
	<p>The government has used tools (for example, legislation, fiscal agreements, research) to address effluents.</p> <p>It has created a public database to publicize cleanup techniques used in the Great Lakes.</p>	<p>The government has not assigned priorities to address effluents.</p> <p>It has not developed a plan to address contaminated sediment in the basin.</p> <p>It lacks indicators for measuring progress and trends.</p>
3 Has the government established good governance structures?	<p>The government, along with the provinces, has regulated industry to protect the public interest.</p> <p>It developed the National Pollutant Release Inventory to report on industrial facility releases.</p>	<p>It has no clear accountability and reporting responsibility for remediation of contaminated sediment.</p>

3.3 Areas of Concern in Ontario: Tackling Contamination

The issue **3.3.1** In the 1970s and 1980s, several areas along the Great Lakes were severely contaminated. Algal blooms choked off bays and harbours, and many people considered Lake Erie to be dying. Bacterial contamination led to beach closings. People were finding birds with twisted beaks and catching fish with gross tumours. Chemical contamination led to limits on fish consumption. The putrid smell of the water left waterfront areas unused.

3.3.2 In 1985, the International Joint Commission, the governments of Canada and Ontario, and the U.S. federal and state governments identified 42 geographic areas of concern—areas that were severely degraded—along the shores of the Great Lakes; another was added to the list in 1991. Twelve were in Ontario, and five more were shared by Canada and the U.S. along connecting rivers (Exhibit 3.1). The 1987 protocol to the Great Lakes Water Quality Agreement cited areas of concern as the most polluted areas in the Great Lakes and St. Lawrence River basin, where action was urgently needed.

Exhibit 3.1 Canadian areas of concern in the basin



3.3.3 Included in the revised Great Lakes Water Quality Agreement (1987), Canada and the United States developed a list of “impairments to beneficial uses” of areas of concern or adverse effects on aquatic life. These impairments were wide-ranging—from tainting of fish to eutrophication, from loss of habitat to beach closings. Since they were broadly defined, the list of impairments did not always offer good guidance on what had to be done.

Tainting of fish and game flavour, for example, is not easily measured; nor is improvement.

3.3.4 The Great Lakes Water Quality Agreement directs Canada and the U.S. to co-operate with provincial and state governments on a remedial action plan for each area of concern. A three-stage reporting process was established:

- Stage 1 was to identify the environmental problems in the area of concern.
- Stage 2 was to outline cleanup activities to resolve those problems and specify who would undertake them.
- Stage 3 was to provide information from monitoring and surveillance to show that an area of concern had been fully restored to its beneficial use. Reports were to be submitted to the International Joint Commission for review and comment after each stage. Only after all three stages were completed could an area of concern be “delisted.”

Only one area of concern in Canada has been delisted, Collingwood Harbour; the 16 remaining areas of concern in Canada are at various stages of completion.

The federal role

3.3.5 Through the Great Lakes Water Quality Agreement, the federal government committed to restoring areas of concern by developing and carrying out remedial action plans. The 1994 Canada–Ontario Agreement Respecting the Great Lakes Basin Ecosystem committed both governments to restoring areas of concern and having nine of them delisted by 2000.

Our audit questions

3.3.6 What is the federal government trying to accomplish in the areas of concern? What is their current status, and when does the government plan to have them delisted?

The story

3.3.7 Although spread throughout the basin, many areas of concern have similar problems: pollution by industrial effluents, releases from municipal sewage treatment plants, and combined sewer overflows; contaminated sediment from old industrial and municipal releases; and runoff of pesticides, fertilizers, manure, and soil from farms.

Local management is key, but oversight is needed

3.3.8 For well over a decade, the federal government has been determining what it needs to do in areas of concern. When it began, it had no other model to work with. This was a new approach for both the federal and the provincial governments, with a large learning curve to climb.

3.3.9 The stage 1 reports had been substantially completed by the federal and Ontario governments by 1992. We found that the reports clearly described the existing risks or problems in the areas of concern. The federal government also helped establish a public advisory committee to increase public awareness of environmental problems and their potential solutions. The committees were formed by Environment Canada and the Ontario Ministry of the Environment and included industry, conservation authorities,

and municipal staff, as well as Natives and other local citizens concerned about their environment. They were instrumental in setting restoration goals and planning remedial actions.

3.3.10 Remedial action plan teams were also assembled to define restoration targets and develop plans to measure progress toward them. Through the Canada–Ontario Agreement, the Ontario government appointed the majority of the people on remedial action plan teams. Provincial budget cuts in the 1990s left teams without a co-ordinator in many areas of concern. Some remedial action plans became “orphan” plans temporarily, with nobody clearly in charge of implementing them. Later, Environment Canada assumed the co-ordinating role for most of those sites.

Did you know?

- Number of Canadian areas of concern identified by the International Joint Commission in 1985: **17**
- Number of areas of concern delisted since 1985: **1**
- Amount the federal government spent on the areas of concern through the Great Lakes 2000 Cleanup Fund: **\$65 million**
- Amount of the \$65 million spent on habitat restoration: **\$24 million**
 on contaminated sediment: **\$18.5 million**
 on urban runoff: **\$8.6 million**
 on sewage treatment: **\$7.7 million**
 on non-point source pollution: **\$4.6 million**
 on administration and communications: **\$1.5 million**

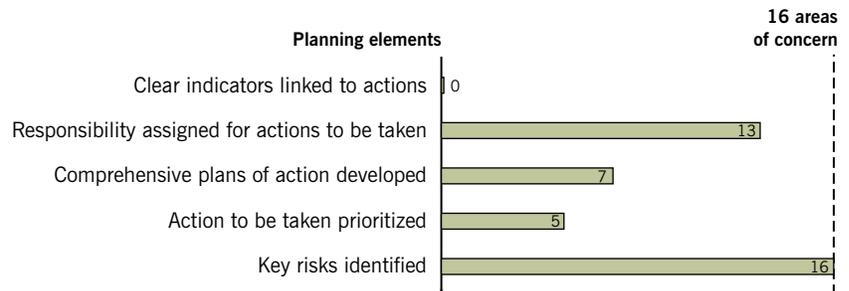
Remedial action plans do not provide clear direction

3.3.11 The federal government had received and responded to 11 stage 2 reports by 1998, and subsequently submitted them to the International Joint Commission. A comprehensive plan is one that describes its purpose and priorities, actions needed, accountabilities, and a method for measuring progress. We reviewed the stage 2 reports against these attributes.

3.3.12 The stage 2 reports generally did not offer the guidance expected from a good plan. Of the 16 areas of concern that remain, 12 have remedial action plans that lack key planning elements. In general, the remedial action plans did identify key risks and list environmental actions to be taken. Most, however, did not provide direction on what actions were most important, what had to be done to delist the site as an area of concern, and how progress would be measured. The Detroit River, Severn Sound, Bay of Quinte, and Wheatley Harbour remedial action plans met most of our criteria, though none of them had clear indicators linked to the actions proposed (Exhibit 3.2).

3.3.13 While the plans may not have been robust, they served to identify a range of projects for funding. Because the plans did not set clear priorities, however, it was not always clear that the funded projects addressed the highest priorities.

Exhibit 3.2 Key planning elements addressed in remedial action plans



Taking action to clean up areas of concern

3.3.14 The federal Great Lakes 2000 Cleanup Fund was set up to provide federal funds for cleanup efforts in the Canadian areas of concern so they could eventually be taken off the list. It supported programs to help restore water quality and to develop cleanup technologies. The Fund was designed to be leveraged; it typically funded one third of each project and the rest came from a variety of partners. From 1990 to 2000, the Cleanup Fund contributed more than \$65 million to projects that ranged from restoring wetlands to making sewage treatment plants more effective (see case study, Activities and improvements in the Hamilton Harbour Area of Concern). The federal money was matched by \$133 million from about 400 different partner groups. Overall, we found that the Fund has been managed well and used constructively to deal with environmental problems in the areas of concern.



In Collingwood Harbour, the Great Lakes 2000 Cleanup Fund was used to construct a park with an environmental theme.

Source: Environment Canada

3.3.15 Clearer rationale needed for financing actions. It is not clear how Environment Canada allocates cleanup funds among areas of concern and among projects within each area of concern, or which actions the federal government is committed to implementing. While some areas need a lot more remediation than others, Environment Canada has not articulated how funding should be allocated. To date, 44 percent of the Cleanup Fund's total spending has gone to three areas of concern—Hamilton Harbour, Toronto, and Thunder Bay. The three areas of concern at the low end of spending—Wheatley Harbor, Jackfish Bay, and Port Hope—have together received 0.3 percent of the Fund's total contributions.

3.3.16 Criteria for funding are to be based on technical merit and the priorities of the remedial action plan; a project that receives funds must also address one or more of the impaired beneficial uses. In practice, the projects selected for funding are mainly those that have local partners willing to put up their own funds—typically, two thirds of the project's costs. The selection of a project, therefore, often depends on the level of local interest in the project, not necessarily on its significance to improving the area of concern or the basin.

3.3.17 The types of activities funded by the Cleanup Fund have targeted habitat restoration, sediment cleanup, urban runoff, sewage treatment, effluent pollution, and administration and communications. Examples of projects include the following:

- **Municipal effluent treatment.** Federal funds have gone toward improving sewage treatment through, for example, the Municipal Sewage Treatment Plant Optimization Program. By maximizing their efficiency while keeping the costs low, sewage treatment plants improved the quality of the effluent they released.
- **Rural runoff control.** Between 1990 and 2000, the Cleanup Fund supported various projects to curb agricultural runoff into the Great Lakes. For example, it helped to finance 12 kilometres of fencing along the Welland River in the Niagara River Area of Concern, thereby blocking access to the river by 500 head of livestock.

- **Fish and wildlife habitat.** The Cleanup Fund has contributed to several coastal wetlands restoration projects in the basin, including \$6,765,000 for Cootes Paradise in Hamilton Harbour and \$82,000 for coastal wetlands rehabilitation in Toronto.
- **Pilot cleanup technology.** Work in the areas of concern has provided opportunities to pilot a range of cleanup technologies. Environment Canada developed the Remediation Technologies Program to identify and demonstrate technologies that would remove and treat contaminated sediments. The Cleanup Fund examined 29 of the technologies that were demonstrated; several of their developers won international contracts as a result of their demonstrations.
- **Public education.** The Cleanup Fund contributed to a variety of projects in areas of concern to increase public understanding of the Great Lakes environment. Workshops, conferences, and symposiums focussed on strategies to clean up and maintain the areas of concern and the Great Lakes ecosystem. For example, in co-operation with American agencies, Environment Canada used the Cleanup Fund to support the *Great Lakes Alive* documentary series, broadcast on TVOntario.
- **Children's park.** In Collingwood, Ontario, the Cleanup Fund was used to construct a park with an environmental theme.

Activities and improvements in the Hamilton Harbour Area of Concern

Hamilton Harbour is on the western edge of Lake Ontario, in a 500-square-kilometre watershed. Over a half-million people live in five municipalities in the watershed. Development has eliminated 75 percent of the original wetlands, protected inlets, and shallow areas of the landscape. The Niagara Escarpment and Cootes Paradise are two natural features. On the south side of the harbour is the largest concentration of iron and steel industry in Canada; the upper watershed is a mix of rural and urban land. Major problems are pollution, contaminated sediments, combined sewer overflows, loss of shoreline access, and degradation or loss of fish and wildlife habitat.

According to Environment Canada, improvements have been made in the Hamilton Harbour Area of Concern through the efforts of various stakeholders, including the federal government, the provincial government, municipalities, industry, university and non-profit groups, and concerned individuals. From 1970 to 1990, an estimated \$600 million (in 1990 dollars) from all partners was spent to restore the harbour. From 1990 to 1997 another \$175 million was spent, \$13.7 million of it from the Great Lakes 2000 Cleanup Fund. Despite this investment, contaminated sediment, one of the main impairments of beneficial use in this area of concern, remains a serious problem that has yet to be addressed effectively. The following are some of the more successful results:

- Since 1990, about \$20 million has been spent on habitat restoration, \$7.2 million of it from the Cleanup Fund.
- New habitat islands have been created, as well as submerged habitat, a fishway, trails, and viewing stations at five locations around the harbour and Cootes Paradise marsh.
- Approximately \$4 million was spent from 1995 to 1998 to optimize Halton's Skyway Sewage Treatment Plant, at least \$200,000 of it from the federal government.
- A total of \$53 million was spent to clean up combined sewer overflows in Hamilton, \$8.2 million of it from the Canada Infrastructure Works program and \$296,000 from the Cleanup Fund. This allowed beaches at the Pier 4 and Bayfront parks to be opened in 1993 for the first time in 50 years.
- The federal government has spent over \$4 million on sediment cleanup, including preparatory work for a sediment removal and treatment project near Randall Reef, close to the Stelco docks.
- The steel industry has invested over \$76 million in effluent controls in the last decade, with major improvements in effluent quality.
- Public access to the harbour shoreline increased from 2 percent in 1986 to 23 percent in 2000, mostly due to the creation of Pier 4 and Bayfront Park and a waterfront trail. The Ontario Ministry of the Environment contributed \$7 million for soil remediation; the federal government's Millennium Partnership program contributed \$500,000 for a waterfront trail.

Turning to the future

3.3.18 Many of the projects that remain to be implemented will be very costly—upgrading sewage treatment plants, for example, and cleaning up contaminated sediment. Tackling them may not always be possible with the expertise and resources available on local community teams. The federal government has been funding projects for over a decade, but we found no evidence of long-term planning to minimize the time or expense involved in fully restoring Canadian areas of concern (see case study, *Delisting the Severn Sound Area of Concern while building a sustainable community*). Of the 17 areas of concern identified in Canada in 1985, 16 are still on the list.

3.3.19 The Great Lakes 2000 Cleanup Fund was replaced in July 2000 by the Great Lakes Sustainability Fund. This \$30 million, five-year fund is intended for projects that will complete federal actions in 13 of Canada's 16 remaining

Delisting the Severn Sound Area of Concern while building a sustainable community

Severn Sound, a group of bays in southeastern Georgian Bay, was famous in the 1970s for walleye, a popular game fish. In the 1980s, the bays and inlets of Severn Sound filled with algae, known locally as “green goo.” The algal growth was caused by high levels of phosphorus, which entered the water from farms, rural septic systems, sewage treatment plants, shoreline development, and storm water. As the algae grew, the waters became murky and the walleye population dwindled.

In 1985, the Canadian and U.S. federal governments and their partners declared Severn Sound an area of concern. They cited the following eight problems:

- restrictions on fish and wildlife consumption
- degradation of fish and wildlife populations
- degradation of bottom-dwelling plants and animals, such as crabs
- restrictions on dredging activities
- eutrophication, with undesirable algae
- degradation of shoreline beauty
- degradation of phytoplankton and zooplankton communities
- loss of fish and wildlife habitat

The federal and provincial governments, with local stakeholders, established the Severn Sound remedial action plan development team. Partners on the team included Environment Canada; Fisheries and Oceans; the Ontario Ministry of the Environment; the Geological Survey of Canada; the Ontario ministries of Natural Resources and Agriculture, Food and Rural Affairs; local municipalities; landowners; farmers; and members of the community. The team was led by a full-time co-ordinator on loan from the Ontario Ministry of the Environment. A public advisory committee of local volunteers was also established.

In 1995 the federal and provincial governments announced that they would gradually wind down their support to the remedial action plan team. The local community established the Severn Sound Environmental Association in 1997. Its mission is “to restore environmental quality and to ensure continued protection through a legacy of wise stewardship of Severn Sound and its tributaries.” The Association links partners and secures the resources needed to carry out the remedial action plan.

The remedial action plan co-ordinator prepares an annual business plan that includes anticipated revenues, expenditures, and revisions to the previous business plan, and submits it to the partners for review. The co-ordinator must also prepare an annual report outlining progress toward objectives and indicating the overall progress toward delisting Severn Sound as an area of concern.

The Severn Sound community actively participates with the Association. Members of the community help to set goals and define priorities for remedial action. Landowners, farmers, volunteers, and community groups devote time and money to restoration projects.

This community-led approach is moving toward delisting Severn Sound as an area of concern. The Association reports that most actions listed in the action plan have been completed, and efforts are now under way to assess whether the impaired beneficial uses have been restored. If the Association can secure a source of funding, it plans to remain active even after Severn Sound is no longer an area of concern.

areas of concern and make progress in the other three. We have two concerns. First, federal actions have never been listed. While categories of federal funding are described, specific commitments are not. For example, the government considers remediating contaminated sediment to be a federal action but does not commit to remediating any specific sites, with or without partners. Second, the federal government is ambiguous about its responsibility for actions by others, even if those actions are necessary for Canada to fulfil its responsibility for restoring the beneficial uses of areas of concern. Will the federal government walk away before the job is done?

Conclusion

3.3.20 The federal government has been actively engaged in setting up structures to implement actions in areas of concern. It has generally managed its cleanup fund well to assist projects in areas of concern. However, it has not decided what it wants most to accomplish in areas of concern. It has not set clear priorities for action. The projects selected for funding are mainly those that have local partners willing to contribute their own money. It is not clear how or when the government plans to see the remaining 16 areas of concern restored and delisted. Until then, we may still have contaminated water, toxic fish, and beach closings.

3.3.21 In our view, to ensure that the remaining work in the areas of concern is completed, the federal government needs to provide greater leadership and support—setting priorities, clearly linking proposed actions to criteria for delisting, and brokering co-ordinated action by other governments and organizations.

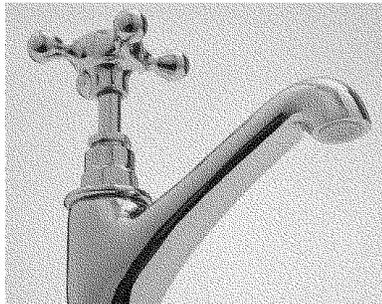
Our audit objectives and main findings

Holding the federal government to account		
1 Has the government fulfilled its commitments?	Commitments	Results
	Restore and delist nine areas of concern by 2000.	Only 1 of the 17 areas of concern has been delisted since 1985. No others have been delisted since the 1994 Canada–Ontario Agreement Respecting the Great Lakes Ecosystem.
Assessing the government’s performance		
2 Has the government applied good management practices?	Strengths	Weaknesses
	The government has identified and documented existing risks.	The government has done poorly at developing programming priorities, plans, and indicators in remedial action plans. Some areas of concern have no management structures.
3 Has the government established good governance structures?	The government has set up a Web site that documents the stages completed in the areas of concern and provides a breakdown of projects.	The government has not defined its responsibility for addressing each area of concern.

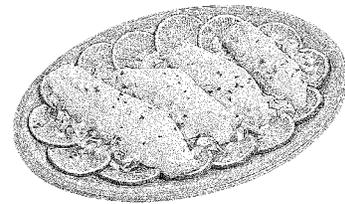
3.4 Monitoring Water Quality: Human and Ecosystem Health

The issue

3.4.1 The quality of drinking water in the Great Lakes and St. Lawrence River basin is one of the chief environmental concerns of people living there. They want to know that they can trust their drinking water. Recent tragedies in Walkerton, Ontario and North Battleford, Saskatchewan have heightened public concern about the quality of drinking water. A poll in May 2001 found that 46 percent of Canadians do not trust the safety of the water coming out of their taps.



Forty-six percent of Canadians do not trust that the water coming out of their taps is safe to drink.



Many pollutants found in the basin can harm human and ecosystem health. They accumulate in tissues as they move up the food chain, their effects magnifying.

3.4.2 Many pollutants found in the basin can harm human and ecosystem health—organochlorines such as PCBs and metals such as mercury, for example. These chemicals do not break down easily, and some do not at all; they persist in the environment and accumulate in tissues as they move up the food chain, their effects magnifying. Organochlorines accumulate in fatty tissues, even breast milk; metals accumulate in organs, muscle, and flesh. Endocrine-disrupting chemicals, pharmaceuticals, and personal care products discharged into our waters may also affect human and ecosystem health.

The federal role

3.4.3 The federal government's role in ensuring a safe supply of drinking water is limited; drinking water is primarily a provincial responsibility. Health Canada assists in developing the guidelines for drinking water quality and provides a secretariat to the Federal–Provincial–Territorial Subcommittee on Drinking Water. Provincial governments either apply the Subcommittee's national guidelines directly in their provinces or use them to develop their own. How guidelines are applied and monitored is a provincial responsibility.

3.4.4 The federal government does have a mandate to monitor the quality of surface waters under the *Canada Water Act*, the *Department of the Environment Act*, and the 1987 Federal Water Policy. The Great Lakes Water Quality Agreement commits Canada and the United States to extensive monitoring and reporting of water quality in the lakes. Environment Canada does this monitoring on Canada's behalf in both the Great Lakes and the St. Lawrence

River. It also monitors certain species whose tissues are good indicators of changes in the levels of known contaminants.

3.4.5 Health Canada has also conducted studies of the health risks of exposure to various contaminants in the basin.

Our audit question

3.4.6 How does the federal government monitor the quality of the water in the basin to ensure that the health of Canadians and the basin's ecosystem is not at risk?

The story

Do we know whether our drinking water is safe?

3.4.7 Federal role is limited. The development of Canada's national guidelines for drinking water quality is a joint effort by the federal and provincial governments. The purpose of the guidelines is to protect health by establishing the safe levels of various contaminants commonly found in drinking water. As part of its mandate to protect human health, Health Canada has played a key role in the development of drinking water quality guidelines since 1968. It develops risk assessments for substances that are potentially harmful. While Health Canada has various supporting roles to play, outside of most First Nations reserves it does not test drinking water quality to determine whether it meets the guidelines (Exhibit 3.3).

3.4.8 Generally, the state of Canada's drinking water is considered good, but recent events have shaken the public's confidence. According to the Ontario government, drinking water in at least 26 Ontario locations did not meet the province's health objectives in 1998–99. In recent years, several municipalities throughout Canada have had to issue orders to boil water.

3.4.9 Aside from Ontario's recent reports on drinking water quality and anecdotal evidence such as boil orders, Health Canada does not know the quality of drinking water across the country. It does not know whether the very guidelines it helps develop to protect Canadians' health are being followed. It has done limited surveys of provincial systems and regulations but not of the water quality itself. We found no evidence of a review by Health Canada of the overall state of Canada's drinking water, the provinces' use of the guidelines, or the extent to which the quality of drinking water meets the guidelines.

3.4.10 If the federal government chose to, it could play a stronger role in setting standards for drinking water. Under the *Food and Drugs Act*, the federal government regulates the quality of all food and drink sold in Canada. This includes, for example, water that is used in prepared soups and in soft drinks. Apparently, it does not extend to drinking water sold by municipalities.

3.4.11 Unlike the U.S. and the European Union, Canada does not have standards for drinking water that are enforced nationally. Use of the guidelines is at the provinces' discretion. Federal legislation to address drinking water quality is a move that has been proposed; at the end of our audit, the federal government was considering it.

Exhibit 3.3 Drinking water quality guidelines—roles

Federal	Federal–Provincial–Territorial Subcommittee on Drinking Water	Provincial and Territorial
<p>Health Canada and Environment Canada participate on the Federal–Provincial–Territorial Subcommittee on Drinking Water.</p> <p>Health Canada provides the Subcommittee’s Secretariat.</p> <p>Health Canada develops risk assessments for substances under review or scheduled for review.</p> <p>Health Canada prepares technical documents for Subcommittee’s review.</p> <p>Health Canada publishes <i>Guidelines for Canadian Drinking Water Quality</i>.</p> <p>Health Canada maintains information on the Subcommittee and its activities.</p> <p>Health Canada applies the guidelines in areas that fall under federal jurisdiction.</p>	<p>The Subcommittee identifies new substances, re-evaluates existing guidelines, assesses and evaluates proposed guidelines, and consults with affected parties.</p> <p>It makes recommendations to the Federal–Provincial–Territorial Committee on Environmental and Occupational Health for endorsement of proposed guidelines.</p>	<p>The provincial and territorial governments participate on the Subcommittee.</p> <p>They incorporate guidelines into provincial and territorial guidelines, standards, or legislation, at their discretion.</p> <p>At their discretion, they establish and enforce approval, sampling, monitoring, and reporting procedures for drinking water providers.</p>

Monitoring the quality of open waters

3.4.12 Monitoring the quality of water in lakes and rivers is important to understand how contaminants in the waters of the basin affect the ecosystem, including human health. Monitoring allows the federal and provincial governments to assess the state of the basin and to identify trends in pollutants entering the water. Monitoring water quality is also critical to identify new problems and the biggest threats to health.

3.4.13 Environment Canada monitors water quality in the open waters of the Great Lakes by planned sampling at regular locations throughout the basin. Depending on the year and the lake, this sampling has included between 60 and 100 attributes of the water in each lake since the mid-1990s. Environment Canada also monitors water quality in the Niagara and St. Clair rivers and at Wolfe Island (near Kingston, Ontario) in the St. Lawrence River.

3.4.14 Throughout the 1990s, Environment Canada’s monitoring covered each of the Great Lakes intermittently. Its monitoring program has included, at different times, all of the metals and persistent organic pollutants listed as

priorities in the Great Lakes Water Quality Agreement (except toxaphene, for which there is not yet a clear monitoring protocol). Other toxic metals and organic pollutants are also monitored.

3.4.15 Monitoring of water quality in the St. Lawrence River is different. Between 1985 and 1990, Environment Canada monitored water quality intermittently at 72 locations on the river. Partly from those monitoring data, Environment Canada developed a contaminant-modelling program for the St. Lawrence River. In 1992 it established a site near Quebec City for permanent monitoring. The Department now relies on this single site for most of its data on the quality of water in the river, though it supplements them with data it collects at Wolfe Island and data that Quebec collects along the St. Lawrence River and its tributaries.

What we do not monitor today may affect us in the future

3.4.16 Over 23,000 chemicals are currently used in Canada. Of these, 245 are included on the 1999 National Pollutant Release Inventory, and 58 of those are released directly into the waters of Quebec and Ontario. The presence of most of these pollutants is not monitored by Environment Canada in any of the Great Lakes or the St. Lawrence River.

3.4.17 Existing data show a decline in contamination. The monitoring data that do exist show a clear decline throughout the 1970s and 1980s in concentrations of contaminants in the Great Lakes and the St. Lawrence River. The federal government's ban in the 1970s on the use of DDT and other pesticides seems to have worked. Tighter regulation of toxic chemicals over the past three decades appears to have led to improvements in water quality. Concentrations of DDT in breast milk and wildlife tissues have dropped.

3.4.18 From the early 1970s to the mid-1980s, concentrations of total phosphorous in the open waters of lakes Ontario and Erie declined significantly. Since the mid-1980s, however, concentrations in all of the Great Lakes have been stable, and they are rising again in parts of Lake Erie.

3.4.19 Other data show a levelling off or a slight increase in some toxic substances and chemicals. Chemicals carried by the wind from hundreds or even thousands of kilometres away contribute to concentrations in the basin. So, probably, does leaching from farmland of chemicals sprayed many years ago or pesticides used today.

Indicator species also provide information on water quality

3.4.20 Some persistent contaminants that are difficult to detect in water can be measured more easily in tissues of certain fish and wildlife species. Herring gull eggs are one such indicator.

3.4.21 Environment Canada established a program in the early 1970s to understand better how contaminants accumulate in the ecosystem. It monitors levels of key contaminants, such as DDT and PCBs, in the eggs of Great Lakes herring gulls and other water birds such as cormorants.

Did you know?

- Number of attributes that Environment Canada monitors in the waters of each of the Great Lakes: **60 to 100**
- Number of chemicals that are used in Canada: **over 23,000**
- Number of chemicals that are on the 1999 National Pollutant Release Inventory: **245** number released into waters in Quebec and Ontario: **58** number monitored by Environment Canada in the Great Lakes: **fewer than half**

Researchers can detect in gull eggs the presence of new contaminants in the environment and changes in the levels of known contaminants. They also maintain a bank of samples they can use, if desired, to test later for the presence of contaminants not previously measured.

3.4.22 The herring gull eggs study indicates that water quality has improved. Contaminants in herring gull eggs have declined significantly since the early 1970s, although concentrations of some contaminants levelled off in the 1980s. Herring gull eggs provide a good indicator of regional water quality. Environment Canada is also considering the use of site-specific indicator species, such as snapping turtles and the great blue heron.

Long-term health impacts of water

3.4.23 One of the key concerns about water quality in general is the long-term effects it has on people's health. The Great Lakes Water Quality Agreement commits the governments of Canada and the United States to reduce the health risks from exposure to toxic substances in the lakes. Health Canada has committed to conducting research to help protect health in the basin through its Great Lakes Health Effects Program and the Health Component of St. Lawrence Vision 2000. It works with other federal departments, the Ontario Ministry of Health (now the Ministry of Health and Long-Term Care), Quebec Department of Health and Social Sciences, and academic researchers on human health problems in the basin.

3.4.24 Health Canada started the Great Lakes Health Effects Program in 1989 as part of the first Great Lakes Action Plan. It introduced the Health Component of St. Lawrence Vision 2000 in 1993. Both the Health Component and the Great Lakes Health Effects Program were designed to protect human health in the basin from the effects of exposure to contaminants in the environment.

3.4.25 Health Canada has completed various studies throughout the basin. For each of the 17 Canadian areas of concern around the Great Lakes, it prepared a study on general health status and selected health outcomes (disease and mortality incidences). In another study, it assessed the exposure of people living in the Great Lakes basin to persistent environmental contaminants. Along the St. Lawrence River, reports by the Health Component on 12 zones of prime concern describe the health risks related to the use of the St. Lawrence River.

3.4.26 Health Canada's studies show that eating fish is the main way people are exposed to persistent contaminants in the waters of the basin. Aboriginal people, certain minority groups, and sport anglers are particularly at risk, because they tend to eat more fish than the general population or have physical or genetic traits that make them more susceptible. The lower resistance of the elderly, developing fetuses, and nursing infants makes them, too, more vulnerable to the effects of contaminants. Developmental, reproductive, neurological, and behavioural problems are some health effects of significant exposure to persistent toxic contaminants.

3.4.27 Health Canada has prepared a handbook for health professionals on health and the environment and published a status report on human health in the St. Lawrence River basin. Still, provincial government fish consumption guidelines are the only direct way at present that the public is informed about the risks of eating fish.

3.4.28 This may not be enough. A study for Health Canada found that in 1996 and 1997, only about a third of fish eaters in five of the Ontario areas of concern had used the province's sport fish consumption guide. A study in Quebec found that only 40 percent of fishers said they always followed fish consumption recommendations in that province. Nevertheless, Health Canada has no plans to develop its own health communications strategy. It has very limited funding for the Great Lakes, and funding for the Health Component of St. Lawrence Vision 2000 has been reduced. Some partners have expressed concern that important research is not being conducted or is being delayed unnecessarily.

Conclusion

3.4.29 Health Canada has fulfilled its obligation to help develop guidelines for drinking water quality. However, certain gaps in Canada's monitoring of drinking water are a concern. Monitoring the quality of drinking water and informing the public when safety precautions are needed are provincial responsibilities. The federal government does not obtain information on the results of provincial monitoring. Ontario is the only province in Canada that is committed to informing the public when water quality does not meet the provincial guidelines. In the other provinces, there is no straightforward way for the public to know about the quality of drinking water. We note that water used in foods and drinks is regulated across Canada but, in most provinces, water that comes out of the tap is not.

3.4.30 Overall, Environment Canada is meeting its basic obligations to monitor the presence of contaminants listed in the Great Lakes Water Quality Agreement. It monitors water quality in the Great Lakes and the St. Lawrence River and has studied certain indicator species to gain a better understanding of changes in water quality over time.

3.4.31 However, the federal government's understanding of changes in water quality is based on a limited number of substances that are known to be harmful to human health. Many substances are not monitored at all.

3.4.32 Health Canada has studied the effects of water quality on human health, and has identified populations in the basin who are at risk from excessive exposure to contaminants. But it does not communicate this information directly to the people who may be at risk.

Our audit objectives and main findings

Holding the federal government to account		
1 Has the government fulfilled its commitments?	Commitments	Results
	Develop national guidelines for drinking water quality.	Health Canada participated in the development of the Guidelines for Canadian Drinking Water Quality, last updated in 1996.
	Monitor water quality in the Great Lakes and the St. Lawrence River.	Environment Canada monitors water quality in a planned and scientific way in the Great Lakes and the St. Lawrence River. It monitors the eggs of herring gulls as an indicator of contaminant levels in the Great Lakes.
	Assess the risk of fish consumption to Canadians' health.	Health Canada, in collaboration with partners, has identified populations vulnerable to fish consumption. Health Canada does not have a communications strategy to reach these populations, and it has not allocated resources to develop a strategy.
Assessing the government's performance		
2 Has the government applied good management practices?	Strengths	Weaknesses
	Environment Canada is monitoring contaminants listed in the Great Lakes Water Quality Agreement and analyzing the trends.	Environment Canada monitors fewer than half of the 58 contaminants reported to the National Pollutant Release Inventory that are released into water in Ontario and Quebec.
3 Has the government established good governance structures?	Environment Canada posts water quality information about the basin on its Web site.	The water quality information on the Web site is not up-to-date.

3.5 Monitoring Water Quantity: Use and Withdrawals

The issue

3.5.1 Fresh water is becoming the world's most sought-after resource. With more than a billion people who do not have enough of it, the thirst for water is set to reach new peaks in this century. The availability and management of fresh water is becoming one of the greatest environmental, political, and social challenges of the 21st century. Corporations have already begun to explore how to meet the rising demand by wealthy but drought-prone markets in the U.S. and Asia.

3.5.2 Although the Great Lakes have an abundant supply of fresh water, it is not an infinite supply. The International Joint Commission and others estimate that only about one percent of the water in the basin is renewable. This one percent is the amount of water that flows through the basin and out the St. Lawrence River and elsewhere and is replenished by rivers, streams, groundwater, and rainfall. As a critical part of the basin's hydrology, it is not expendable. Furthermore, no one knows how climate change will affect the basin; some studies indicate that it could substantially reduce the available supply of water there.

3.5.3 The demand for water is also growing in the basin itself. Already, 16 million Canadians rely on the waters of the Great Lakes and the St. Lawrence River to fill their daily needs. Recent estimates suggest that the population on the Canadian side of the basin will rise 20 percent in the next 20 years; this is sure to put more pressures on the water supply. Growth on the U.S. side will add to the pressures, and so will the rising demand for water outside the basin, particularly in the southern U.S. In 1998 the Nova Group proposed to export roughly 600 million litres of Lake Superior's water each year for five years to supply Asian markets. The proposal was eventually turned down, but it renewed public concern about the export of our water.

3.5.4 The bulk export or diversion of water is a major concern of Canadians. Public debate on the subject is rife with references to domestic and international law and politics. A sound scientific understanding of the effects of exports and diversions will be crucial in settling future debates.

The federal role

3.5.5 Three departments share the federal responsibility for surface water and groundwater quantity issues in the basin—Environment Canada, Fisheries and Oceans, and Natural Resources Canada—and the Department of Foreign Affairs and International Trade is responsible for international agreements. Collectively, and working with the U.S. and the International Joint Commission, those departments determine how much fresh water Canadians have available, who can use it, how much water can flow from Lake Superior, and how much from Lake Ontario to the St. Lawrence River.

3.5.6 The main responsibility for fresh water, however, belongs to provincial governments. They monitor water levels in the lakes and rivers wholly within their borders and near the shores of international boundary waters, such as the Great Lakes. They also determine the supply of water available to consumers in their own provinces. In practice, the federal and provincial

governments share the monitoring of water flows in the Great Lakes and St. Lawrence River basin, under cost-sharing agreements. Municipal governments provide water to consumers, and their pricing policies can have a large influence on water consumption.

3.5.7 The U.S. federal and state governments and the International Joint Commission are also players. Canada shares the management of boundary and transboundary waters with the U.S. through the 1909 Boundary Waters Treaty, which also established the International Joint Commission to resolve disputes over the use of boundary waters.

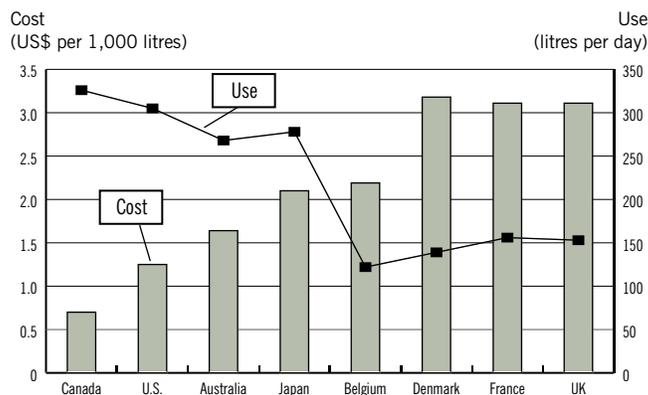
Our audit questions

3.5.8 How does the federal government monitor the quantity of our surface water and groundwater supply? What is it doing to ensure a sufficient and secure supply of water for the future? Is the government carrying out its strategy to prohibit bulk removals?

The story

3.5.9 According to the Organisation for Economic Co-operation and Development, Canadians use more water per person in their homes than people in most other member countries—326 litres a day (Exhibit 3.4). This is mostly because we have always had far more fresh water than our population needs. The demand for Canada's fresh water is expected to grow, at home and abroad. At the current rates of use, the strain on the available supply of fresh water in the basin may contribute to decreased water levels, which could cause significant environmental damage and substantial social costs.

Exhibit 3.4 Canadians use more water and pay less for it



Source: OECD—All data are from 1994 to 1999 except data on U.S. use, which are from 1980.

Monitoring surface water levels

3.5.10 Environment Canada monitors water flows and discharges in both Ontario and Quebec. While monitoring has been reduced somewhat since the mid-1980s, it still provides important information. In Ontario, Environment Canada monitors at over 400 stations, roughly 27 percent fewer than in 1985. It shares the costs of many of the stations with the Ontario government. The Quebec Department of the Environment has a network of

70 to 80 stations that do most of the monitoring in the St. Lawrence River basin. Environment Canada shares the costs of some of these monitoring stations and has 11 of its own in the basin.

3.5.11 The Canadian Hydrographic Service of Fisheries and Oceans monitors water levels in the Great Lakes at 31 stations and in the St. Lawrence River at 16 stations. Technical advances have allowed it to upgrade these stations so they report real-time data by a telephone link to a central computer database. In Ontario, Environment Canada maintains these stations in exchange for their data. The public can also get data from individual monitoring stations by phoning an automated response line.

3.5.12 The International Joint Commission's international water control boards for Lake Superior, the Niagara River, and the St. Lawrence River use the data generated by Environment Canada and other sources to help regulate water levels in the Great Lakes and St. Lawrence River basin. The International Joint Commission also uses Environment Canada data in studies it produces independently.

3.5.13 Using water flow data and advanced modelling techniques, Environment Canada can understand flows within the basin. One report from the Quebec region suggests, for example, that several smaller dams along the Ottawa River can affect the flow of water into the St. Lawrence River significantly more than the larger dam near Cornwall, which regulates flows of water from Lake Ontario. Water flow data and modelling are also used in studies of toxic releases into the St. Lawrence River.

The federal government has a poor understanding of groundwater in the basin

3.5.14 Groundwater aquifers are the prime source of drinking water for 28 percent of Ontario and Quebec residents. Over 270 municipalities in these provinces rely on groundwater for at least part of their municipal supply. Those cities can be severely affected if there are shortages of groundwater.

3.5.15 Groundwater is an important part of the basin's hydrology. According to the International Joint Commission, the Great Lakes system is composed of "numerous aquifers (groundwater) that have filled with water over the centuries, waters that flow into the tributaries of the Great Lakes, and waters that fill the lakes themselves."

3.5.16 The federal government does not have direct responsibility for managing groundwater, except in aquifers that are known to cross provincial and international boundaries. Still, it is responsible for understanding the effects of groundwater on surface water in the basin. The 1987 Federal Water Policy, noting that knowledge of groundwater in the basin was incomplete, committed the government to developing a better understanding of groundwater aquifers.

3.5.17 We found that the federal government has gained little understanding of groundwater in the basin since then. Between 1987 and 1991, Environment Canada carried out limited aquifer and data sampling studies and prepared a groundwater strategy to define the federal role and the actions

the federal government should take. Environment Canada and Natural Resources Canada subsequently agreed to share responsibility for groundwater, but few initiatives were undertaken before 1997. Natural Resources Canada revived the issue with several new research studies in different regions. In June 2000, it brought together federal and provincial officials from across Canada for the first national workshop on groundwater to discuss what is known about its sources.

3.5.18 Natural Resources Canada recently entered an agreement with the United States for co-operation on research in the earth sciences, which includes groundwater. In its 2001 sustainable development strategy, Natural Resources Canada commits to producing a national groundwater strategy by 2002 that will outline federal, provincial, and territorial actions. The Department is also committed to developing a national database on groundwater by 2003. The federal government does not know much more in 2001 about groundwater in most of the basin than it knew in 1987.

3.5.19 In contrast, the United States Geological Survey knows a lot more about the key aquifers on the U.S. side of the basin. It can describe the geology of many of them, their water-yielding characteristics and potential yields, and their flow and interaction with surface water. The U.S. Geological Survey also has information on withdrawals of fresh water from these aquifers.

Partial action to prohibit bulk removals

3.5.20 Proposals for large-scale removals and export of water have surfaced periodically over the past 40 years. According to a 1999 survey by EKOS Research Associates Inc., 13 percent of Canadians believe that under no circumstances should Canada export water, and 66 percent say only on humanitarian grounds.

3.5.21 In its 1987 water policy, the federal government publicly committed to preventing the large-scale removal of water by interbasin diversions. It introduced legislation in 1988 to that effect, which died on the order paper when an election was called.

3.5.22 The government took no further legislative action for more than a decade. Then, in February 1999, it announced a strategy to prohibit the bulk removal of water, including water for export from Canadian watersheds. The strategy had three parts:

- A reference to the International Joint Commission to study the effects of water consumption, diversion, and removal from boundary waters (including export). The reference was submitted by both Canada and the U.S. in February 1999 and the Commission issued its report, *Protection of the Waters of the Great Lakes*, a year later. The report makes recommendations to both governments that, if adopted, would make large-scale, long-distance removals of water from the basin virtually impossible.
- Proposed amendments to the *International Boundary Waters Treaty Act* to prohibit the bulk removal of boundary waters, affecting principally the Great Lakes. This legislation died on the order paper after the call

for a federal election in October 2000, but was reintroduced in February 2001.

- A proposal to protect Canadian watersheds through a Canada-wide accord on bulk removals of water. The accord would commit provinces to prohibiting bulk removals from watersheds under their sole jurisdiction. Negotiations for the accord began in 1999. In November that year, all of Canada's environment ministers (except Quebec's) agreed to prohibit the bulk removal of surface water and groundwater from the Canadian portion of major basins. At the end of our audit, 10 of Canada's 14 federal, provincial, and territorial jurisdictions, including Ontario, had endorsed the accord; four others were still considering it. Quebec has interim legislation in place to prohibit water removal.

3.5.23 The federal government is unable to enforce an accord such as the 1999 strategy proposed. Even if all jurisdictions signed it, the accord would still be only a voluntary agreement, dependent on the continued political will of all provinces. If a province later decided to allow the bulk removal of water from a lake within its jurisdiction, the federal government would have no legal recourse.

Did you know?

- Total volume of lakes Superior, Huron, Erie, and Ontario at low water levels: **17,764 km³**
- Amount of groundwater in basin: **unknown**
- Percentage of water in the Great Lakes that is renewable: **about 1**
- Number of litres of water per day that each Canadian household uses: **326**
- Average cost to Canadians in 1994 for 1,000 litres of water: **96 cents**

Federal objectives for realistic pricing are not being met

3.5.24 The government's 1987 Federal Water Policy committed it to promoting and applying the principles of realistic pricing and user pay. Charging a price for water that reflects both the value of the water and the value of the service—the cost of purification, distribution, cleaning, and disposal—has two important effects. First, consumers tend to use water more efficiently because it saves them money. Second, with the consumer paying the full cost of the service, distributors can spend what is needed to maintain and expand the supply. Regulating how water is provided and priced are provincial and municipal responsibilities, but there are means other than regulation that the federal government could use to carry out its policy.

3.5.25 Canadians use more water per person than almost anyone else on the planet. This is partly because users are rarely charged the full cost of cleaning, supplying, taking away, and recleaning the water they use. On average, Ontario residents are charged less than half this cost on their water bills; most Quebec residents are not charged at all by volume for the water they use. The costs of using water that do not show up on water bills are typically hidden in municipal or regional property taxes, providing no incentive to use less water. In Canada, metered households that paid for water by volume in 1996 used about 268 litres per person every day, compared with 416 litres in households that paid a flat rate.

3.5.26 Since 1987, Environment Canada has taken several modest measures to encourage consumers to manage their demands and conserve water. It has prepared public information materials such as brochures, newsletter articles, and a Web site. It has produced technical studies on realistic pricing and demand management. It also maintains databases on municipal and industrial water consumption and water pricing in major cities across Canada. In

conjunction with the Canadian Water and Wastewater Association, Environment Canada has helped to develop an on-line database of experience with water efficiency.

3.5.27 Missed opportunity to link policies and programs. The federal program of grants for infrastructure has been an important tool for improving municipal infrastructure throughout the basin. Between 1994 and 1999, the federal government contributed \$126 million to Ontario and \$210 million to Quebec for municipal water and sewer projects. Yet neither phase of the program required using water pricing policies as a criterion in evaluating projects. The program funded some water conservation projects but gave no priority to those that promoted demand management or realistic pricing, a federal policy commitment.

3.5.28 Through the Great Lakes 2000 Cleanup Fund, the federal government has spent \$7.7 million to improve sewage treatment (for example, sewage plant optimization studies) and \$8.7 million to handle urban runoff (such as upgrading combined sewer overflows). Like the infrastructure grants, the Great Lakes 2000 Cleanup Fund did not make realistic pricing a criterion in funding projects.

3.5.29 Nor does the federal government's current "green" infrastructure program make any reference to water pricing policies. The government has allocated \$516 million to Quebec over the life of the program; when combined with matching grants by Quebec's provincial and municipal governments, a total of \$1.5 billion will be available. Ontario will get \$681 million in federal money over the life of the program, for a total of more than \$2 billion when combined with matching provincial and municipal grants. The agreements with both provinces stipulate that 40 percent of the funds must go to "greening" municipal infrastructure. While these agreements do recognize the importance of improving water and wastewater management, they do not include realistic pricing of water to consumers as a criterion in evaluating proposed projects.

Conclusion

3.5.30 The federal government continues to monitor water flows, discharges, and levels in the Great Lakes and St. Lawrence River basin. Though recent efforts are encouraging, it still lacks basic knowledge of groundwater aquifers in the basin. Since 1987, when the federal government committed to improving its understanding of groundwater, its knowledge has remained fragmented and incomplete.

3.5.31 The government has taken active steps to carry out its strategy on bulk removals of water, although we note that it took more than a decade to become active after its 1987 policy commitment and its 1988 proposed legislation, which never became law. The strategy was not yet complete by the end of our audit, and it is not clear whether it will be enough to prevent large-scale exports of Canada's fresh water.

3.5.32 The federal government has not carried out its policy to reduce domestic consumption of water through demand management and realistic pricing. The design of its funding programs does not specifically encourage water pricing as stated in the water policy.

Our audit objectives and main findings

Holding the federal government to account		
1 Has the government fulfilled its commitments?	Commitments	Results
	Monitor surface water.	The government has a surface water monitoring program in place that provides useful information.
	Develop understanding of ground-water in basin.	It has an incomplete and fragmented picture of groundwater in the basin.
	Prohibit large-scale bulk water removals from the basin.	It has completed a reference to the International Joint Commission. Not all provinces and territories have endorsed an accord that, in any case, would be non-binding. Amendments to the <i>International Boundary Waters Treaty Act</i> had not been passed at the conclusion of our audit.
Promote realistic water pricing and demand management.	The government has not taken explicit measures to encourage the application of water pricing in its infrastructure grants program.	
Assessing the government's performance		
2 Has the government applied good management practices?	Strengths	Weaknesses
	The government's water monitoring program is planned well—it sets priorities and involves responsible departments.	The government had limited involvement in groundwater between 1991 and 1997.
	It is working with provinces, through a memorandum of understanding, to undertake monitoring of water flows and discharges.	
It is gathering and providing users with information on municipal water use and pricing through an on-line database.		
3 Has the government established good governance structures?	It provides information on water levels to all users.	The government has not clarified its role in and commitment to demand management. The federal government and some provincial and territorial governments have an accord to limit bulk removals of water, but it is only voluntary.
	It shares data on water levels and plans—federal, provincial, and others—on a timely basis.	
	It has clearly defined roles and responsibilities for water quantity.	

3.6 Planning for Good Water Quality

The issue



Plans are needed to improve water quality in the basin.

3.6.1 Through successive water quality agreements with the U.S. and Ontario over the past three decades, the federal government has planned various actions to improve water quality in the Great Lakes. Similarly, the federal and Quebec governments, through successive agreements, have made concerted efforts to improve water quality along the St. Lawrence River. Examples include reducing phosphorous loading in Lake Erie, carrying out remediation activities in Ontario areas of concern, and reducing releases of toxic substances into the Great Lakes and the St. Lawrence River. While a host of individual actions in both regions had clear plans and priorities, the federal government and its partners were not implementing any basin-wide plans for water quality in either the Ontario or the Quebec region.

3.6.2 The federal government, working with its partners, is in the process of creating a plan for each of the Great Lakes bordering Canada. These plans are to provide decision makers with a good understanding of the risks posed by contamination so they can take the most appropriate actions to address water quality problems. Future progress in the Great Lakes may depend on how well the federal government and its partners develop and carry out the plan for each lake.

The federal role

3.6.3 Under the *Canada Water Act* the federal government, with the provinces, is to develop plans for managing waters of national interest and waters that cross provincial and national boundaries, such as the Great Lakes and the St. Lawrence River.

3.6.4 The 1987 Protocol to the Great Lakes Water Quality Agreement committed the Canadian and U.S. federal governments to develop and carry out, with provincial and lakeside state governments, a lakewide management plan for each of the Great Lakes. The purpose of the plans is to provide comprehensive assessments of significant threats to water quality and restore the beneficial uses of the lakes.

3.6.5 There is no specific commitment to prepare a similar planning document for the St. Lawrence River. Nonetheless, the Canada–Quebec Co-operation Agreement on the St. Lawrence—and good management practices—call for effective planning for the St. Lawrence River.

Our audit questions

3.6.6 Has the federal government identified major threats to water quality and priorities for managing them? Has it developed plans for acting on those priorities, with identified schedules, resource needs, and responsible parties? Has it decided how progress will be measured? Has it considered the ecosystem and areas of concern in planning to improve water quality? Has it used the plans to guide its actions?

The story

Developing lakewide management plans

3.6.7 The development of lakewide management plans is a very complex process. Each lakewide plan is developed over a period of years in joint work by representatives from several Canadian and U.S. federal departments,

U.S. state departments, provincial ministries, and many other stakeholders. Initially, lakewide management plans were to be developed in four stages: defining the problem, scheduling reductions in contaminants, choosing remedial measures and reduction strategies, and reporting on significant progress. In the interest of speeding up the process, Canada and the U.S. abandoned the four-stage sequence for a process that would update the state of knowledge and the management plans every two years, beginning in 2000.

3.6.8 Planning for Lake Superior. The Lake Superior Lakewide Management Plan is the most advanced of any of the lake plans. Stage 1 and its update report were completed in September 1995. The plan identified 22 “critical” pollutants and determined 9 of them to be priorities for elimination. They include mercury, PCBs, DDT, and dioxins. These substances enter the waters from local and faraway sources.

Did you know?

- Estimated percentage decrease in mercury discharges in Lake Superior over the last 10 years: **60**
percentage decrease in dioxin: **75 to 95**

3.6.9 Reduction targets for 9 of the 22 critical pollutants were set in September 1996. Proposed reduction strategies, with actions to be taken by each agency for the next two or three years, were identified in April 2000, as were actions toward eliminating the 9 priority pollutants identified in stage 1. The stage 3 report recognizes the importance of both source monitoring, which measures the amount of a critical pollutant being released from a particular facility, and environmental monitoring, which measures the concentration of contaminants in the environment.

3.6.10 The Lake Superior plan makes a clear commitment to the ecosystem under five ecosystem themes: aquatic communities, terrestrial wildlife communities, habitat, human health, and developing sustainability. Its action plans cover the Lake's watershed, and it notes the importance of considering the eight areas of concern around the Lake. Four of these are in Canada and another, on the St. Mary's River, is shared by Canada and the U.S.

3.6.11 However, as a document prepared by various partners, the plan itself does not commit the federal government or any other partner to action. It identifies Environment Canada as a lead agency for more than 30 of the planned actions, but in many cases the Department has not allocated resources to those actions or made any commitments to act. And although the plan identifies what should be measured, no one has made a commitment to do the measuring.

3.6.12 Planning for Lake Huron. So far, the federal government has not begun to plan for action in the Lake Huron watershed. The Michigan Department of Environmental Quality, with the support of the U.S. Environmental Protection Agency, launched a Lake Huron initiative in 1999. Canada's federal involvement in the initiative has been limited to Environment Canada's participation on the steering committee and development of graphics of the Lake Huron watershed. The Ontario Ministry of Natural Resources has also participated. The Lake Huron and Georgian Bay watershed includes the Spanish River and Severn Sound areas of concern as well as Collingwood Harbour, which was removed from the list of areas of concern in 1994. The federal government has not begun to consider the

major threats to the Lake, priorities for action, cleanup and pollution prevention activities, or the way it would measure progress in the watershed surrounding Lake Huron.

3.6.13 Planning for Lake Erie. In 1993, the U.S. Environmental Protection Agency and Environment Canada began the initial phases of planning for the development of a lakewide management plan for Lake Erie. The first report of the Lake Erie plan was prepared in 2000, and an update is planned every two years.

3.6.14 So far, the main accomplishment of the Lake Erie plan has been to identify the critical pollutants that require priority action, namely, mercury and PCBs. The plan cites air deposition as the largest source of mercury; contaminated sediments contain the greatest mass of mercury. Land use practices and nutrients in runoff are cited as the main human threats to the future state of the Lake Erie ecosystem.

3.6.15 At present, the problem definition phase of the Lake Erie plan is just nearing completion, so objectives have been established only for mercury and PCB reductions; no indicators at all have been established. The plan lists several ongoing projects in the Lake Erie watershed, but it does not identify how their progress will be monitored.

3.6.16 The Lake Erie plan emphasizes the importance of an ecosystem approach to understanding the sources of pollutants and developing action plans. It also notes that there are 12 areas of concern on the Lake but does not identify their significance to the watershed (see case study, Phosphorus in Lake Erie: Do we need a new plan?).

3.6.17 Planning for Lake Ontario. Stage 1 of the Lake Ontario plan was completed in May 1998. It identifies several toxic chemicals, including PCBs, DDT, mirex, dioxins, and furans, as the main contaminants in the Lake. The plan cites the main tributaries that carry each of these chemicals into the Lake. It notes that the U.S. tributaries are the main sources of PCBs and dieldrin, while Canadian tributaries contribute more DDT, dioxins, and mirex.

3.6.18 The plan also estimates that sources of these chemicals upstream pollute Lake Ontario more than sources in the basin, though these estimates are considered preliminary.

3.6.19 The Lake Ontario plan identifies the key sources of critical contaminants, but it does not set priorities for action, outline action plans, or suggest how actions should be monitored. It identifies the areas of concern around the Lake but does not describe their importance to the quality of the Lake itself. And it focusses on the effects of critical contaminants on water quality; it does not consider their effects on the broader ecosystem.

Phosphorus in Lake Erie: Do we need a new plan?

This case study demonstrates the importance of developing and acting on lakewide plans.

From the 1950s to the 1970s, Lake Erie was highly polluted, mostly by phosphorus. Massive growths of algae were killing fish, degrading beaches, and clogging water intakes. The phosphorus was attributed to industrial wastes, agricultural runoff, and municipal wastewater containing household laundry detergents.

Lake Erie's shallow waters made it particularly vulnerable to land use changes and pollutants. Among the Great Lakes, the Lake Erie watershed had the fastest-growing population, the largest proportion of land devoted to agriculture (67 percent), and the highest proportion of shoreline in use. It also had by far the largest amounts of suspended solids entering the Lake from its tributaries—6.5 million tonnes a year, compared with 1.6 million tonnes a year for Lake Ontario, and less for the other lakes.

Early success in reducing phosphorus. In 1970, a study of Lake Erie by the International Joint Commission concluded that amounts of phosphorus entering the Lake had to be reduced. Canada and the U.S. signed the Great Lakes Water Quality Agreement in 1972; among other things, it specifically included programs and requirements to reduce phosphorus loadings into Lake Erie.

The Great Lakes Water Quality Agreement of 1978 identified new reduction requirements. These were revisited in a supplement to the Agreement in 1983, which committed the parties to reduce by another 2,000 tonnes the amount of phosphorus entering Lake Erie. Canada's share of this reduction was 300 tonnes. The amendment also called for phosphorus reduction plans and committed both governments to prepare inventories of treated areas, develop watershed modelling, and improve the measuring of phosphorus in tributaries.

During that period, Canada and the U.S. took several actions. They spent over \$7.6 billion to build or upgrade municipal sewage treatment plants, limited the amount of phosphorus allowed in household laundry detergents, and encouraged farmers to practice conservation tillage and manage fertilizers better. As a result, the annual releases of phosphorus into the Lake by municipalities and industry were reduced from 28,000 tonnes in 1968 to just over 11,000 tonnes in 1985. Concentrations in the open lake responded accordingly.

The problems are not resolved. Recent evidence shows that the gains of the 1970s and 1980s are being reversed. Phosphorus levels in the western part of Lake Erie have been higher than anywhere else in the basin, at concentrations higher than the target in each of the last six years for which data are available—in 2000, roughly three times higher. A 1998 workshop concluded that “phosphorus levels are far from under control.”

The contribution to these levels by each source of phosphorus is not known, although information for Ontario suggests that farming contributes over 300 times more than municipal sources. The amount of phosphorus entering Lake Erie from each source has not been estimated since 1994. Without this information, changes in phosphorus levels from different sources may go undetected. The International Joint Commission noted in 1998 that it was impossible to make these estimates because recent budget cuts had caused the “wholesale elimination of surveillance and monitoring programs.”

It's time to complete the Lake Erie management plan. The primary management tool for responding to the phosphorus problem in Lake Erie is the lakewide management plan. While the 1970s and 1980s saw significant progress, we stand to wash away those gains. Effective, ongoing planning for the Lake, carrying out the planned actions, and monitoring the results are the surest way to recoup our investment and ensure the long-term beneficial uses of the Lake.

When will the federal government have lakewide management plans?

3.6.20 Almost 14 years after the federal commitment to develop lakewide management plans, most of them are still in their early stages of development (Exhibit 3.5). Most do not yet recommend actions to be taken. In our opinion, the engagement and support of federal departments in the lakewide management plan process, aside from Environment Canada, has been uneven and ad hoc. It is not evident when the plans will be completed or whether the government will use them to strategically direct its actions and those of others to restore the Great Lakes.

Planning for the St. Lawrence River

3.6.21 The federal government is not required to prepare a comprehensive plan for the St. Lawrence River comparable in intent to lakewide management plans (Exhibit 3.5). There are no plans developed explicitly to improve water quality in the St. Lawrence River. We audited how the federal government, working with the Quebec government and other partners, is planning to address it in future actions.

3.6.22 The first two phases of the St. Lawrence Action Plan addressed significant water quality issues. Phase I (1988–1993) of the Action Plan aimed to reduce discharges from major industrial sources, and it developed a *State of the Environment Report on the St. Lawrence River*, among other things. Phase II (1993–1998) expanded those efforts to additional industrial plants.

3.6.23 Risks to the St. Lawrence River are well known. In 1996 the St. Lawrence Action Plan published the *State of the Environment Report on the St. Lawrence River*, which described the leading sources of water pollution along the river. These were discharges from municipal and industrial facilities and atmospheric inputs from various sources. The main pollutants in the river were persistent organic pollutants such as pesticides, PCBs, dioxins, and furans from agricultural, petroleum, and chemical plants and from pulp and

Exhibit 3.5 The state of federal management plans for the Great Lakes and the St. Lawrence River

Elements	Lake Superior	Lake Huron	Lake Erie	Lake Ontario	St. Lawrence River
Sources of contamination identified	○	●	◐	○	Information is dated
Priorities established	○	●	○	●	◐
Action plans developed	○	●	◐	●	◐
Monitoring identified	○	●	●	●	◐
Areas of concern considered	○	●	◐	◐	Not applicable
Ecosystem approach used	○	●	○	●	○
Plans to guide actions developed	●	●	●	●	○

○ Yes

◐ In part

● No

paper mills. Inorganic pollutants, including heavy metals such as mercury and chromium, were also significant pollutants.

3.6.24 According to the 1996 report, flows from the Great Lakes were responsible for 44 percent of the river's inorganic contamination and 40 percent of organic contamination. By contrast, industrial effluents discharged directly into the St. Lawrence were responsible for 14 percent of inorganic contamination and just 3 percent of organic contamination. The remainder come from tributaries and other sources, such as the atmosphere. These data were from 1991, before some of the effects of the St. Lawrence Action Plan would have shown up in the environment.

3.6.25 Reporting by the Action Plan on the state of the environment was dropped after Phase II. In 1998 an update on water quality in the St. Lawrence River was produced, using data to 1996. However, much of the information is not comparable with information in the 1996 report, due to differences in the methods of analysis and the indicators used. The few comparisons that can be made show a trend toward better water quality. This is mainly due to improved sewage treatment and less-toxic emissions from pulp and paper mills.

3.6.26 Current planning not explicitly related to water quality information. The 1996 *State of the Environment Report on the St. Lawrence River* and its 1998 update did not identify which industries or municipalities should receive priority attention or what actions should be taken. Phase III of the St. Lawrence Action Plan, St. Lawrence Vision 2000, was not developed primarily on the basis of water quality information. Instead, as described in more detail in Section 7 of this chapter, priorities were established by working groups of officials from federal and provincial agencies, the academic community, and other organizations. As a result, the priorities cover much more than water quality.

3.6.27 Nonetheless, St. Lawrence Vision 2000 does include components that address water quality. It has earmarked \$86.8 million from 1998 to 2003 for projects that include mitigating the negative effects of farm practices on water quality. Another \$31.4 million is allocated for various projects to reduce pollution from industrial and urban sources. As with other projects in St. Lawrence Vision 2000, these action commitments and spending by each agency are tracked and made available to the program's officials.

Conclusion

3.6.28 The federal government, with its partners, has done a lot of work to understand the risks to water quality in the Great Lakes and the St. Lawrence River. But it needs to do much more. The presence of critical contaminants is generally known, but not always their sources. The available information does not show what threatens the basin most and, therefore, where the federal government should focus its efforts.

3.6.29 The government has set some priorities for action, but it is not always clear that they reflect the biggest risks. Plans throughout most of the basin, if they exist, tend to be weak. The federal government has not established good

indicators of the state of the environment and used them to measure the effects of its programs on the basin's ecosystems.

3.6.30 The government knows less about the sum than the parts. Collectively, the lakewide management plans and the planning in St. Lawrence Vision 2000 provide a lot of information on contaminants in the Great Lakes and the St. Lawrence River. But they do not show a clear picture of the state of the basin overall. Without a good understanding of what is happening in the basin, it is difficult to set priorities or develop effective plans.

Our audit objectives and main findings

Holding the federal government to account		
① Has the government fulfilled its commitments?	Commitments	Results
	Develop water resource management plans for watersheds of significant national interest.	<p>The government has completed a plan for Lake Superior; however, it has not allocated resources to implement the over 30 federal actions identified in the plan.</p> <p>It does not have a lakewide management plan for Lake Huron and has incomplete lakewide management plans for lakes Erie and Ontario.</p> <p>It does not have a plan for the St. Lawrence River; however, planning elements are present in St. Lawrence Vision 2000.</p>

3.7 The Absence of a Federal Fresh Water Strategy

The issue

3.7.1 The waters of the Great Lakes and St. Lawrence River basin face many threats, ranging from pollution by local industries and municipalities to global climate change. Today, many Canadians worry about the harmful effects of urban runoff, agricultural manure, pesticides, and other pollutants. Proposals to export water from the Great Lakes and elsewhere in Canada—and the reactions they generate—are further reminders of how complex the issues surrounding Canada's supply of fresh water have become. Many of the federal government's programs and activities touch on some aspect of water management, pointing to the need for clear federal priorities for the management of fresh water in Canada and a strategy to carry them out.

The federal role

3.7.2 Federal commitments to fresh water. At least nine pieces of federal legislation establish a host of responsibilities for the federal management of fresh water. And at least six federal departments play an active role in the government's commitment to a safe and secure water supply in the Great Lakes and the St. Lawrence River. Environment Canada, as the lead, is the most active. Other departments are Fisheries and Oceans, Health Canada, Natural Resources Canada, Agriculture and Agri-Food Canada, and Foreign Affairs and International Trade. These departments have a large collective commitment to the Great Lakes and St. Lawrence River basin.

3.7.3 In 1987 the federal government released its Federal Water Policy. Its aims were to encourage the efficient and equitable use of fresh water and to protect and enhance water quality.

Our audit questions

3.7.4 What are the federal government's priorities for fresh water? Do its programs and activities in the basin reflect its priorities? Has it implemented the Federal Water Policy?

The story

The Federal Water Policy

3.7.5 In 1987, the federal government published its Federal Water Policy commitment to protect and enhance the fresh water resource. Reflecting the government's view that Canadians undervalued their water resource and therefore overused and abused it, the policy set out five broad strategies for water pricing, science leadership, integrated planning, legislative changes, and improving public awareness. With concerns emerging in Canada and internationally about the demand, availability, and use of water, these were important strategies.

The policy was set adrift

3.7.6 Several federal departments share responsibility for many of the issues that the policy covers. But the government has never explicitly allocated to any of them the responsibility or the funds to carry out the actions set out in the policy.

3.7.7 The Interdepartmental Committee on Water was to put the policy into effect. Established in 1968, this was a committee of senior officials from nine

Did you know?

- Year when consultations on a federal water policy were initiated: **1984**
- Number of years later that the Federal Water Policy was released: **3**
- Number of annual progress reports produced since 1988 by the Interdepartmental Committee on Water (the committee of senior government officials formed to co-ordinate federal actions and produce annual progress reports): **2**
- Number of federal departments with an active role in fresh water: **6**
- Number of years after the Federal Water Policy was issued that formal discussions began on clarifying federal roles and responsibilities for fresh water: **10**
- Date when the federal government will adopt the new draft freshwater strategy, the associated strategies, and departmental roles and responsibilities: **unknown**

federal departments involved in water issues. The government made the Committee the focal point to co-ordinate the actions in the water policy among federal departments and agencies. It was also to produce an annual report on the overall implementation of the Federal Water Policy, the strengths and weaknesses of that policy's delivery, and areas for future examination.

3.7.8 The Committee has tabled only two progress reports, in 1990 and in 1994. Otherwise, it has been generally inactive. In 1993 the Auditor General criticized the Committee for not playing a stronger role in monitoring and co-ordinating departments' actions under the Federal Water Policy. However, the Committee stayed inactive for close to four years, and its progress reports on the policy's implementation do not cover events past 1992.

3.7.9 Environment Canada intended to carry out many of the actions in the Federal Water Policy through its Inland Waters Directorate. In the fall of 1993, however, the Directorate was disbanded and its large staff dispersed among the remaining services of the Department. The Department's focus on water was lost. The next year, Environment Canada carried out an internal review to determine whether and where it was meeting its various responsibilities for water. Among the review's findings were the following:

- Water quality activities in the regions, although dispersed, could be identified. At headquarters they were much less apparent.
- There was no national focal point for international matters related to fresh water.
- The Department's regional offices were conducting hydrological analyses, but their capability varied among regions. And activities tended to favour specific local priorities. There was little national effort to systematically apply new methods of analysis and modelling.
- Groundwater programs were operating at each end of the country, in the Department's Pacific and Atlantic regions. But there was no national leadership or co-ordination of their activities and no efforts to develop and implement national strategies or guidelines for groundwater management.
- Research on contaminants in groundwater had been transferred to two research institutes whose core expertise in groundwater was eroding.

3.7.10 In the mid-1990s, other departments also scaled back their commitments to water management. Health Canada found it harder to fund its program. Fisheries and Oceans advised Environment Canada that it would scale back many activities in the Great Lakes. It had become unclear which of the five strategies or 25 policy statements and related activities in the water policy were still priorities.

New initiatives do not offer direction

3.7.11 In 1997, the inactive Interdepartmental Committee on Water began formal discussions to clarify federal roles and responsibilities for fresh water. In 1998, Environment Canada completed a draft discussion document, *Towards a Federal Freshwater Strategy*. This document was intended to lead to

an update of the 1987 Federal Water Policy. It was the subject of extensive consultations in the federal government and with the provinces. The Federal Water Policy was not updated.

3.7.12 In 2000, a second draft discussion paper was prepared, *Fresh Water—A Federal Discussion Document*. This paper on fresh water updated the 1987 Federal Water Policy and set out 25 new or revised policy statements.

3.7.13 While the discussion paper describes potential federal priorities and commitments, these largely restate or confirm current federal activities. The discussion paper does not offer new direction or priorities for the federal government, nor does it identify or recommend funding levels for any of the 25 policy statements. Its status remains unclear.

3.7.14 Environment Canada reports that recent attempts to develop a freshwater strategy have focussed on enhancing collaboration with the provinces and territories in the conservation and protection of water. According to Environment Canada, this has the potential to form the basis for a national strategy, of which a federal strategy would be a component. Throughout this evolution of events there has been, in our opinion, a lack of a consistent and clear strategy for updating the Federal Water Policy. At the conclusion of our audit, the timetable for updating the policy and the associated departmental roles and responsibilities, whether as part of a national strategy or not, was unclear.

Conclusion

3.7.15 The relative importance of various water issues can change over time. Without established and articulated priorities, programming and funding may not address the issues of greatest importance. Throughout the 14-year life of the Federal Water Policy, the government has never formally identified its top priorities or decided how it would put them into effect in Canada's freshwater bodies. It has not reported any progress made since 1992 toward implementing its Federal Water Policy.

Our audit objectives and main findings

Holding the federal government to account		
① Has the government fulfilled its commitments?	Commitments	Results
	Implement the 1987 Federal Water Policy.	<p>The government has issued no updates on progress made since 1992 toward implementation of its water policy.</p> <p>It has undertaken minimal efforts to affect water pricing, a goal of the policy.</p> <p>It released its federal strategy to prohibit bulk water removals in 1999 and has partially completed some elements.</p>

Our audit objectives and main findings

Assessing the government's performance		
<p>2 Has the government applied good management practices?</p>	Strengths	Weaknesses
	<p>The 1987 Federal Water Policy is broad in scope and includes goals and a series of action items for each objective.</p> <p>The 2000 draft discussion paper on fresh water is a restatement or confirmation of current federal activities.</p>	<p>The policy does not have a formal process for setting priorities.</p> <p>It does not include a plan for its implementation.</p> <p>The discussion paper does not offer new direction or priorities for the federal government.</p> <p>It does not prioritize the 25 policy statements.</p> <p>It does not commit any federal resources to specific actions.</p>
<p>3 Has the government established good governance structures?</p>	<p>The Federal Water Policy addressed important public policy issues.</p>	<p>Responsibility is shared but the policy makes no explicit allocation of responsibility or funding among departments for specific actions.</p> <p>The policy does not make specific departments accountable for specific actions.</p>
	<p>The government published detailed progress reports on the policy in 1990 and 1994.</p>	<p>The government has not published progress reports on the policy since 1994.</p>