

WATER. OUR LIFE. OUR FUTURE.

QUÉBEC WATER POLICY

Québec 

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QUÉBEC WATER POLICY

A Word from the Premier

A WATER POLICY ROOTED IN A VISION OF SUSTAINABLE DEVELOPMENT



Water in Québec is a source of life, culture, development, pleasure and good health. Indeed, the abundance, exceptional quality and accessibility of water in this province provide security not only for our quality of life, but for that of future generations. For this reason, we shall today unveil Québec's new approach to managing this invaluable resource, striving towards a global vision within a perspective of sustainable development.

I take great pride in presenting this innovative Policy that recognizes water as a natural resource belonging to Québec society as a whole. The policy is based on grassroots participation and the democratization of information. It also confirms the Québec government's determination to ensure a sound system of water governance that conforms to its character as part of the collective heritage of all Quebecers. This governance

demands the highest level of public participation, and we are calling upon all Québec citizens to contribute to water and ecosystem management. Indeed, the cornerstone of the Québec Water Policy is a strong commitment from all Quebecers to join together and build momentum for this important cause.

Renewable freshwater resources in our rivers alone account for 3% of the world's reserves – an impressive quantity particularly when compared with other countries. Our province is a natural tapestry of thousands of lakes and rivers. Among these is the majestic St. Lawrence, which has played a key role in our history and continues to be a source of prosperity and pride as one of the most important waterways in the world. There is no substitute for water, which makes it the most precious of Québec's abundant resources. It is also one of the most endangered.

In recent years, Quebecers, like citizens in other countries, have become increasingly aware of the vulnerability of this wealth that our current practices may threaten. Therefore, it became imperative that we undertake a process of in-depth reflection in an effort to develop a water policy that would guarantee the sustainability of this resource, as well as the protection of both public health and aquatic ecosystems, and greater harmony of all our interventions. These reflections have now been translated into the new Québec Water Policy.

Indeed, it is in a perspective of integrated management that I have delegated a Minister of State to oversee the coordination of water management. I wanted to ensure that the laws, regulations, policies, programs and other intervention mechanisms at the provincial or international levels likely to have an influence on water and aquatic ecosystems reflect a consistent strategy.

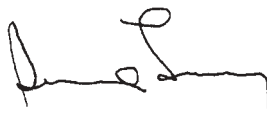
The integrated management will be made possible by means of close collaboration among the ministries and public agencies that have a joint responsibility for water management. This new approach will also call upon all water-management players at the different levels of intervention: local and regional, public and private

managers of this resource, major water users, social, economic, environmental and scientific sectors, and especially all Québec citizens. Over fifty government commitments will be implemented within the context of this Policy, in concert with all players.

Therefore, the Québec Water Policy establishes a broader context that complements and integrates the sector-based policies of rural, marine and river transport.

The new water governance that we intend to apply in the 21st century is based on two values cherished by Québécois – democracy and collaboration. Moreover, it takes into account major global trends in matters of water protection and enhancement, as well as a water management framework.

The commitments we are making today demonstrate Québec's determination to assume its responsibilities at home and throughout the world, with respect to provincial water management. Rooted in a vision of sustainable development, these commitments represent our pledge to protect and preserve this wealth that is a source of life for us and for future generations, whose fate is the responsibility of each and every one of us.

A handwritten signature in black ink, appearing to read 'Bernard Landry', with a stylized, cursive script.

Bernard Landry

*A Word from the
Minister of State for
Municipal Affairs and
Greater Montréal, the
Environment and Water*

A NEW VISION OF
WATER GOVERNANCE



It is a great honour for me as Minister of State for Municipal Affairs and Greater Montréal, the Environment and Water to present to Quebecers this first Québec Water Policy that introduces a new vision of water governance.

This Policy is part of a global effort to provide a better framework for water management. It meets the legitimate expectations of the population in terms of the way in which we must henceforth manage, protect, restore and develop this critical resource that is inextricably intertwined with our development and our future.

The Québec Water Policy contains recognition of the fundamental rights of Quebecers to enjoy full access to water to satisfy their essential needs. By means of this Policy, we are reaffirming that water is considered the collective heritage of Quebecers and that it constitutes “a common good,” which means that in its natural state water cannot be subject to proprietary interests. The reaffirmation of this status of water, in a perspective of sustainable development, imposes an obligation on the government to act in the public interest to regulate water management in order to preserve this resource and its ecosystems, while reconciling the often-conflicting uses of water.

We also intend to protect the quality of water and aquatic ecosystems, in order to ensure their sustainability and better protection of public health. That is why we have adopted a global, integrated approach with a view to increasing the accountability of managers and users of water within a natural groundwater basin, or watershed. We also expect to apply integrated management to the extensive St. Lawrence River system that overflows Québec borders in many places, a process requiring close collaboration among all the bordering States. We intend to grant this river special status in recognition of its remarkable natural environment, to take precedence over its important economic value.

The Québec Water Policy is the Québec government’s pledge to take several measures in order to attain these objectives. To this end, various commitments have been put forward related to water monitoring and treatment, notably in the agricultural, industrial and municipal sectors; access to more complete information on water and aquatic ecosystems; protection and restoration of aquatic ecosystems; strengthen Québec’s participation in cross-border and international organizations, notably those concerned with the Great Lakes and the St. Lawrence River; municipal infrastructures for which we are striving to ensure sustainability and improve water management services; and, lastly, public access to numerous bodies of water and the development of recreation-based tourism, all of which will greatly contribute to improving the quality of life for Quebecers.

For the first time, Québec has a policy that integrates the different aspects of water management within the framework of a new form of governance based on the concerted efforts and accountability of all concerned parties. This global vision, which is a definite integral part of the sustainable development perspective, will enable us to better ensure the quality and preservation of water in Québec, as well as its many uses.

I would like to extend a special word of thanks to the personnel of the Ministère de l'Environnement for the quality of the vision of which they never lost sight, throughout the drafting of this policy. I also wish to congratulate my fellow members and ministers who enthusiastically contributed to making this vision a reality in a spirit of cooperation. Lastly, I commend the efforts of all those individuals who on behalf of

environmental groups, citizen committees, sector-based, municipal or industrial associations provided input, either directly by playing a consultant role or indirectly by devoting their unflagging efforts to foster sustainable development. Indeed, this type of commitment represents, beyond any shadow of a doubt, one of our society's greatest sources of wealth.

I invite all of you now to rise collectively, so that together we can meet this new challenge.

A handwritten signature in black ink, appearing to read 'André Boisclair', with a long horizontal stroke extending to the right.

André Boisclair

Table of contents

INTRODUCTION	1	5.1 Ensuring Safe, High-Quality Drinking Water	45
<i>Chapter 1</i>		5.2 Protecting Aquatic Ecosystems	46
1. WATER – A 21ST-CENTURY ISSUE	3	<i>Chapter 6</i>	
1.1 Water – A Coveted Resource	3	6. CONTINUATION OF WATER CLEAN-UP	
1.2 Water In Québec: A Status Report	4	EFFORTS AND IMPROVED MANAGEMENT OF	
1.3 A Better Framework for Water Management:		WATER SERVICES: <i>RECOVERING LOST USES</i>	55
An Emerging Will and a Global Imperative	6	6.1 Intensifying Agricultural Clean-Up Efforts	56
1.4 A General Framework for Sound Water Management		6.2 Broadening Industrial Clean-Up Efforts	62
in Québec	7	6.3 Supplementing Municipal Clean-Up Efforts	64
<i>Chapter 2</i>		6.4 Ensuring the Sustainability of Municipal Infrastructures	
2. THE ISSUES AND MAIN POLICY ORIENTATIONS	9	and Improving the Management of Water Services	67
2.1 Water – A Collective Heritage of All Quebecers	9	<i>Chapter 7</i>	
2.2 Protection of Public Health and Aquatic Ecosystems	10	7. PROMOTION OF WATER-RELATED	
2.3 Water – A Resource to be Managed in an Integrated		RECREOTOURISM ACTIVITIES:	
Manner and from a Sustainable-Development Perspective	11	<i>THE PLEASURES OF WATER</i>	73
2.4 Orientations of the Policy	13	7.1 Expanding Access to Water and Promoting Sportfishing	73
<i>Chapter 3</i>		7.2 Promoting Water Safety and the Quality of Life	
3. REFORM OF WATER GOVERNANCE:		on Lakes and in Watercourses	78
<i>A STRATEGIC CHOICE</i>	15	7.3 Promoting Nautical Tourism	79
3.1 Revision of the Legal Framework Pertaining to Water	15	<i>Chapter 8</i>	
3.2 Implementation of Watershed-Based Management	17	8. IMPLEMENTATION	83
3.3 Acquisition of Knowledge and Information About Water	22	8.1 Government Coordination and Public Participation	83
3.4 Introduction of Economic Instruments Relevant		8.2 Formulation of Québec's Expectations as Concerns	
to Governance	26	the Federal Government	84
3.5 Strengthening of Québec's Partnerships and Relationships	28	8.3 Policy Evaluation and Monitoring	86
<i>Chapter 4</i>		CONCLUSION	87
4. IMPLEMENTATION OF INTEGRATED		LIST OF ABBREVIATIONS AND ACRONYMS	88
MANAGEMENT OF THE ST. LAWRENCE RIVER:		<i>Appendix 1</i>	
<i>A MAJOR CHALLENGE</i>	35	THE MAIN USES OF WATER	89
4.1 A Natural Wonder	35	Municipal Uses	89
4.2 Environmental Threats and Clean-Up Efforts	37	Agri-Food Uses	89
4.3 Two Main Courses of Action for the St. Lawrence River	39	Industrial Uses	90
4.4 Special Status for the St. Lawrence River	39	Energy Uses	90
4.5 Integrated Management of the St. Lawrence River	40	Recreational Uses	91
<i>Chapter 5</i>		<i>Appendix 2</i>	
5. PROTECTION OF WATER QUALITY AND		List of Government Commitments	92
AQUATIC ECOSYSTEMS: <i>A NECESSITY</i>	45		

Introduction

The development of the Québec Water Policy began on August 29, 1997, with the government's announcement that the Symposium on Water Management would be held in December of that year. Subsequently, a series of actions intended to lead to the adoption of this policy were taken.

The symposium, which brought together various national and international experts in the field of water, provided an initial picture of the different uses made of water in Québec and the mechanisms used for its management. Thus the symposium proceedings published in 1998 constitute a prime reference document.¹

Following the discussion by experts, the Bureau d'audiences publiques sur l'environnement (BAPE) was mandated to organize an extensive public consultation process to gather public opinion in every region of Québec. The Commission sur la gestion de l'eau heard thousands of testimonials and received close to 400 briefs that reflected public interest in and active commitment to environmental issues, and more specifically, those related to water. These consultations led to the publication and tabling, with the Minister of the Environment, on May 1, 2000, of a report² containing the Commission's recommendations. The report dealt primarily with various problems raised during the BAPE hearings, namely, the exportation of water, exploitation of groundwater, privatization of water services, health, water treatment, the St. Lawrence, protection of aquatic habitats, water pricing, and the watershed-based management approach.

On June 15, 2000, the government followed up on the Commission's report by publishing its general orientation paper for the future policy on water management.³ It set forth the orientations, objectives, and principles to be used in developing the Québec Water Policy. This Policy is therefore the outcome of a process that began five years ago and that involves all Quebecers.

The first chapter of this Policy discusses water as a 21st-century issue. It describes the international and Québec contexts in relation to water, while recalling the principles already approved by Cabinet. Chapter 2 defines the issues and government orientations set forth in the Québec Water Policy. Chapters 3 to 7 state the government's commitments with respect to the five major orientations, namely: reform of water governance, integrated management of the St. Lawrence River, protection of water quality and aquatic ecosystems, continuation of water clean-up and improved management of water services, and, lastly, promotion of water-related recreation activities. Finally, Chapter 8 provides an overview of a few elements of the implementation process involving the Québec Water Policy: government coordination and public participation, Québec's expectations of the federal government, as well as follow-up on and an evaluation of the Policy on Water.

Last of all, Appendix 1 describes the main uses of water in the municipal, agri-food, industrial, energy, and recreational sectors, while Appendix 2 contains a summary table of all the government commitments set forth in the Policy.

1 INRS-Eau, *Symposium on the Management of Water in Québec, Actes du Symposium*, volumes I, II, and III, 1998.

2 BAPE, *L'eau, ressource à protéger, à partager et à mettre en valeur*, No. 142, volumes I, II, and III, May 2000.

3 Ministère de l'Environnement, *Cadre général d'orientation de la future Politique sur la gestion de l'eau*, May 2000.

Chapter 1

WATER MASS WHICH COVERS
THE SURFACE OF THE EARTH

2.5% of this water
mass is freshwater

70% of this freshwater is
inaccessible for human usage

0.007% of the water mass
covering the surface of the
Earth is easily accessible
for human usage

Chapter 1

WATER – A 21ST-CENTURY ISSUE

The abundance and quality of water found in Québec constitute an invaluable asset. The beauty of the St. Lawrence River, the countless lakes and rivers covering the territory, and the quality of the groundwater have long been a source of pride for Quebecers. Moreover, they recognize the numerous economic, social, and cultural advantages they derive from this resource and that also give Québec an enviable place on the world stage.

The public consultation on water management revealed that water use is on the rise in Québec, as are public expectations that this resource be protected and preserved for the benefit of present and future generations. In this context, society therefore faces choices regarding water use.

Furthermore, water is a rare and valuable commodity on a global scale; it is also a source of envy and sometimes of conflict. Although water is abundant in Québec, it is not distributed evenly across the land. This is the perspective that Québec must now bear in mind as it seeks to manage this resource, while obviously having to make the choices arising from this awareness.

1.1

WATER – A COVETED RESOURCE

Traditionally viewed as a natural resource that can be taken for granted, today water is increasingly coveted. The hastening pace of economic development in the context of globalization makes it a rare commodity in some countries and a strategic resource on a global scale.

Yet freshwater, while a vital component for life and development, accounts for a mere 2.5% of all the water on the Earth's surface. Close to 70% of this freshwater is locked within the Arctic and Antarctic icecaps, dispersed as moisture in the ground, or buried in deep, inaccessible aquifers. Consequently, less than 1% of the world's fresh-

water, or approximately 0.007% of all the water on the planet, is easily accessible for human use in the form of lakes, rivers, streams, reservoirs, or underground sources. This water alone is regularly renewed by precipitation in the form of rain and snow, making it a sustainable resource.

Natural ecosystems, especially wetlands and forests, capture water and stabilize the seasonal flow of watercourses, while feeding the groundwater. Preservation of these ecosystems is therefore essential for the maintenance of renewable freshwater resources.

Québec's first Policy on Water thus fits into a global context of constraints and opportunities, in which water is a prime issue. It also draws on international experiences in water management. This Policy will enable Québec to define its priorities and defend its interests on the world stage at this dawn of the third millennium.

This international dimension of water affects the interests of Quebecers in more ways than one, particularly with respect to:

- management of the Great Lakes–St. Lawrence River basin, in which Québec is a partner with other riparian provinces and states;
- the debate over whether or not to include water in international trade agreements such as the North American Free Trade Agreement (NAFTA);
- the framework of the North American Agreement on Environmental Cooperation (NAAEC) and international commitments to sustainable development;
- the problem of climate change, which notably affects the level of watercourses and bodies of water;
- Québec's full participation in relevant international bodies and forums.

Thus a good portion of water management in Québec must now be handled by taking into account decisions made outside our borders, while in turn trying to bring influence to bear on these decisions.

WATER – A PLANETARY ISSUE

When it comes to water, the international community faces a series of highly complex problems. Water consumption increased sevenfold in the 20th century, due mainly to the soaring world population and economic development. Freshwater is scarce in many parts of the world, making it one of the most crucial issues of the 21st century. In the past 100 years, water consumption has increased twice as fast as population growth, and 1.4 billion people now have no access to drinking water. According to United Nations (UN) forecasts, this figure could climb to 2.5 billion in 2025, or one third of humanity. And 2 billion humans have no sanitation facilities. Eighty percent of all diseases afflicting the southern hemisphere are caused by drinking polluted water, and 4 million children die from it every year. This demographic pressure on water is difficult to sustain in the long term. The extremely unequal distribution on the Earth of a resource as vital as freshwater is thus the source of a growing number of disputes and tensions. This is the case, for example, with rivers in the Middle East (the Jordan, Tigris, and Euphrates), Asia (the Mekong, Ganges, and Indus), Africa (the Congo and Nile) and the Americas (the Amazon, Colorado, and Rio Grande).

While the world population is growing rapidly, the environment in general and water supply in particular are deteriorating, with the effect of limiting development capacity in some countries. In addition to demographic growth, urbanization is increasing the pressure on water resources.

Based on the premise that water is essential to all aspects of life, the 1992 United Nations Conference on Environment and Development held in Rio de Janeiro set a worldwide objective of ensuring the protection of the quality and supply of freshwater resources by means of integrated approaches to the development, management, and use of water resources. Since then, water has consistently received special attention at major international conferences and forums such as the Dublin Conference (1992), the Marrakech World Water Forum (1997), the Paris Conference on Water and Sustainable Development (1998), the 6th session of the United Nations Commission on Sustainable Development (1998), the Hague World Water Conference (2000), and the International Freshwater Conference in Bonn (2001). Moreover, certain major, albeit non-binding commitments made at the 2002 Johannesburg World Summit on Sustainable Development involve water issues. The conclusions of these meetings call for long-term harmony with nature and our neighbours through cooperative arrangements at the water basin level, as well as stronger, better performing governance arrangements.

1.2

WATER IN QUÉBEC: A STATUS REPORT

Water forms an integral part of our history and culture. Long before the Europeans arrived on the continent, the Aboriginal peoples settled near the best bodies of water, which supplied them with drink, food, and a means of travel. Under the French Regime, watercourses were the

only connection among the colonists living on properties whose boundaries lay perpendicular to the shoreline. The St. Lawrence River, which Amerindians called “the moving road,” was the perfect route for the fur trade in the 17th and 18th centuries, for timber in the 19th century, for farm products, iron ore, aluminum and pulp and paper in the 20th century, and now, early in the 21st, for its contribution to tourism and the vacation resort industry.

Water is also a major component of our landscape, considering that almost 10% of Québec's 1,667,000 km² is covered by freshwater, and that this territory contains over 4,500 rivers and half a million lakes, 30 of which cover an area greater than 250 km². Even before serving the multiple uses Quebecers make of it, this resource has an intrinsic value: it is an essential contributor to the diversity of plant and wildlife species, as well as a natural habitat and food source for many of them. Water has shaped Québec's land, creating the most breathtaking and diversified landscapes.

Lastly, because of its omnipresence and importance, water is a strong cultural force. Our watercourses, lakes and the St. Lawrence have been the subjects of songs, novels, essays, stageplays, sculptures, paintings and even circus acts. In brief, water has profoundly influenced Québec's soul and now forms an integral part of our nation's personality.

Québec, with its 990 km³/year of renewable water,⁴ accounts for 3% of the planet's renewable freshwater. Given its modest population, Québec has among the largest per capita water resources in the world. Nonetheless, it should be noted that most Quebecers live in the St. Lawrence River drainage basin, which alone

accounts for 40% (410 km³/year) of Québec's renewable freshwater.

Meanwhile, the large groundwater reserves, which cover most of Québec's territory, are estimated at some 2,000 km³; 10% of these reserves are available to inhabited regions. The extensive aquifers are fed by precipitation averaging a total of 750 mm per year for the entire territory.

As in the past, the uses we make of water still represent major socio-economic issues for Québec. After providing mechanical power to operate sawmills and serving as a means of transportation and communication, water now supplies paper mills, steel mills, and aluminum smelters with electricity.

The energy aspect of water exploitation has long been a key issue for Québec, especially within the North American context of energy production and the more global context of a determination to reduce greenhouse-gas emissions.

MAIN WATERSHEDS IN QUÉBEC

Québec has 430 major watersheds,⁵ including 100 with drainage areas in excess of 4,000 km². All these watersheds are divided among Québec's ten hydrographic regions and stem from the four main hydrographic systems: the St. Lawrence River, James Bay, Hudson Bay, and Ungava Bay. The St. Lawrence alone receives the water from seven of these hydrographic regions, thereby covering over one third of Québec's total territory.

LIST OF QUÉBEC'S HYDROGRAPHIC REGIONS:

01 Baie-des-Chaleurs	05 Laurentides	08 Baie de Hannah et baie de Rupert
02 Bas-Saint-Laurent	06 Saguenay–Lac-Saint-Jean	09 Baie James et baie d'Hudson
03 Estrie	07 Côte-Nord	10 Détroit d'Hudson et baie d'Ungava
04 Outaouais		

⁴ Freshwater reserves are calculated on the basis of the average annual flow of watercourses. They do not include the water in lakes and groundwater.

⁵ A watershed is an area of land into which surface water drains. Watershed boundaries are called "divides" and may, for example, match the crest of a mountain range. The raindrops falling on one side of the mountains drain into one river; those falling on the other side drain into the neighbouring watershed.

Source: Relief map: MRN, watershed boundaries: MENV



Major Québec watersheds – All of the 430 major watersheds are distributed throughout the ten hydrographic regions of Québec, draining four main hydrographic basins.

Water use is more diversified than ever before and water's contribution to the economy appears to be considerable, especially in the agri-food, industrial, energy, and recreational sectors. These uses are described in Appendix 1.

1.3

A BETTER FRAMEWORK FOR WATER MANAGEMENT: AN EMERGING WILL AND A GLOBAL IMPERATIVE

The process undertaken by Québec in developing its water policy fits into the new context where increasing numbers of actors call for a more rigorous framework for water management around the world.

The United States applies water policies, which were revised in 1998 in the form of the *Clean Water Action Plan*. The revision sought to improve protection of public health, orient protection efforts towards priority watersheds, and provide the public with new funds for controlling pollution. Most American states are taking advantage of the programs available through this federal initiative.

Moreover, Vermont has adopted a state policy on water-resource management in order to protect, regulate and, if necessary, control the resource in the public interest. Maine and New Hampshire have also enacted special legislation aimed at protecting, restoring, and using this resource. Many Canadian provinces including Ontario, British Columbia, Alberta, Saskatchewan, Manitoba, and New Brunswick apply specific legislation in respect of water.

Elsewhere, in December 2000, the European Union adopted guidelines establishing a framework for a collective policy on water. It covers all water governance⁶ activities and specifically promotes participatory management based on the hydrographic unit of the watershed.

Many aspects of the commitments made at the latest World Summit on Sustainable Development held in Johannesburg in 2002 pertain to water, particularly access to safe water, the protection of public health and ecosystems, integrated management of water resources based on the watershed, and, lastly, participatory management, including greater public involvement at the different decision-making levels. Also covered were the subjects of education, information and the advancement of knowledge on water issues, the principles of precaution and user-polluter-pays, sustainable agriculture, water treatment, and pollution prevention.

Today, the effect that our activities have on water quality, sustainability, and availability is such that we must adopt a global vision that will enable us to improve management of its various uses with a view to sustainable development. A critical examination of our management techniques, legal and regulatory mechanisms, as well as the economic instruments available, is therefore necessary. This process must lead not only to legal and financial commitments, but also to changes in the way things are done by public authorities and the various players (citizens, elected officials, users, experts, managers and decision-makers) capable of taking action with respect to this resource. This is why Québec must adopt a water policy that takes into account major international trends and issues while subscribing to

⁶ Water governance refers to the interactive decision-making and intervention process involving all water-management players (from both the private and public sectors and the public at large) in the political, social, economic, and administrative circles specific to a given territory.

sustainable development and the values espoused by Quebecers.

The Québec Water Policy takes into account major international trends and issues and is based on compliance with ecosystemic and sustainable development requirements. Its goal is to ensure that the priorities set forth therein become deeply rooted in the values of Quebecers. Water is a significant and precious symbol for Québec. It is an integral part of our collective and cultural life, and an essential component of Québec's magnificent heritage landscapes. By means of this first Québec Water Policy, the government intends to guarantee opportunities for Québec's youth to safely enjoy and fully benefit from this resource. This Policy makes an urgent appeal to the entire population's sense of responsibility to ensure the sustainability of this resource for future generations. The Policy calls on every one of us to make a commitment to protect, develop and restore one of Québec's most striking natural endowments, and one of the most beautiful symbols of our national pride.

1.4

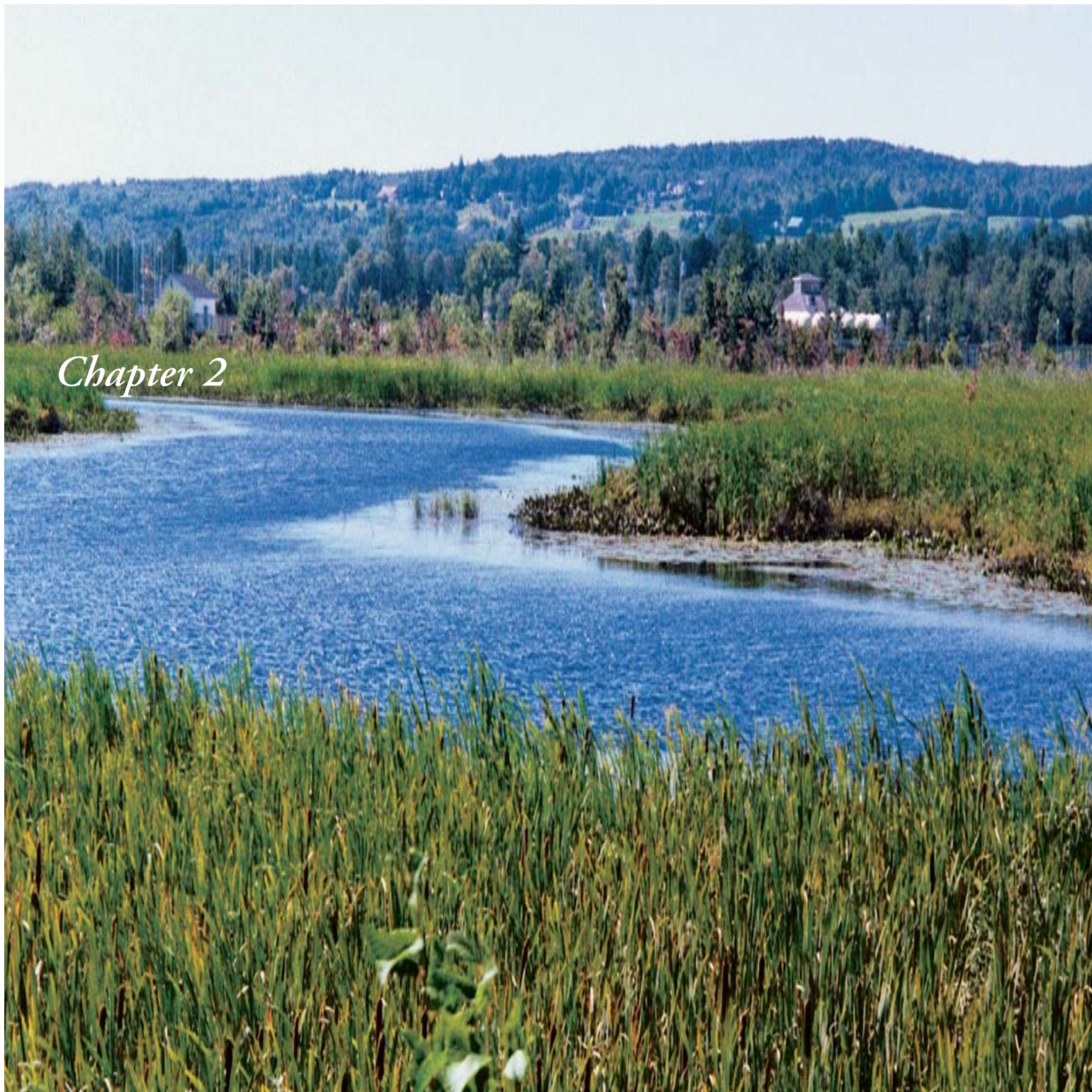
A GENERAL FRAMEWORK FOR SOUND WATER MANAGEMENT IN QUÉBEC

After the Commission sur la gestion de l'eau tabled its report, in June 2000, the government adopted a general framework for its future policy on water management. It set forth the government's general orientation regarding water management, specifically "to preserve the quality of the environment and maintain the availability of resources" (Québec Report on Sustainable Development, presented in Johannesburg, 2002). It also contained principles (see box below) and orientations related directly to water. It also mentioned the protection of public health and ecosystems, the quest for sustainable water resources, their socio-economic development, and the reconciliation of uses. Furthermore, it proposed 15 objectives stemming from the 7 basic principles underlying the Policy.

THE SEVEN PRINCIPLES OF THE GOVERNMENT'S GENERAL FRAMEWORK

- Water is part of Québec society's heritage.
- The protection, restoration, and development of water demand a commitment from society as a whole.
- The precaution principle must guide society's initiatives in respect of water.
- Every Quebecer must have access to high-quality, affordable drinking water.
- Users must be accountable for the use and deterioration of water, according to the user-pays and polluter-pays approach.
- Water must be managed in a sustainable and integrated manner, with a view to efficiency, fairness, and openness.
- The acquisition and dissemination of information on the state of water and on the pressures to which it is subject are an essential component of integrated water management.

Chapter 2



Chapter 2

THE ISSUES AND MAIN POLICY ORIENTATIONS

The deliberation process of the past two years as well as the extensive consultations have helped to define and more clearly pinpoint the issues and orientations encompassed by the Québec Water Policy.

The three issues on which there is a public consensus are the need to recognize water as a collective heritage of all Quebecers, to protect public health and aquatic ecosystems,⁷ and to manage water in an integrated manner and from a perspective of sustainable development.

2.1

WATER – A COLLECTIVE HERITAGE OF ALL QUEBECERS

The benefits that Québec society derives from water are innumerable. In fact, this resource is essential to the environmental, economic, and social well-being of the province. The Québec government therefore wishes first to reaffirm, through this Policy, its determination to recognize this resource as a valuable asset of Québec society and an integral part of its collective heritage.

This recognition is the first issue addressed by the Québec Water Policy. It implies that:

- all members of society have a right to access the resource and to use it in a manner consistent with its nature;
- the Québec government has a responsibility to establish the legal framework necessary to preserve the quality and quantity of water, while taking the public interest as well as sustainable development objectives into account.

Water, like air, is recognized in the *Civil Code of Québec* as something whose use is common to all and that must be governed by general laws (article 913). This “common to all” status applies to water in its natural state, both surface water and groundwater, subject to rights of use or limited appropriation rights that may be recognized. As water forms part of our collective heritage, it is important to ensure its sustainability and to encourage the preservation of its quality for the benefit of society as a whole. In this sense, the Québec government considers that water in its naturally occurring state cannot be treated as merchandise nor subject to the rules of the marketplace since it is irreplaceable and has no substitute.

The Québec government may therefore be called upon to regulate and reconcile the often-conflicting uses of water, whether they involve preserving ecosystems and natural habitats or carrying out economic-development activities. The government can thus establish water use priorities in the public interest. Hence Québec intends to create the instruments required, in the event of conflict, to give precedence to the essential right of individuals to access this resource to meet their basic needs.

Other legislation of a more general scope also enables the government to take steps to ensure the protection of this collective heritage. Thus the *Act to amend the Water Resources Preservation Act* passed in late 2001 gives permanent status to the moratorium established in November 1999 and prohibits very large transfers of surface water and groundwater out of Québec, aside from a few exceptions.⁸ Moreover, the effectiveness of the legal and regulatory framework in respect of water arising from the *Environment Quality Act* and the *Watercourses Act* and other legislative provisions will be assessed, and reform proposals developed as needed.

7 The aquatic ecosystem is divided into two parts. The first part, the biotope, comprises the physical and chemical environment, and includes the water and dissolved substances that condition the environment where microorganisms live together with plant and animal species. The second part (the biocenose, or biotic community) includes all the lifeforms for which the conditions of the aquatic environment are conducive to life and reproduction. The biocenose and its biotope are inextricably linked. Together they form what is known as the ecosystem.

8 The government may, however, lift the prohibition in an emergency or humanitarian crisis, or for any other reason deemed to be in the public interest.

2.2

PROTECTION OF PUBLIC HEALTH
AND AQUATIC ECOSYSTEMS

Protection of public health and aquatic ecosystems is the second issue addressed by the Québec Water Policy. Water quality is, above all, a matter of protecting public health; this applies both to water used for human consumption and activities involving contact with water (swimming and water sports). When contaminated by pathogenic organisms or by harmful organic or inorganic substances, water can actually become a prime carrier of infectious or chronic diseases.

The Québec government recently tightened its standards in this area by adopting a regulation that makes the drinking water consumed in Québec among the safest in the world. Nonetheless, it is important to exercise vigilance to maintain this high standard of security and public confidence in drinking water.



Source: Réal Carpentier, Ministère de l'Environnement

Marais-Trépanier – Recognized as one of the three foremost privately held nature reserves, the réserve du Marais-Trépanier is intended to conserve multiple habitats including aquatic-grass beds, marshes, wet meadows, wetlands, grasslands and woodlands. The reserve is owned by Ducks Unlimited Canada.

Furthermore, human, plant, and animal life, as well as other life forms and social development, are all inconceivable without quality water and healthy aquatic ecosystems. In this regard, aquatic ecosystems are all too often regarded as assets or raw materials rather than as habitats for plants and wildlife. In fact, the composition of plant and wildlife communities attest to the richness of biodiversity and constitute the best indicators of balance among the species. For example, the *Act respecting the conservation and development of wildlife* defines the context for acting to protect and manage wildlife species and their habitats. It must be acknowledged, however, that aquatic ecosystems cover a wide variety of environments (lakes, rivers, marshes, swamps and bogs) whose boundaries fluctuate with the seasonal rhythms of the water cycle. These environments are teeming with animal and plant biodiversity and also function as purifiers. Yet they are often fragile and therefore easily altered by human activity.

Many people consider water an ordinary product like so many others. Its value is taken lightly, it is wasted, polluted, and occasionally altered irreversibly without considering the impact on aquatic ecosystems and people living downstream. The assaults are numerous: during the 20th century alone, approximately 50% of the wetlands in developed countries disappeared, and the pressure on areas bordering floodplains is intensifying. Some 4,000 hectares of wetlands have been destroyed in the past 50 years along the shores of the St. Lawrence River from Cornwall to Matane. The areas most affected are Trois-Rivières (accounting for almost 60% of the loss) and the shoreline between La Pocatière and Matane (15%). In 1988 it was estimated that only 20% of the wetlands found in the Montréal area when it was first colonized still existed.

Examples abound of activities that put substantial pressure on aquatic ecosystems: dredging, changing the profile of watercourses to improve agricultural drainage, engaging in activities related to forest management practices, denaturing shorelines, building structures to generate electricity, encroaching on riparian land, etc.

There is no substitute for water, and this applies both to people and the ecosystems that depend on it. When ecosystems are degraded and water quality deteriorates, their potential benefits for humans are accordingly reduced. This situation threatens the entire food chain and consequently affects the survival of human populations.

The Québec Water Policy sets forth a number of undertakings aimed at improving the quality of water intended for human consumption and at preserving aquatic ecosystems.

2.3

WATER – A RESOURCE TO BE MANAGED IN AN INTEGRATED MANNER AND FROM A SUSTAINABLE-DEVELOPMENT PERSPECTIVE

In the wake of the numerous initiatives to reform water governance around the world, the Québec Water Policy addresses a third issue: the integrated management of water resources.

Water management in Québec is not only a question of pollution, degradation, floods, or any other natural or human disaster. Extensive research and studies have shown over the past 30 years that the ways things are done also create problems. As a society, all too often we manage water and its uses on a sectoral basis that varies according to the authorities with jurisdiction over the territory.

In Québec, various bodies, including the federal and provincial governments, are engaged in qualitative and quantitative water management. This situation is the outcome, in a context of relative abundance, of shared management of water's numerous uses. No less than eight federal departments manage various water-related matters, while at least eight Québec ministries and public corporations are also involved. In addition, the 1,106 local municipalities, 87 regional county municipalities (RCMs) and the two metropolitan communities all have water-related responsibilities.

This coexistence of a multitude of decision-making centres can lead to disagreements over what objectives to pursue and what uses to favour. Even when the various players join forces, conflicts over the use of a given water-course, lake, or groundwater can become so complicated that arbitration is required. To not only improve coordination of the various efforts, but to do so with a view to genuine integrated water management, an overall approach is therefore essential.

Sectoral water management makes it harder to assess cumulative impact. When the players each act within their own spheres of jurisdiction with none of them being specifically entrusted with having to manage or coordinate their actions as a whole, it becomes difficult to draw up a balance sheet of the actions, projects, and policies initiated by each. We end up managing uses, permits, and projects, but not the water issue viewed as a whole. An overall-assessment approach, from a sustainable-development perspective, therefore appears necessary so that actions and projects can be prioritized while taking into account their cumulative impact on the environment.

Without vigorous intervention, the complexity of the issues involved and the multiplicity of interests at play risk triggering a growing number of conflicts over what options to favour with regard to lakes and watercourses, or groundwater.

A NECESSARY GOVERNMENT REFORM

Consistent government action requires first, the development of an overall view and the modernization of our means of intervention. Thus, the implementation of the Québec Water Policy will largely depend on shifting from the sectoral way of doing things to real, integrated and coordinated management based on watersheds.

Source: Corporation d'aménagement et de protection de la Sainte-Anne



Rivière Niagarette – In hopes of restoring the riverbanks, the Corporation d'aménagement et de protection de la Sainte-Anne began planting trees along the banks of the Niagarette River in the Portneuf region in 2002.

It is from this integrated management perspective that the Québec government has appointed a Minister of State for the Environment and Water, whose primary role is to ensure consistency among all government actions pertaining to this resource. In particular, the Minister must coordinate the policies, programs, and various governmental, intergovernmental and international committees likely to have an influence on water and aquatic ecosystems. The Minister will perform these tasks working in collaboration with the ministers involved in water management, each according to their respective fields of expertise and pursuant to the laws and regulations that fall within their specific areas of responsibility.

GREATER GRASSROOTS INVOLVEMENT

The government also wants to foster greater grassroots involvement in the management of water and its uses. Citizens will have to become more prominently involved in this new method of governance.

They will be able to participate in various ways: as members of the agencies responsible for integrated management by watershed and for management of the St. Lawrence River, or as participants in the consultations and activities conducted by those agencies. Thus society as a whole will be involved in developing lake restoration and action plans and in determining measures to protect, restore, and develop shorelines. People will have a say in the identification of aquatic reserves and, lastly, in the development of water-related recreotourism activities. Numerous commitments made in the Policy aim for greater grassroots involvement in water management and recommend measures to support that participation. Moreover, it is with this in mind that Québec's Aboriginal communities, consisting of ten Amerindian nations and the Inuit nation, will also be asked to participate in managing the water in their territory.

2.4

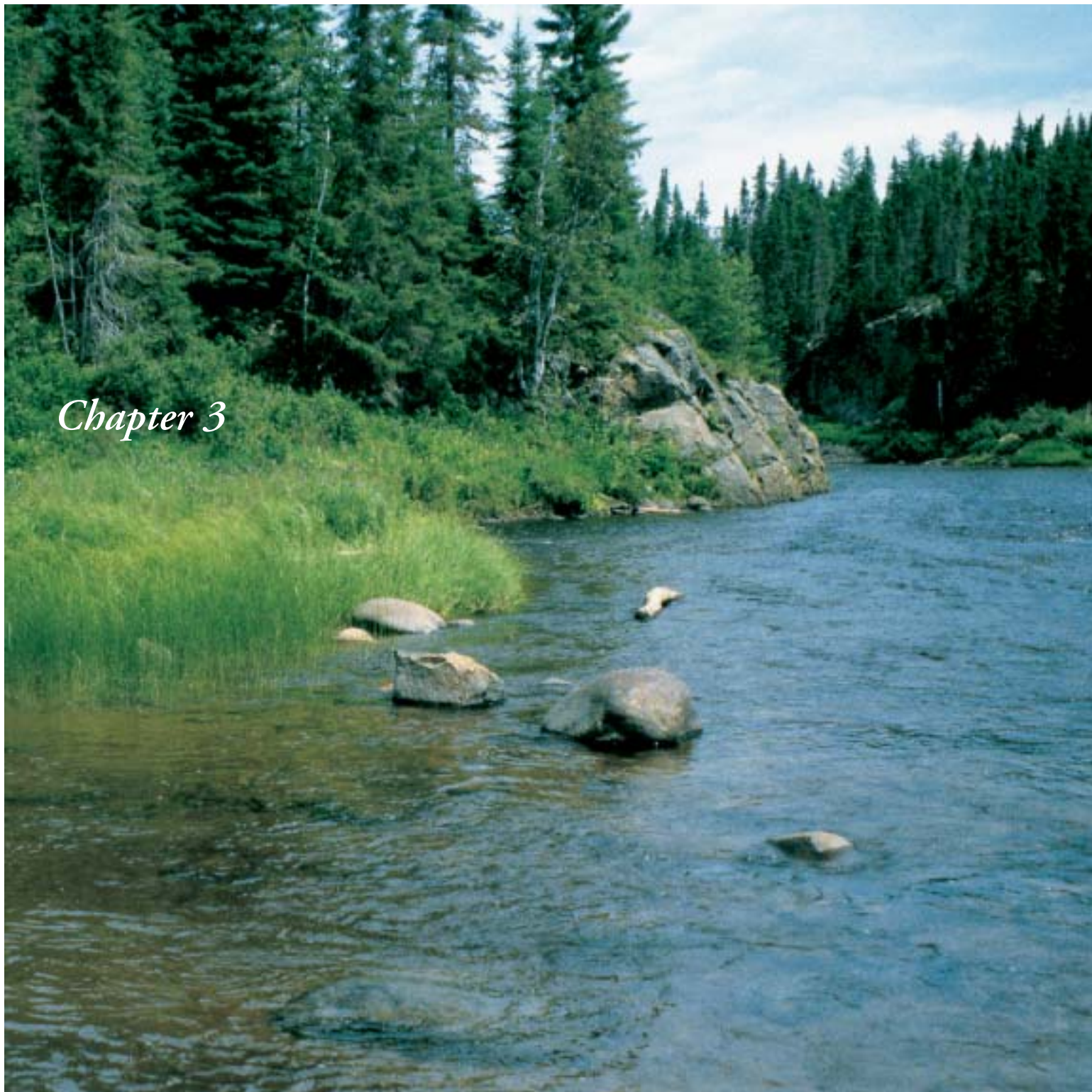
ORIENTATIONS OF THE POLICY

Based on the principles and three key issues discussed in the foregoing chapter, the Québec Water Policy is built around the following five key orientations:

- Orientation 1: Reform of water governance;
- Orientation 2: Integrated management of the St. Lawrence River;
- Orientation 3: Protection of water quality and aquatic ecosystems;
- Orientation 4: Continuation of water clean-up and improved management of water services;
- Orientation 5: Promotion of water-related recreotourism activities.

These orientations, discussed respectively in Chapters 3 to 7, call for various courses of action as well as a series of government commitments associated with these courses of action. Moreover, each chapter begins with a brief description of the situation that gave rise to these government commitments.

Chapter 3



Chapter 3

REFORM OF WATER GOVERNANCE: A STRATEGIC CHOICE

The first orientation of the Québec Water Policy stipulates that water governance must be reformed. This reform involves the development and enunciation of a shared, comprehensive vision of water resources to ensure consistent implementation. It aims for an evolution of the existing system of governance, particularly through greater participation by the different water users in both decision-making and the various actions resulting from these decisions. This evolving process is based on the following courses of action:

- revision of the legal framework pertaining to water;
- implementation of watershed-based management;
- acquisition of knowledge and information about water;
- introduction of economic instruments relevant to governance;
- strengthening of Québec's partnerships and relationships.

Each of these courses of action reflects the government's strategy to ensure more consistent action among all the water-management players in various areas pertaining to governance of this resource and at the different levels of intervention (local, regional, national, federal, and international). Interventions on the part of water-management stakeholders in Québec will have to incorporate social, economic, environmental and health concerns. Moreover, their ultimate purpose must be the application of the principles of sustainable development and the establishment of favourable conditions for the well-being and quality of life of present and future generations.

In addition, regardless of the area chosen, this governance must be organized around 3 focal points – leadership, accountability, and coordination:

- **local and regional leadership** from the water-management

players brought together within watershed agencies, zonal committees, and the St. Lawrence River steering committee; **provincial leadership** from the Québec government on water-related matters and, more specifically, on the governance of water, which is part of Quebecers' heritage;

- **accountability** of water-management players with respect to their own management of the resource and the impact of their decisions on all other users and on the other players concerned from a long-term and ecosystem perspective. First and foremost, these include ministries and agencies of the Québec government, the federal government, and elected officials from regional county municipalities, metropolitan communities and the municipal sector as a whole, as well as water users, i.e. citizens, environmental groups, industry, farmers, conservation agencies, and others;
- **coordination** of and greater accountability as concerns the activities of all water-management players in order to design and implement protection, restoration, and development projects that will ensure the sustainability of water resources and aquatic ecosystems and promote public involvement, as well as extensive dissemination of information, the measures undertaken and their consequences.

This comprehensive vision must be backed by a legal framework capable of addressing these new concerns.

3.1 REVISION OF THE LEGAL FRAMEWORK PERTAINING TO WATER

As mentioned earlier, both surface and groundwater have “common to all” status (*res communis*). The recognition of the heritage aspect of water resources confirms the importance of the State assuming responsibility for regulating the uses of water in order to protect its quality and quantity in the public interest.

The government's responsibility for regulating the different uses made of water will translate into a revision of the legal framework (laws and regulations) pertaining to water.

THE EXISTING LEGAL FRAMEWORK PERTAINING TO WATER IN QUÉBEC

Like air, water (both surface and groundwater) has the status of something “common to all” (*res communis*) in the *Civil Code of Québec*. Québec assumes numerous responsibilities with respect to the water on its territory. Over the course of its history, it has developed a framework governing the various uses of water. Thus, in addition to the *Civil Code of Québec*, a number of laws and regulations have been adopted to ensure the protection and management of water resources. These provisions reflect the wide variety of roles that water plays in Québec society and govern most water-related activities. The Québec government has also made sure that the municipalities have the statutory jurisdiction to provide the public with water services. It has contributed to success in attaining goals related to the accessibility, quality, and purification of water by assisting financially in the rehabilitation and installation of water service infrastructures. It has established terms of reference governing the exercise of municipal responsibilities for water management. At least nine Québec laws contain provisions concerning water and its management, including the *Environment Quality Act* (EQA) and the *Watercourses Act* (WA).

In the majority of cases, water services in Québec come under the municipalities, which own many of the infrastructures related to drinking water and wastewaters. The municipalities plan, finance, maintain, and control most of the activities related to these services. The *Land Use Planning and Development Act*, the *Municipal Code of Québec*, and the *Cities and Towns Act* all contain provisions empowering local and regional authorities to meet water needs. These laws also attribute to the municipalities various responsibilities regarding the management of municipal watercourses. In addition, municipalities have the power to carry out work projects to improve the quality of the aquatic environment and facilitate access to it.

The federal government has legislative powers in the areas of interprovincial and international watercourses, fisheries, and navigation. The following are some examples of federal interventions with respect to water:

- the *International Boundary Waters Treaty Act*;
- the *North American Free Trade Agreement Implementation Act*, which states the position of Canada’s federal government with respect to the non-application of NAFTA to water;
- the transport of airborne pollutants (US–Canada Air Quality Agreement and the Pan-Canadian Strategy on Acid Emissions);
- standards governing exports, navigation, and fisheries management;
- the protection of certain aquatic species.



Source: Julie Moisan, Ministère de l'Environnement

Rivière Châteauguay – La Société de conservation et d'aménagement du bassin de la rivière Châteauguay aims to inform and raise the awareness of the population as to environmental protection. Interpretation panels have been erected near various access points to the river.

To this end, the government undertakes:

1. To effect a revision of the legal framework as regards water and to develop the legal instruments needed to implement its Policy.

Among other things, this revision will make it possible to:

- revise existing mechanisms to make it more explicit that water is recognized as a collective heritage;
- reexamine the instruments governing water use, particularly with regard to the essential needs of the community;
- define the legislative provisions governing municipal responsibilities in matters relating to the management of municipal watercourses;
- establish mechanisms for implementing the “user-pays” and “polluter-pays” principles, as well as various economic mechanisms (charges, taxes, permits, imposition of conditions, tax exemptions, deterrent measures, etc.) designed to support them;

- gradually define the tools providing a framework for integrated management at the watershed level;
- assert, at the national and international levels, Québec's jurisdictions and powers in the area of water and to strengthen its participation in international agreements and its role within international bodies whose decisions have an impact on its territory.

3.2 IMPLEMENTATION OF WATERSHED-BASED MANAGEMENT

In Québec, as in many countries, it is being increasingly recognized that existing water-management practices have reached the limits of their effectiveness in solving certain problems. Thus, diffuse pollution from agricultural sources, control of micro-pollutants, and the management of wastes, cumulative impacts, and conflicts over use, to name but a few, are all aspects of water management that are poorly handled by the available legal and regulatory instruments and by existing policies and programs. It is therefore necessary to make adjustments to the intervention methods at all levels: local, regional, and national in order to adapt them to watersheds in general.

Integrated watershed-based management of water, which offers the best alternative to sectoral management of water, constitutes a major course of action in this Policy on Water. This type of management is characterized first by a territorial approach, i.e. the watershed associated with the watercourses, lakes, or bays. It also strives to ensure that all the players involved (municipalities or RCMs, citizen groups, watershed users, government departments and agencies) take a comprehensive view of water and its uses as well as ecosystems in general, in order to develop more effective policies, programs, and projects of various kinds.

WATERSHED-BASED MANAGEMENT AROUND THE WORLD

In Ontario, the United States, Europe, Mexico, Brazil, Chile, and elsewhere, watershed-based management of water has a strong following and is in widespread use. However, despite similarities (the watershed as the territorial unit of intervention, science-based decision-making, and concerted efforts by various water-management players to establish goals), a number of different approaches to putting this method of management into operation can be distinguished.

In France, for example, watershed-based management is organized around extensive legislation governing the operation of various water management tools. These include watershed agencies, which collect water-related charges, develop master plans for land-use planning and water management, and establish guidelines regarding quality and quantity for a group of watersheds. In Ontario, there are agencies operating under the name “Conservation Authority,” which group together a number of municipalities. Their mission is to develop and implement a program for conserving, restoring, developing, and managing natural resources by watershed. In New Brunswick, watershed-based management focuses on protecting surface drinking-water collection sources. In the United States, the federal government has opted for intervention methods based on financial and technical support provided to local structures rather than on legal tools or government-run administrative structures. While not excluding the possibility of exercising recourse to legal and organizational tools, Americans have chosen an approach based on mobilizing (while continuing to respect their mandates) existing resources and players around one central principle: coordination at the watershed level.

Thus, in practice, watershed-based management takes a wide variety of forms depending on structure and culture, themselves constantly changing, to adapt to the environmental problems that arise and to changes in society’s needs. Nowadays, the trends in watershed-based management are shifting towards increased information-awareness and education of both citizenry and water-management players, towards a more participatory style of management, and towards a change in the role of the State, which adds to its role of directing and coaching local and regional players.

In addition, the International Network of Watershed Organizations (INWO), which brings together a number of countries, was created several years ago to support this type of water management. Québec holds the chairmanship of the network for the years 2002-2004.

Watershed-based management aims at ensuring concerted efforts by all of the water-management players involved. It facilitates better integration of the multiple interests, uses, concerns, and action mechanisms of the “bone and sinew” of the community from a sustainable-development perspective. This type of management should normally lead to the implementation of more effective solutions, and thus to improved health of watercourses and lakes and of the ecosystems associated with them.

In order to improve governance of water and aquatic ecosystems, the government undertakes:

2. To gradually implement integrated watershed-based management.

The government of Québec will gradually introduce integrated watershed-based management for 33 major watercourses located primarily in the St. Lawrence plain, in those areas where industrial, agricultural, and municipal water treatment and clean-up problems appear the

most glaring and where conflicts over use exist. This implementation process will, first of all, begin informally with a participatory-management approach and administrative reform that may, secondly, be enacted in legislation or regulations when the legal framework pertaining to water is revised.

WATERSHED AGENCIES: STATUS AND ROLE

At the local and regional levels, watershed agencies will be responsible for implementing integrated management, from a sustainable-development perspective, by preparing a Master Plan for Water (MPW) for their respective watershed, which will include watercourses, lakes, marshes, and other wetlands, as well as any aquifers in the area. These watershed agencies, which already exist in over 20 watersheds across Québec, will rely on public consultation, as well as local and regional expertise, on the responsibilities of the municipalities and RCMs on the territory, as well as those of the ministries and other government agencies. They will also be required to observe national priorities regarding protection, restoration, and development of water resources and to comply with relevant guidelines, directives, standards, regulations, and legislation.

The Regroupement des organisations de bassin versant du Québec (ROBVQ), in conjunction with the Ministère de l'Environnement, establishes the procedure for recognizing the watershed agencies referred to in this orientation. To date, 23 watershed agencies are in operation and have received financial backing from the government.

The role of watershed agencies, functioning at the watersheds themselves and composed of members acting on behalf of all water-management players (local and regional as well as public and private), will be to act as planning and consultation tables. They will include representatives of the following bodies, who will not have a majority voice:

- citizens and citizen groups (environmental groups, lake associations, tourism associations, associations of fishermen, recreational boaters, etc.);

- elected officials designated by the municipalities or RCMs within the watershed;
- water-user representatives in the watershed (agricultural, industrial, forestry, hydro-electric, commercial, and institutional sectors).

Moreover, Québec government representatives will have seats on the watershed agencies, but with no right to vote or participate in the agency's coordination activities. These government representatives will also have to report on their water-management responsibilities and on the enforcement of the various laws and regulations applicable to the watershed. They will oversee and make available government information relevant to the undertakings of the watershed agencies to facilitate enlightened decision-making. In addition, these representatives will take note of the concerns of watershed agency members and contribute, in line with their respective areas of responsibility, to the identification of solutions as problems are identified.

All watershed agency members will have to make their interests and responsibilities in the area of water management known. They will also have to table any project with a potential impact on water, its quality, quantity, availability, accessibility, and uses. Moreover, they will have to define common goals to be achieved for the benefit of all the water users and to take concrete measures to achieve them.

Municipalities and RCMs will play a vital role in the watershed agencies, primarily due to the scope of their responsibilities in the area of land development. Together, they will appoint their representatives who will thus speak on their behalf while actively participating in the development of a master plan for water. Subsequently, each municipality and RCM will be able to propose actions to include in its urban development plans and by-laws. For example, this could consist of zoning to facilitate access to bodies of water, usage restrictions to protect a sensitive area, or even urban clean-up commitments.

At the provincial level, the Minister of State for the Environment and Water will be responsible for coordinating Québec government initiatives in the area of water, in concert with the other ministers concerned, so as to ensure a consistent management approach at the territorial level. The Minister will also be required to define provincial priorities regarding water management and to take into account, on behalf of the government, the goals set by each watershed agency.

A general reference framework developed by the Ministère de l'Environnement, in concert with the ministries and agencies involved in the Québec Water Policy, will establish the mechanisms for implementing integrated watershed-based management, particularly from the financial, technical, and scientific points of view.

This guided implementation of watershed-based integrated management will allow for:

- a concerted effort among all water-management players motivated by principles of sustainable development;
- systematic protection of water bodies, wetland environments and their ecosystems that are deemed ecologically valuable water resources;
- faster depollution and restoration of bodies of water;
- preservation or reintroduction of lost uses such as swimming, fishing, and other recreotourism activities;
- the possibility for greater public participation in future developments as concerns bodies of water;
- greater accountability for water-management players, both individually and collectively;
- improved efficiency in the implementation of projects, policies and programs through more concerted efforts, a pooling of resources and expertise, and a common vision for desirable environmental gains;
- a consistent balance among the various socio-economic and environmental dimensions and watershed development.

In this connection, the government undertakes:

3. To provide financial and technical support for the operation of 33 watershed agencies.

The process of establishing and providing support to these watershed agencies will concretely signal the change in direction which the government wishes to pursue as it moves towards more complete integration of policies, programs, and projects by means of direct participation by local water-management players. To this end, the government will grant the watershed agencies with stable funding, which will thus allow them to effectively draft and monitor the implementation of the water-related master plans for which they will be responsible. Arranging supplementary financing will be the responsibility of the local and regional players. Furthermore, the Québec government will make use of the tools at its disposal, including its expertise and the relevant public information it has on hand, to support the efforts of the watershed agencies.

The 33 watersheds selected for this first phase cut across every region of Québec, and all of them pose major problems. Watershed agencies are already in place in most of them. The present Policy has recently recognized the work accomplished in the past several years, often on a voluntary basis, by numerous citizen groups and agencies. In the first phase, this recognition will more directly benefit the agencies intervening in the 33 watersheds designated as priorities. Agencies intervening on behalf of other watersheds and rivers may call on the expertise and technical support of the Ministère de l'Environnement. They will also have access to funding sources provided under the various assistance programs for independent community action and sustainable development initiatives.

A MASTER PLAN FOR WATER: A TOOL FOR FOSTERING CONCERTED EFFORTS AND WATERSHED MANAGEMENT

The watershed agencies will each have a mandate to draft a master plan for water for their entire watershed. This Master Plan for Water (MPW) is a document that

compiles the information needed to understand the hydrological and environmental problems of the watershed, as well as the proposed intervention strategies, especially in connection with the protection, restoration, and development of water resources. As such, the MPW serves as the background document for negotiation of a Watershed Agreement.

A MPW must notably contain the following points of information:

- a description of the watershed, including a diagnosis of its environmental problems (hydrological and plant- and wildlife-related);
- a list of wetlands and aquatic environments of ecological significance as concerns water as a resource;
- a statement and prioritization of the relevant issues, orientations, and courses of action, and of the results to be achieved, based on the orientations of this Policy and due to concerted efforts by the water-management players in the watershed and on public consultations;
- an action plan specifying the goals to be reached as well as the terms and schedule of implementation.

The MPW will be a tool that will facilitate more effective water management because the actions to be taken will have been put forward within an integrated and participatory framework. It will be submitted to the Minister of State for the Environment and Water, who will evaluate and approve it in concert with the other ministers concerned. The MPW will thus become an expression of the vision and priorities of water users and water-management players with respect to the future of their watershed.

A WATERSHED AGREEMENT: CLEARLY DEFINED COMMITMENTS BY WATER-MANAGEMENT PLAYERS

A watershed agreement is an agreement that spells out the actions to be taken by the various water-management players who want to be involved (in accordance with their own wishes, rights, or responsibilities), in the protection, restoration, or development of the watershed.

The Watershed Agreement arises from the Master Plan for Water and serves as a tool for the Plan's implementation. It provides a detailed description of the actions to be taken, their costs, the project developers, and the partners involved in carrying out the actions. It also includes an implementation schedule, a follow-up program to quantify the results of the actions, and a financial plan for carrying them out.

The commitment made by the signatories to the Watershed Agreement concerns the achievement of goals that have been established on a consultative basis so as to ensure that they are attained.

THE 33 PRIORITY WATERSHEDS

Watershed-based management in Québec can only be introduced gradually for all the watersheds within the territory. Moreover, environmental problems are basically concentrated near areas of intensive human activity. The Québec government has therefore opted to take a gradual approach whereby integrated management will be introduced beginning with the 30 or so watersheds acknowledged as being high priority.



Rivière Saint-Maurice – Since 1992, the Corporation de gestion du développement du bassin de la rivière Saint-Maurice has been making a concerted effort to develop recreotourism on the river, particularly after timber-floating operations were discontinued in 1993.

Source: Julie Moisan, Ministère de l'Environnement

The table below lists the watersheds selected for implementation of integrated watershed-based management. Inclusion on this list was based partly on the magnitude of the environmental problems observed and partly on

the existence of a voluntarily established watershed agency as well as on the degree of commitment of the local and regional water-management players.

ADMINISTRATIVE REGION	RIVERS AND BODIES OF WATER TARGETED FOR INTEGRATED WATERSHED MANAGEMENT
Abitibi-Témiscamingue	Bourlamaque
Bas-Saint-Laurent	Fouquette, Kamouraska, Rimouski
Capitale Nationale	Sainte-Anne, Montmorency, Jacques-Cartier, Saint-Charles
Centre-du-Québec	Bécancour, Nicolet
Chaudière-Appalaches	Boyer, Chaudière, Etchemin
Côte-Nord	Aux Anglais, Des Escoumins
Estrie	Saint-François
Gaspésie-Îles-de-la-Madeleine	Matapédia, Bonaventure
Lanaudière	L'Assomption, Bayonne
Laurentides	Du Nord
Mauricie	Batiscan, Saint-Maurice, Du Loup, Maskinongé
Montréal	Châteauguay, Baie Missisquoi, Richelieu, Yamaska
Outaouais	Du Lièvre, Gatineau
Saguenay-Lac-Saint-Jean	Du Moulin, À Mars

3.3
ACQUISITION OF KNOWLEDGE
AND INFORMATION ABOUT WATER

Both the new approach of watershed-based management of water and the integrated management of the St. Lawrence River must be based on the best possible information and knowledge about the territory, the resource, ecosystems, management tools, and concerted-effort mechanisms.

In Québec, there is a constant need for information, knowledge, and research in support of the decision-making process, particularly as regards the following:

- description of the watersheds and of the St. Lawrence River;
- the location, quantity, quality, and vulnerability of underground water resources;
- water quality and life-support capability of lakes;
- point-source and non-point-source pollution;
- hydrology of water bodies;
- climate change and its impact on human health and that of ecosystems; the water cycle; riparian, aquatic, and marine habitats; the uses of water and of the St. Lawrence River; and aquatic and marine resources;
- acid and toxic precipitation.



Source: Paul G. Adam / Publiphoto

Lac Brome – Montérégie's Lac Brome is one of many Québec lakes being monitored by MENV for cyanobacteria production. This environmental control is pursuant to the implementation plan jointly undertaken by the Ministère, the municipality of Lac Brome, two riparian associations, and the Conseil de gestion du bassin versant de la rivière Yamaska.

High-quality, verifiable, intelligible, and accessible information, along with scientific and socio-economic information, are the basis on which the water-management players will mobilize their efforts, reconcile their different points of view, and coordinate their efforts to set up projects to restore, protect, or develop water resources and aquatic ecosystems.

While it will be necessary to acquire certain types of knowledge in a few specific fields, Québec is nonetheless blessed with a substantial quantity and great diversity of data, information, and knowledge relating directly or indirectly to water and aquatic ecosystems. These are produced and compiled by various governmental and non-governmental players (the Société de la faune et des parcs, Institut national de la recherche scientifique – Eau, Terre et Environnement, Groupe de recherche interuniversitaire en limnologie et environnement aquatique, Institut des sciences de la mer, Groupe interuniversitaire de recherches océanographiques du Québec, Centre d'étude sur les ressources minérales of the Université du Québec à Chicoutimi, McGill University's Brace Centre for Water Resources, Université de Sherbrooke, etc.).

At the government level, there is a significant amount of expertise available that is put to effective use in areas such as setting up measurement networks, analyzing and interpreting qualitative and quantitative data on water,

ecosystems and the atmosphere, and using geomatics and various prediction models.

In order to support the acquisition or utilization of data as well as knowledge development, it is essential to promote research and development (R&D) specifically to further knowledge about water resources and aquatic ecosystems. In addition, it is widely acknowledged that the economic and social spin-offs of R&D favour the development of expertise and of high-performance enterprises. The knowledge spawned and technologies developed by R&D provide many windows of opportunity where our expertise can be turned to good account on both domestic and foreign markets.



Source: D. Lévesque / Publiphoto

Laurentide Lake – Natural eutrophication is the process by which lakes gradually age. This phenomenon is particularly prevalent in lakes in the Laurentian mountains. The Québec Water Policy includes many commitments to address the concerns of citizens in the region.

A CENTRE OF ENVIRONMENTAL EXPERTISE IN THE ÎLES-DE-LA-MADELEINE

In August 2001, the Minister of the Environment announced a plan to create a centre of expertise and referral on environmental matters in the Îles-de-la-Madeleine. This initiative is being carried out as part of the 2000-2005 regional strategic plan for the Gaspé and the Îles-de-la-Madeleine. The mission of this centre of expertise is to contribute, working in partnership with the Îles-de-la-Madeleine community and other players, to scientific and technical research, to the acquisition and diffusion of knowledge, and to the development of expertise regarding the environmental problems affecting island habitats like that of the Îles-de-la-Madeleine.

The areas of intervention chosen also fit into the framework of the Québec Water Policy. These areas are: integrated management as a planning and decision-making model, the pressures and impacts associated with socio-economic activities in an island environment, the protection and exploitation of the resources of the ecosystems characteristic of the Îles-de-la-Madeleine, erosion and the evolution of hills, and education about the environment.

In order to improve consistency in the various areas of water governance and at the different levels of intervention (local, regional, national, federal, and international), the information must be centralized so that it can be distributed and accessed by all water-management players. This exercise is particularly important for the implementation of integrated water management at the watershed and St. Lawrence River levels, which gives rise to specific needs as concerns information and knowledge.

The government therefore undertakes:

4. To assemble and develop the information on water and aquatic ecosystems essential for water governance.

The Ministère de l'Environnement, in concert with its government and university partners, will develop the infrastructure required to support the need for knowledge about water governance.

The objectives targeted are the following:

- gather and supply the existing information on water and aquatic ecosystems required for water governance and, more specifically, to implement integrated

management of water on a watershed basis and of the St. Lawrence;

- design and develop an information system by integrating and assessing data from various government, parapublic and other programs, agencies and institutions, essential for water governance;
- create a network of the various government partners as well as groups and university research centres for the exchange and distribution of water-related information;
- coordinate research programs in partnership with university circles, research centres, and other groups and organizations interested in fostering the compilation and transfer of information;
- identify the priorities related to the need for knowledge and information.

Various scenarios will be proposed to accomplish these undertakings. For example, the government of Québec is planning to create the Institut national de l'eau et des écosystèmes aquatiques which will most likely carry out part of this ambitious mandate.

The new water governance approach put forward in the Policy calls for many areas of competence and expertise. In particular, there will be a need for technical and scientific tools as well as management tools such as simulation models, various analytical frameworks, and decision-support systems, and these will have to be adapted as knowledge develops. In addition, this commitment will support initiatives relating to the operation of a strategic, technology and trends “watch” mechanism regarding water and aquatic ecosystems.

5. To conduct an inventory of Québec’s major aquifers.

Over the next 15 years, the government will carry out hydro-geological mapping of the major aquifers in Québec. This inventory will include an assessment of their vulnerability and of resource availability (recharging) in watersheds where agricultural or industrial activities are taking place. It will also facilitate development of a network to measure and monitor the quantity (piezometry) and quality of our groundwater, especially for the most sensitive aquifers being used, or likely to be used, to supply drinking water.

This inventory process will give priority to aquifers that are subject to major contamination problems or to conflicts over use (e.g. the Châteauguay [Franklin] watershed).

Moreover, in order to complement the expertise it needs to implement the integrated watershed-based approach, the government undertakes:

6. To broaden and enrich our knowledge of Québec’s major watersheds, and to provide support for the updating of relevant information on a permanent basis.

This descriptive process will make it possible to identify, describe, and quantify the pressures exerted by industrial, agricultural, municipal, and forestry activities on water resources and aquatic ecosystems,

including wildlife species and their habitats. It will also facilitate determination of use potentials of bodies of water, assessment of the level of ecosystem integrity and vulnerability, and determination of environmental targets for residues and of the life-support capability of the water resources and aquatic ecosystems.

Over the past 25 years, the acquisition of knowledge on the quality of bodies of water in Québec has focused mainly on rivers. The existing lake-monitoring program was discontinued in the early 1980s. Now, however, the number of requests for expert reports, water quality analyses, and assessments of the state of health of lake ecosystems keeps growing and reflects the concerns many riparian property owners have about the protection of their lakes.

To this end, a new lake-monitoring program (monitoring network) was put in place by the Ministère de l’Environnement in 2001. The purpose of this network is to acquire knowledge about ten recreational lakes each year for five years, for a total of 50 lakes distributed throughout the territory. This will involve determining the existing trophic level (ageing) of the lakes and tracking their evolution over time. Since 2002, this monitoring network has been supplemented by a volunteer-run



Rivière Chaudière – The Chaudière river watershed is one of seven whose large manure surpluses have given rise to studies by MENV on drinking water quality.

Source: Michel Bouliane, Ministère de l’Environnement

monitoring network that can provide more basic data (measurements of phosphorus levels and of water clearness) for a larger number of recreational lakes in cooperation with riparian property owner associations.

Due to an ever-increasing demand from the public for technical assessments, the government undertakes:

7. To provide support to riparian property owner associations on recreational lakes.

The government wishes to assist riparian property owner associations that are coping with situations requiring a diagnosis of the condition of their lake and that would like to take action to protect or restore their lake.

Depending on the applications submitted, technical or financial assistance will be provided to these associations in accordance with criteria recognized by the government.

Specifically, these criteria will give priority to lakes with, for example, problems of eutrophication, pollution, or various types of degradation. The degree of private ownership of the shorelines will also be one of the criteria, in order to give precedence to lakes providing public access. Depending on the magnitude of the problems, certain lakes could be added to the Ministère de l'Environnement's current monitoring network for recreational lakes.

Furthermore, training and education represent means of transferring knowledge for the advancement of this knowledge and to improve the skills of the various water-management players.

In this connection, the integrated management approach, economic instruments, modelling, land-use planning, financing, and participatory management are among the fields of training which are indispensable for individuals involved in water governance. Awareness-raising and public education on the sound use of water resources and aquatic ecosystems are needed. Water conservation programs are a good example.

In this connection, the government undertakes:

8. To develop and implement awareness-raising and education programs directed at the various water-management players.

These programs will serve to promote local and regional initiatives, at the watershed level, in the areas of awareness-raising and education so as to further mobilize users to collectively assume greater responsibility for water governance.

3.4

INTRODUCTION OF ECONOMIC INSTRUMENTS RELEVANT TO GOVERNANCE

The societal challenges that await Québec in the future will place serious pressure on its water resources, from both within and outside the province. Our neighbours will also experience more pressing needs for water in coming years. In order to promote rational, balanced, and realistic use of Québec's water resources, a number of intervention instruments, including legal, administrative, and economic, will be required.

In keeping with the recognition of the heritage aspect of water, Québec will increasingly govern the utilization of its water resources by means of economic tools aimed at more effective management of its uses. In particular, these tools will help make the various water-management players more accountable. They will expose the real costs associated with the various uses of water and constitute an integral part of good water governance.

In addition, the fact that water, like air, is recognized as something "common to all" that society as a whole can benefit from results in the government being responsible for assuming a stewardship role for the resource on behalf of the community. Currently in Québec, the absence of a charge for water use encourages users to enjoy the benefits without regard for its value and without contributing to the costs of conserving or restoring water resources and aquatic ecosystems. Moreover, certain users may forget



Source: Y. Hamel / Publiphoto

Waterfalls – Users must be made accountable for the use and degradation of water under the user-pays and polluter-pays principle.

that this resource is a collective resource. Under the existing legal framework, the user thus enjoys the right to use the resource without assuming adequate responsibility, towards the community, future generations, and other species in the biosphere sharing the same space, for ensuring sustainable and responsible use.

Thus, one of the guiding principles of the Policy states that users must be accountable for the utilization and deterioration of water by means of a user-pays and polluter-pays approach. Application of this principle supports the development of economic tools such as user charges for water. This is an economic principle which stipulates that users must finance the social costs of

their activities (including environmental costs), whose main goal is to reduce activities harmful to the resource. In particular, this principle aims at making water users accountable for the value of this resource and for the costs associated with protecting, restoring, or developing it. In the context of sustainable development, the principles of user-pays and polluter-pays mediate between economic imperatives and the consideration of water as the life source for humans and other wildlife and plant species.

User charges are also fees paid in exchange for use of the water resource (withdrawal or disposal). These charges are established mainly on the basis of criteria relating to the quantity or quality of withdrawal or disposal. Such charges become an effective economic instrument for water management when levying them affects user behaviour and when the amounts collected are put towards financing activities for the protection, restoration, or development of water resources.

In theory, these types of charges can be applied to a number of water uses (industrial, agri-food, municipal, and other water sampling and discharge), depending on the priorities established by the government. The government will take into consideration the financial capacity of the sectors concerned to keep them competitive, notably by making adjustments to the rate schedule. Finally, the latter will be established on the basis of its legal, social, and economic applicability in order to limit the economic impact on users.

In this connection, the government undertakes:

9. To develop and gradually implement, beginning in 2003, a system of charges for the use (withdrawal and disposal) of Québec's water resources.

In the start-up phase of any such plan, the Québec government plans to target economic sectors that use and benefit from high-quality naturally occurring water in their production operations. The system of charges will be phased in gradually over the sectors that are subject to it. In addition, the rate schedules for the individual sectors will be reviewed periodically.

The contributions collected will make it possible, more specifically, to set up a fund that will be managed by the Minister of the Environment and earmarked for the financing of measures taken within the context of the Policy. This fund will be used to pay for water governance and for any measures relating to sustainability of the resource. It will thus help ensure that the quality of water is maintained in order to meet the needs of present and future generations.

As concerns citizen contributions, the government recognizes that most Quebecers already pay for access to drinking water and for wastewater treatment through municipal taxes. These financial contributions in themselves exclude them from the system of charges.

3.5 STRENGTHENING OF QUÉBEC'S PARTNERSHIPS AND RELATIONSHIPS

Administrative boundaries and geopolitical constraints have a major impact on the future of water resources. Concerted efforts by all water-management players and Québec's partners are essential to ensuring effective management.

RELATIONS WITH THE ABORIGINAL COMMUNITIES

Relations with the Aboriginal communities (Amerindians and Inuit) have evolved at an unprecedented pace since the publication in April 1998 of the government document entitled "*Partnership, Development, Achievement – Aboriginal Affairs – Québec Government Guidelines*." In this official document, the government of Québec announced its goal of creating a relationship of trust based on mutual respect and of allowing Aboriginal communities to take charge of their own development and thereby achieve greater autonomy. These guidelines⁹ also seek to ensure that the Aboriginal communities maintain their cultural identity and obtain their fair share of the collective wealth. In addition, the Québec Water Policy



Lac à l'Eau-Claire – With a surface area of 1,211 km² in territory occupied by the Inuit and Cree, lac à l'Eau-Claire is the second-largest natural lake in Québec, and is a protected area.

Source: Jonathan Tessier, Société de la faune et des parcs

9 Secrétariat aux Affaires autochtones, Partenariat, développement, action – Affaires autochtones – Orientations du gouvernement du Québec, Bibliothèque nationale du Québec, 1998.

recognizes the importance of Aboriginal communities as concerns the task of protecting and developing our water resources and aquatic ecosystems.

Since the disclosure of the Québec government's guidelines pertaining to Aboriginal affairs, a number of agreements have been negotiated and/or signed, and they include provisions in respect of the exploitation of water resources. The most recent of these are:

- the Agreement Concerning a New Relationship Between the Government of Québec and the Cree of Québec, entered into with the Cree nation (February 7, 2002);
- the Partnership Agreement on Economic and Community Development in Nunavik, entered into with the Inuit nation (April 9, 2002).

Thus, in addition to partnerships with the water-management players who are instrumental in the integrated management approach proposed in this Policy (users, experts, managers, decision-makers, etc.), the government recognizes the specific needs of the Aboriginal peoples, and wishes to ensure their participation in the development and management of our water resources. It therefore intends to place particular importance on aspects pertaining to water management in its current and future negotiations with these communities.

With this in mind, the government undertakes:

10. To ensure the participation of Aboriginal nations and communities in water management, within the framework of the agreements signed and those to be signed, between them and the government of Québec.

This participation will satisfy the desire of Aboriginal communities to play a more active role in managing and resolving their specific problems relating to water resources.

CANADA-QUÉBEC RELATIONS

With respect to the entire range of problems related to water resources as well as to the implementation of a new system of governance for this resource, Québec intends to fully assume its responsibilities and exercise its jurisdiction. The federal government, by adopting laws and regulations, by setting up intervention programs, and by other pan-Canadian initiatives, is increasingly involved in the area of water management. However, some of these initiatives are sources of tension and discord.

Québec's actions with regard to the federal government will therefore be directed at:

- eliminating overlaps that create an additional burden for the public;
- where applicable, negotiating bilateral cooperation and management agreements;
- demanding equitable treatment and obtaining a fair share of the funds injected in order to develop and implement its own strategies;
- establishing its discretionary right to take part in actions that meet its needs and interests;
- defending the exercise of its jurisdiction over any legal disputes.

Within the framework of its relations with Ottawa, the government of Québec expects the federal government to adhere to the orientations and implementation of this Policy, the latter being the outcome of an extensive public consultation and a reflection of Quebecers' vision of water management on their territory. Section 8.2 below sets out some of its expectations of the government of Canada in connection with this Policy's implementation.

QUÉBEC'S INVOLVEMENT IN THE GREAT LAKES–ST. LAWRENCE RIVER SYSTEM

The interdependence of the St. Lawrence River and the Great Lakes calls for increased participation by Québec within the international agencies active in managing these bodies of water. Given the direct linkages between Great Lakes activities and management and the condition of the St. Lawrence River, integrated management must take into account the inherent realities of this hydrological system. Québec must also take part in decisions made upstream. Québec and its neighbours must therefore agree jointly on guiding principles, goals, policies, programs, and management mechanisms for the resources they share.

In accordance with the negotiation process initiated following signature by Québec's premier of the Annex to the Great Lakes Charter, Québec must ensure that the management of water withdrawals from the Great Lakes–St. Lawrence River system takes its concerns into account. These concerns relate to the cumulative impact of these withdrawals and to maintenance of the flow levels required for the health of the ecosystems and of the socio-economic activities involving the St. Lawrence.



Source: The Living Earth

Great Lakes – The interdependence of the St. Lawrence River and the Great Lakes necessitates increased cooperation between Québec and international organizations concerned with relevant issues.

Québec also intends to become more actively involved in the Great Lakes Commission in order to take part in setting water-management objectives for the Great Lakes–St. Lawrence River basin and in implementing protection, conservation, restoration, research, and development mechanisms.

Lastly, Québec must promote its interests and voice its concerns within Canadian-American organizations such as the International Joint Commission (IJC). In this connection, Québec intends to play a larger role in the IJC's Plan of Study to Review Lake Ontario–St. Lawrence River Regulation.

With this in mind, the government undertakes:

11. To strengthen Québec's participation in international organizations concerned with management of the Great Lakes–St. Lawrence River basin.

This commitment is aimed at:

- ensuring, for the well-being of Quebecers and the quality of the environment, the preservation of the waters and water-dependent natural resources dependent on this vast basin, by contributing to the development of a management system that will govern water withdrawal and diversions from the Great Lakes basin, and working together with our partners in Ontario and the American states bordering on the Great Lakes;
- taking part, with our partners, in the development of a system to support the decisions allowing for application of a management framework that has been fully negotiated by all partners involved, primarily by ensuring that the criteria and data needed to measure the various impacts on the St. Lawrence are available and adequately taken into account in the management of the watershed;
- furthering the acquisition of the knowledge needed to identify the impacts of climate change on anthropic (human) uses, the fluvial environment, plants, wildlife, and habitats;

- working towards sustainable development and towards the protection and conservation of the resources and habitats of the Great Lakes–St. Lawrence River basin, as well as their development, by taking part in the projects and initiatives of the Great Lakes Commission, including those dealing with shipping, water quality, and the fight to prevent the introduction of invasive exotic species;
- ensuring that the regulations governing management of levels and flows in Lake Ontario and the St. Lawrence River are compatible with the needs and interests of Quebecers with regard to maintaining and expanding uses of this section of the St. Lawrence. These regulations must therefore ensure their health and safety, as well as the health of the existing ecosystems. This will be accomplished by stepping up Québec's participation in the work of the International Joint Commission's Plan of Study to Review Lake Ontario–St. Lawrence River Regulation;
- ensuring that the International Joint Commission takes into consideration the priorities and interests of Quebecers in connection with the St. Lawrence River;
- preserving the environmental quality required to maintain and develop the various uses, by promoting consultation, concerted efforts, the sharing of information and knowledge on matters of mutual interest, and exchanges of expertise with our neighbours.

ISSUES PERTAINING TO THE GREAT LAKES BASIN

The quantity and quality of Québec's waters depend in part on external factors. The most obvious example is the St. Lawrence River, downstream from the Great Lakes. The levels and flows, as well as water quality, of the St. Lawrence are significantly affected by natural phenomena and by human decisions made upstream.

The St. Lawrence River alone accounts for 40% of Québec's renewable freshwater resources. Moreover, it supplies the water needs of three million people in some 100 riparian municipalities. One of the major challenges Québec faces is presenting and defending its interests before the organizations and decision-making centres concerned with the Great Lakes basin. In this respect, Québec is involved in a number of bodies, the most important of which is the Council of Great Lakes Governors.

Québec's premier, along with the eight governors of the American states bordering the Great Lakes and the Premier of Ontario, signed Annex 2001 to the Great Lakes Charter on June 18, 2001. Agreements between the ten signatories will be aimed at protecting, conserving, restoring, improving, and managing the utilization of water and the natural resources dependent on these waters. This applies not only to major diversions of Great Lakes waters, but also to all withdrawals of water for any use.

Québec is also an associate member of the Great Lakes Commission, an organization which brings together the states bordering the Great Lakes. Its main goal is to ensure protection of the water resources of the Great Lakes–St. Lawrence River basin on a sustainable development basis. Moreover, Québec pays particular attention to the work of the International Joint Commission, a Canada-U.S. organization created under the International Boundary Waters Treaty.

The increased involvement of the Québec government in these international organizations will lead it to intensify concerted efforts and to promote the signing or renewal of any environmental cooperation agreements affecting management of the waters of the Great Lakes–St. Lawrence system.

INTERNATIONAL RELATIONS

In addition to cross-border relationships, international water issues represent a challenge for Québec, especially regarding the harmonization of economic and commercial policies with policies in other areas, and more specifically the environment. By way of example, with respect to the North American Free Trade Agreement (NAFTA) between the United States, Mexico, and Canada, Québec monitors developments ever more closely, especially to ensure that investment rules do not hinder the ability of governments to adopt environmental laws and regulations. The discussions on water have proven to be complex, and their outcomes may have major consequences for water management in North America and in Québec. Against this background, Québec took a significant precautionary measure by adopting the *Act to amend the Water Resources Preservation Act*. This Act seeks to ban the massive transfer out of Québec of surface and underground waters withdrawn here. The same question arises in connection with possible water diversions from the Great Lakes basin.

Québec also pays particular attention to a parallel agreement to NAFTA, namely, the North American Agreement on Environment Cooperation (NAAEC), especially with regard to pollution prevention and the environment.

Water issues in Québec also come up in multilateral relations, especially in connection with sustainable development. Québec is already acting on the commitments it made following the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992. At the World Summit on Sustainable Development (WSSD), held in Johannesburg in 2002, Québec tabled a review of its activities in the area of sustainable develop-

ment, in which water management figures fully. Many of the commitments made at the WSSD in the area of water resources are echoed in the present Policy.

Thus at the international level, Québec must be able to benefit from exchanges in the area of water and take into consideration, in its own actions, international issues, guidelines, and decisions. Québec must incorporate and benefit from the knowledge, expertise, and exchanges of ideas and solutions recommended by multilateral forums and international decision-making organizations. Québec must be able to give the international community the benefit of its experience in water management and to promote its own interests and vision of water governance. In addition, all major international commitments must be subject to approval by Québec's National Assembly. It is essential that Québec be able to participate fully in defining these commitments by taking part in international bodies and forums. Moreover, this will and determination also prevails in our bilateral relations, notably with Wallonia, Bavaria, and New England states.

In order to participate fully in the international discussions on water resources, to play a role in the events and organizations dealing with the protection and sharing of water resources, and to promote the export of its expertise, the government undertakes:

12. To strengthen, in all relevant areas pertaining to water, the participation and representation of the Québec government, in order to promote its interests and share its expertise in international agreements, organizations, and forums.

An annual review, factual and analytical in nature, of Québec's involvement in international organizations and forums relating to water resources will make it possible to evaluate its success in living up to this commitment. This review will also serve as a source of information for citizens and Québec organizations on international water issues, including trade agreements. It may be used as a mechanism for obtaining public feedback.

13. To step up Québec's efforts on the international scene by supporting and facilitating the export of its public and private expertise in the areas of water resources technology, management, and protection.

Over the years, Québec has developed expertise in a number of areas relating to water resources. Already, companies as well as university and government researchers are acting as ambassadors for the quality of this expertise. This commitment will make it possible to support a Québec presence and to increase the profile of environmental-sector companies on the international market.

An aerial photograph of a coastal town, likely in Norway, viewed from a high vantage point. The town is nestled in a valley, surrounded by dense green forests. Numerous houses with white walls and dark roofs are visible, interspersed with tall evergreen trees. In the foreground, the dark, silhouetted branches of trees frame the bottom and left sides of the image. The town opens up to a large, deep blue harbor. Several boats, including a large white ship and smaller sailboats, are docked at a long pier. In the background, a small, forested island sits in the middle of the harbor. Beyond the harbor, the sea extends to the horizon under a clear, light blue sky. On the right side, steep, forested hills rise from the water's edge. The overall scene is peaceful and scenic, capturing a typical coastal landscape.

Chapter 4

Chapter 4

IMPLEMENTATION OF INTEGRATED MANAGEMENT OF THE ST. LAWRENCE RIVER: A MAJOR CHALLENGE

4.1

A NATURAL WONDER

The St. Lawrence River is part of the Great Lakes–St. Lawrence River system, whose watershed ranks as one of the largest in the world. No less than 25% of Canada’s population and 10% of the U.S. population live in this

vast area, which spans eight American states, Ontario, and Québec. At the level of Montréal, the Great Lakes account for 80% of the St. Lawrence River’s flow. The volumes of water originating from the Great Lakes only merge around Portneuf in Québec, whence the importance of ensuring the quality of the water flowing from the Great Lakes.

Some 60% of Quebecers live along the shores of the St. Lawrence. This watercourse is therefore the source of drinking water for over half the population, as well as essential for a large number of Québec’s key socio-economic sectors: marine transport and trading ports; industries dependent on marine transport; paper and steel mills, aluminum smelters, and oil refineries; commercial fishing and aquaculture; energy production; agriculture; and recreotourism.

THE ST. LAWRENCE RIVER – A KEY FACTOR IN THE QUÉBEC ECONOMY

Of all the economic-activity sectors that benefit from the St. Lawrence, marine transport is undoubtedly the most visible. In 1998, this mode of transportation, which produces the least amount of greenhouse gases per tonne of goods shipped, represented for Québec a total business volume of \$3.1 billion and accounted for over 26,000 direct and indirect jobs for all marine and port operations. Marine transport is a vital link for other major industry sectors in Québec, such as the pulp and paper, aluminum, steel and oil refining sectors. Also in 1998, Québec’s international maritime traffic totalled 78 million tonnes of cargo. Recognizing it as an important vector of economic development, in the summer of 2001 the government opted for optimal development of the seaway by adopting its *Marine Transportation Policy*. By implementing this policy, the government intends to stimulate growth of the marine transport sector and related industries.

As regards the commercial fishing and aquaculture industry, 9,000 persons hold seasonal jobs in Québec’s coastal regions; this activity sector provides up to 44% of the jobs on the lower North Shore. Commercial fishing is also the biggest industry on the Îles-de-la-Madeleine, with economic spin-offs of over \$54 million. The processing plants on Gaspé Peninsula alone employ 2,000 seasonal workers. Moreover, the area is highly suitable for aquaculture development (raising mussels, oysters, scallops and sea urchins). Lastly, mariculture focuses on breeding mollusks, especially mussels and scallops, and is practised mainly off the Îles-de-la-Madeleine and the Gaspé Peninsula.

As regards the industrial sector, 75% is located along the St. Lawrence River. Its importance led the partners in the St. Lawrence Vision 2000 Action Plan to itemize 106 industrial facilities as priorities in its plan to reduce toxic liquid discharges. The sectors targeted in Phase III of the Plan are metallurgy, metal surface treatment, and chemicals. The St. Lawrence and its riverbanks are also used for energy production, agriculture, sports fishing and various recreational activities. The presence of the St. Lawrence River is a strategic asset and prime competitive advantage for Québec society and its economy.

The St. Lawrence is a remarkable natural setting, providing a habitat for some 185 species of fish, 399 species of birds and 1,919 species of vascular plants. The richness and diversity of its ecosystems have gained international recognition. There are over 500 protected sites on the St. Lawrence, its shores and islands, representing over 47% of Québec's protected areas. There are also four wetlands of global importance (Ramsar sites), as well as the Lac Saint-Pierre Biosphere Reserve, recognized by UNESCO in November 2000, and also a Ramsar site. Finally, in November 1999, Miguasha Park was recognized by UNESCO as a Natural World Heritage Site.



Source: J.-F. Hamel & A. Mercier (SEVE)

Lac Saint-Pierre – Lac Saint-Pierre won UNESCO recognition as a biosphere reserve in 2000.

PROTECTED AREAS OF THE ST. LAWRENCE

The 1999 inventory of protected areas clearly illustrates the abundance and diversity of the St. Lawrence's natural treasures.

- National marine conservation area (Saguenay–St. Lawrence Marine Park);
- Natural setting (Percé and Archipel de Mingan);
- National park and national park reserve (Archipel de Mingan and Forillon);
- Migratory bird sanctuary (26 sites);
- National historic park and site (Grosse Île);

- Québec conservation park (Bic, Île-Bonaventure-et-du-Rocher-Percé and Miguasha);
- Québec recreation park (Îles-de-Boucherville);
- Ecological reserve (6 sites);
- Wildlife habitat (420 sites);
- Habitat of a threatened or vulnerable species (6 sites);
- National wildlife reserve (8 sites);
- Wetlands of international importance (2 Ramsar sites);
- Lake Saint-Pierre Biosphere Reserve (UNESCO);
- Wildlife sanctuary (5 sites);
- Park of recreational, tourism or conservation interest (5 sites).

Numerous other sites protected by the Fondation de la faune du Québec (17 sites) or the charters of private organizations (35 sites) round out the list of protected areas. The levels of protection or conservation they provide vary, depending on their status. Most sites are small in area and located on public land.

4.2 ENVIRONMENTAL THREATS AND CLEAN-UP EFFORTS

The condition of the St. Lawrence River reached a critical threshold in the early 1970s. Since then, clean-up efforts under the Programme d'assainissement des eaux du Québec (PAEQ), Programme d'assainissement des eaux usées municipales (PADEM), and Great Lakes Water Quality Agreement, as well as action taken in the industrial sector, have greatly improved the water quality of the St. Lawrence River.

Given the necessity of protecting and restoring the St. Lawrence, the governments of Québec and Canada joined forces in 1989 to develop and implement the St. Lawrence Action Plan. Implementation of the plan's first three phases produced tangible results in terms of the protection of natural environments, industrial, urban and agricultural clean-up, navigation, human health, and community involvement. The St. Lawrence now has

14 Priority Intervention Zones (ZIP) where local committees work on implementing ecological remedial action plans (PAREs); the riverside communities play a major role in this effort.



Wastewater treatment plant – The municipal wastewater treatment plant at Saint-Hyacinthe discharges treated wastewater into the Yamaska River, resulting in a reduced pollution load.

Source: Ministère de l'Environnement

PRIORITY INTERVENTION ZONES (ZIP)

The government partners in the Vision 2000 St. Lawrence Action Plan recognize the importance of riparian residents in ensuring the success of efforts to protect, preserve and develop the river. It was with this in mind that the Priority Intervention Zone (ZIP) program was created. It aims to promote the carrying-out of local initiatives for protecting, restoring, conserving and developing the usage and resources of the St. Lawrence from a standpoint of sustainable development.

The program is based on ZIP committees, which are non-profit organizations. Fourteen ZIP committees formed in Phases II (1993-1998) and III (1998-2003) of the action plan cover most parts of the river.

The quality of water in the St. Lawrence is generally good as far as Montréal, where it starts deteriorating. This is partly the result of bacterial contamination from overflows of untreated wastewaters during rainstorms. Moreover, the discharges from the City of Montréal treatment plants and the Centre d'épuration des eaux de la Rive-Sud in Longueuil, which do not disinfect the treated water, also contribute to the damage. The bacterial contamination from these two sources persists as far as 125 km downstream from Montréal and begins disappearing in Lac Saint-Pierre.

The ecosystems of the St. Lawrence remain vulnerable to pollution from all sources, environmental disturbances, and unsustainable water-management practices. Moreover, these ecosystems now face new environmental threats. In fact, the habitats of the St. Lawrence are currently under threat from human-induced and natural phenomena,

and the pressure is mounting. These phenomena include the prospect of climate change, extreme fluctuations in water levels, and increased shoreline erosion along the river and in the estuary and gulf, as well as the introduction of invasive exotic species, the disappearance of certain wetlands, and the discharge of complex new toxic substances about which little is often known.

The impact on the St. Lawrence of activities carried out in its tributary watersheds is compounded by that of activities taking place on the Great Lakes. The cumulative impact has not only an environmental dimension, but also economic consequences. For example, the introduction of the zebra mussel into the Great Lakes–St. Lawrence River system alone has triggered huge expenditures on both sides of the border, to the tune of some \$3 billion a year, mainly in the United States.

BIENNIAL REPORT ON GREAT LAKES WATER QUALITY

In its Biennial Report on Great Lakes Water Quality¹⁰ published on September 12, 2002, the International Joint Commission (IJC) states that the objectives set by the governments for the protection of Great Lakes water, particularly in terms of discharges of toxic substances, dredging, contaminated sediment, invasive species and knowledge have not been attained. The IJC considers the efforts insufficient and urges the governments to intensify their activities and investments to protect Great Lakes water.

¹⁰ International Joint Commission, Canada–United States, 11th Biennial Report on Great Lakes Water Quality, *The Challenge to Restore and Protect the Largest Body of Fresh Water in the World*, September 2002, 88 p.

The challenge of achieving integrated management of the St. Lawrence constitutes the second orientation of the Québec Water Policy.

4.3

TWO MAIN COURSES OF ACTION FOR THE ST. LAWRENCE RIVER

The Québec government recognizes the importance of the St. Lawrence River, its historical, economic, social, cultural and heritage value, and the richness of its natural settings. As the managing authority of water in Québec, it will continue protecting and cleaning up the St. Lawrence while emphasizing development of its resources. Thus the government will help ensure the sustainability and diversity of use of the St. Lawrence, while protecting public health as well as the health of its ecosystems from the Ontario border up to and including the Gulf of St. Lawrence.

The problems, issues, strategies, and general objectives defined and discussed in various plans for development or management of the St. Lawrence over the past 30 years by the Québec government and its partners, or in the public consultations conducted by the BAPE on water management in Québec, have given rise to the following two courses of action for managing the St. Lawrence:

- give the St. Lawrence special status to underscore the importance of its intrinsic value for Quebecers;
- implement integrated management of the St. Lawrence.

4.4

SPECIAL STATUS FOR THE ST. LAWRENCE RIVER

In the government's view, the St. Lawrence consists of all the river, estuary, and maritime segments from the Ontario border up to and including the Gulf of St. Lawrence. It intends to give the St. Lawrence a status that reflects its intrinsic and heritage value as shaped by history, culture, economics, society, and nature. The Québec government must at long last formalize its intention of taking charge of development of the St. Lawrence while underscoring the importance it attaches to this watercourse.

The government therefore undertakes:

14. To enshrine, through official recognition, its vision of the St. Lawrence River as a national heritage to be protected, developed, and valued.

The concept of heritage also refers to the idea of a Québec asset and legacy, thus encompassing what we have inherited and what we will bequeath to future generations. It is a heritage that we enjoy, are altering, and must improve. This recognition will therefore be rooted in a vision of the St. Lawrence River, whose development we intend to pursue in the years ahead on a sustainable-development basis. Such recognition will also enshrine the special status accorded to the St. Lawrence by Québec, both here and beyond our borders. It will finally affirm Québec's jurisdiction over the management of this exceptional environment.

Source: PG-Adam/Publiphoto



The Montréal waterfront – Integrated management of the St. Lawrence River will encompass all the main watercourses, beaches, shorelines and wetlands, as well as the associated islands, archipelagos and fluvial lakes.

4.5 INTEGRATED MANAGEMENT OF THE ST. LAWRENCE RIVER

Sectoral initiatives have proven to be insufficient in terms of limiting the negative impact of harmful human activities and natural phenomena on the St. Lawrence River's remarkable environment. It therefore seems essential to apply the principle of enlightened, forward-looking, concerted, and integrated governance to the entire St. Lawrence.

This governance must lead to highly integrated actions; it will increasingly call for community participation through non-governmental organizations (NGOs) or municipalities, which will be invited to play a major role in implementing the various actions aimed at the St. Lawrence, from the Ontario border up to and including the Gulf.

In this regard, the government undertakes:

15. To implement integrated management of the St. Lawrence River.

Following adoption of the Québec Water Policy, the government will implement integrated management of the St. Lawrence based on orientations, objectives, courses of action, and management structures described in the general orientation framework for

integrated management of the St. Lawrence, which will be tabled in support of implementation of this Policy. This integrated management of the St. Lawrence will apply to the entire main watercourse, littoral zones, riverbanks, wetlands, fluvial lakes, tributary mouths, islands and archipelagos, from the Ontario border up to and including the Gulf. Thus the management tools that are developed will enable the Québec government and its partners to act on the basis of a shared vision linked to the Québec population's intrinsic needs for water.

PROPOSED ACTIONS INVOLVING INTEGRATED MANAGEMENT OF THE ST. LAWRENCE RIVER

Preferred courses of action

- Adaptation to climate change and fluctuations in water levels;
- Protection and restoration of the riverbanks, littoral zones, floodplains, and wetlands of the St. Lawrence;
- Prevention of and control over the introduction of exotic invasive species;
- Continued urban, industrial and agricultural clean-up efforts;
- Protection of drinking water sources (quantity and quality);
- Protection and restoration of habitats and protection of species and biodiversity;

Actions planned

- Identify vulnerable areas, species, and habitats along the St. Lawrence;
- Propose integrated action to offset anticipated effects, such as shoreline erosion on the Gaspé Peninsula and the North Shore;
- Give priority to the wetlands of Lac Saint-Pierre and shores of the islands between Montréal and Sorel, among other areas;
- Prevent zebra mussel invasion and control water chestnuts;
- Disinfect wastewaters where justified by protection of usage;
- Reduce the frequency of overflow from individual systems during rainstorms;
- Accelerate and expand application of the industrial waste reduction program;
- Measure the impact of farmland watersheds on St. Lawrence River ecosystems, including their biodiversity, water quality, wildlife populations, state of health of their habitats and volume of sediment originating from farmland tributaries;
- Prepare a strategy to protect surface water intakes;
- Ensure the protection of habitats and reintroduction of sensitive species such as the:
 - copper redhorse,
 - American shad,
 - striped bass.

- Development of a network of public water-access sites, beaches, and recreotourism activities;
- Implementation of a sustainable navigation strategy;
- Resource development and exploitation;
- Knowledge, research, and information;
- Public participation and community involvement;
- Develop and implement a government plan to create a network of public access sites;
- Implement a financial assistance program for public access for municipalities along the St. Lawrence;
- Support the “Blue Montréal” and “Promenade Champlain” (Québec City) projects;
- Continue implementing the *Politique québécoise des pêches et de l’aquaculture*;
- Optimize commercial navigation activities from the standpoint of the environmental benefits it provides;
- Develop a comprehensive integrated St. Lawrence River research program;
- Sign the multilateral agreement on monitoring the condition of the St. Lawrence;
- Complete the network of ZIP committees and broaden their mandates and composition so that they become the founding cores of zonal committees.



Source: Robert Grefard, Ville de Québec

The river at the level of Québec City in winter – One of the courses of action advocated by the government of Québec is adaptation to climate change and varying water levels.

The government, represented by the Minister of State for the Environment and Water, will establish a standing joint committee for the integrated management of the St. Lawrence. This committee will be made up of the Québec government's main partners involved in management and/or use of the St. Lawrence and its resources: representatives of federal and Québec departments, local officials, Aboriginal communities, watershed organizations, environmental groups, users, non-governmental organizations, and the future St. Lawrence zonal committees.

The committee's mandate will primarily be to:

- develop and oversee implementation of a five-year integrated management plan for the St. Lawrence;
- draft and negotiate a "St. Lawrence contract" whereby all the partners undertake to carry out the management plan in keeping with their respective jurisdictions and powers;
- see to the carrying-out of Québec-wide actions;
- establish the zonal committees, whose mandate will be to submit integrated management plans for their zone, negotiate St. Lawrence River zone contracts, and ensure implementation of the integrated management plans applicable to them;
- ensure informed public participation in the development and implementation of integrated management of the St. Lawrence.

The government recognizes the value of the expertise developed by local committees currently engaged in carrying out St. Lawrence rehabilitation, restoration, or development projects. The correspondence between current ZIP boundaries and the St. Lawrence zones motivates the government to build on existing structures so as to ensure continuity with past efforts and avoid any structural redundancy. For example, the ZIP committees may see their mandate and responsibilities broadened, along with, where necessary, a redefinition of the boundaries of certain territories, the addition of areas of the St. Lawrence not covered at present or the integration of citizen groups or associations already active in the field but yet not currently members of the ZIP committees.

The Québec government is in the process of developing its general orientation framework for integrated management of the St. Lawrence. Among other things, it will propose the management tools to be established for development and implementation of the Plan de gestion intégrée du Saint-Laurent. Local water-management players and Quebecers will have a chance to comment on the government's proposed orientations through a public

consultation process to be overseen by the Minister of State for the Environment and Water.

The integrated management of the St. Lawrence will influence some of the management mechanisms agreed upon with Québec's various partners. The current Memorandum of Understanding regarding Canada-Québec Cooperation on the St. Lawrence expires in March 2003. The next one will be revised so as to contribute to achievement of the undertakings made in this Policy with respect to integrated management of the St. Lawrence River.

In order to define a new form of partnership with the federal government in implementing integrated management of the St. Lawrence, the government undertakes:

16. To sign a new Canada-Québec agreement on the St. Lawrence and ensure its implementation.

The government would like the agreement to cover a set of tangible commitments from the federal and Québec governments with respect to integrated management of the St. Lawrence, based on the priorities for action discussed in this Policy.

Chapter 5

before

after

Chapter 5

PROTECTION OF WATER QUALITY AND AQUATIC ECOSYSTEMS: A NECESSITY

Like air, water is vital to life, well-being, and health – hence the importance of controlling its quality to protect both public health and the health of ecosystems. Of all its uses, drinking water has the greatest direct impact on people. And since water is associated with almost every human activity, it is subject to all kinds of pollution. Moreover, natural ecosystems are increasingly threatened by human activity. It is therefore up to the government to take steps to protect the quality of our ecosystems and enable sustainable use of the resource. These two aspects represent the two courses of action associated with the third orientation of the Québec Water Policy.

5.1 ENSURING SAFE, HIGH-QUALITY DRINKING WATER

Water-related health issues begin with the drinking water supply. This is one of the most basic services a municipality provides for its residents. Since water is essential for life, municipalities have a responsibility to supply good quality drinking water. Water is also an indispensable strategic resource for municipal development.

Numerous efforts have been made in recent years to tighten controls over the quality of drinking water. In addition to the mandatory regular sampling and testing required of water utilities, the new *Regulation respecting the quality of drinking water* toughens water quality standards and makes training obligatory for drinking water production plant operators. It ranks Québec as having among the highest quality standards and toughest controls in North America. It calls for a review of drinking water standards every five years. As for groundwater, the government has



Source: Rock Thérault

Water pump – Providing all Quebecers with access to safe, quality drinking water is a priority for the government of Québec.

adopted the *Regulation respecting groundwater catchment*. It sets standards designed to ensure the best possible quality of raw water by requiring protection perimeters to be delimited around groundwater catchment works.

A regulatory approach is essential to protect public health in the realm of drinking water, but complementary measures are also required. No specific measure currently protects surface sources of drinking water, as is the case with groundwater. This makes it necessary to protect the surface water collection sources used to supply drinking water.

Ensuring the sustainability of water services makes modernization of drinking-water purification systems a necessity.

In this regard, to protect public health, the government undertakes:

17. To provide financial assistance over the next five years for bringing all drinking water supply and treatment facilities up to standard.

This commitment aims to help municipalities update drinking water supply and treatment facilities to comply with the *Regulation respecting the quality of drinking water*. The government will invest the necessary funds under existing assistance programs to help municipalities bring their facilities up to standard.

This updating process will have substantial economic, technical, scientific and social benefits. Fulfillment of this commitment will take into account the advancement of Québec expertise and know-how in the area of drinking water treatment technology.

18. By 2004, to develop a strategy for protecting surface water collection sources.

The government undertakes to take steps to protect Québec's sources of drinking water similar to the measures instituted in the United States, Ontario, Nova Scotia, and New Brunswick.

As an essential complement to the *Regulation respecting the quality of drinking water*, this undertaking will help reduce the risks of contamination of surface waters used as supply sources. It will make it possible to determine the vulnerability of water collection zones, and to define priority actions for improving protection of the quality of raw water.

19. To increase and improve the ability of regional public health branches to intervene, investigate, and assess risks or impacts whenever water quality standards are violated or waterborne illnesses break out.

The government will establish systems for continuously and effectively monitoring waterborne diseases. The Institut national de santé publique du Québec will conduct the necessary scientific studies and help

provide special training regarding water. These efforts aim to enhance the government's ability to protect public health and prevent water-caused public health problems. Better access to information about illnesses and contamination is a key factor in fulfilling this commitment.

5.2

PROTECTING AQUATIC ECOSYSTEMS

Aquatic and riparian ecosystems as well as wetlands such as marshes, swamps and bogs are known for their ecological abundance, biodiversity, and even their purification function. They are also subject to multiple forms of economic exploitation and are the site of recreotourism activities (such as fishing, hunting, trapping, fish farming, bird watching, water sports, and peat harvesting). Yet the development of human activities sometimes has a negative impact on these environments. Certain activities related to forest management practices, to the erection of structures designed to protect riverbanks and shorelines from erosion, to encroachment and dredging, and to the alteration of watercourse profiles in order to improve agricultural or urban drainage are all examples of activities that put aquatic ecosystems under considerable pressure. In this way, practices designed to reduce the impact of such activities have been developed in recent years. For example, the method for removing sediment and vegetation from ditch bottoms applicable to maintenance work enables the reduction of erosion in agricultural, forestry and road ditches, and limits sediment deposits in main watercourses.

Wildlife resources are faced with numerous problems. These include assaults on their aquatic and wetland habitats, violation of the integrity of fish communities, and constraints placed on fishing and its development as a result of conflicts over water-related uses. Concrete action must therefore be taken to provide better protection for the banks, shorelines, and littoral zones of lakes and watercourses, their floodplains, and wetlands.

Source: Léopold Gaudreau, Ministère de l'Environnement



Lac Saint-Paul – Lac Saint-Paul, located in the Centre-du-Québec region, borders the Léon-Provancher ecological reserve that protects wetlands representative of shoreline ecosystems along the St. Lawrence River.

Aquatic, riparian and wetland environments can be protected in different ways, namely by establishing criteria concerning the hydrological regimen of watercourses, assigning a conservation status, providing guidelines, or applying appropriate laws and regulations. Yet the restoration of these habitats requires the acquisition of knowledge about the biology of little known, sometimes endangered or vulnerable species, as well as new development techniques that will allow for conservation and enhancement of these species.

In addition to the increasing uses made of water and the uncertainty about its availability, water withdrawal or

watercourse diversion projects can have substantial impact and significantly alter aquatic ecosystems. The presence of these projects can also intensify competition among users and amplify conflicts over use among the population located downstream. The goal of ensuring sustainable use, multiple uses of watercourses, and the ongoing health of aquatic ecosystems therefore implies respecting the environment's support capacity.

Thus, with respect to the management of bodies of water and watercourses, the government will establish rules to govern alterations to flow. These rules will be established taking cumulative impact into account in order to ensure sufficient flow for the development and continuing health of aquatic ecosystems, as well as to guarantee other public uses of water.

To ensure sustainable use of the resource and aquatic ecosystems, various government bodies mainly in other Canadian provinces and certain international organizations are currently reviewing quantitative water management. In particular, the Great Lakes states, Québec, and Ontario are developing criteria for managing water withdrawal and diversion in the Great Lakes basin, which includes a good part of the St. Lawrence River. When negotiations are completed, agreements setting forth these rules will be binding upon the parties involved. Québec will then have to apply them with regard to the

THE REINTRODUCTION OF THE STRIPED BASS

In the summer of 2002, the Société de la faune et des parcs du Québec and its partners launched a project to reintroduce the striped bass into the St. Lawrence River. Spanning a period of more than ten years, the project was developed in conjunction with various groups. Until fishing for this species stopped in the mid-1960s, it must be remembered that this practice formed an integral part of the natural and social heritage of the riparian communities along the St. Lawrence. Since April 2002, the Société has poured major investments into its Baldwin Mills piscicultural station in order to concentrate its production on the fish needed for this project. When the project ends, several thousand small striped bass will have been released into the St. Lawrence. It is already apparent from consultations that this project is meeting the expectations of citizens, who are witnessing the return of striped bass as a concrete result of the efforts made to date to clean up the waters of the St. Lawrence.

St. Lawrence River basin to a point upstream from Trois-Rivières, an area that is home to approximately two thirds of the Québec population. The government believes that the pertinence of extending and adapting these criteria to the entire Québec territory must be evaluated.

Wetlands, rivers, lakes, and littoral zones account for much of the biodiversity of our territory. For this reason, in Québec as elsewhere around the world, the creation of networks of protected areas is an excellent way to sustain a territory's biodiversity. Québec subscribed to this vision over a decade ago by adopting a strategy on biological diversity and an action plan for its implementation. For aquatic environments per se, it also appears essential that certain jewels of Québec's natural, cultural, and recreational heritage associated with watercourses be protected and developed for the benefit of the entire population.

To protect aquatic ecosystems, the government undertakes:

20. To step up knowledge-acquisition and development activities that support interventions aimed at protecting and restoring wildlife habitats in aquatic, riparian, and wetland environments.

The government deems it essential to increase scientific knowledge of the wildlife environments that have been, or are likely to be, degraded by human activities in the agricultural, industrial, or urban sectors. These habitats are often home to species that are sensitive to environmental disturbances, and the ecological requirements of their life cycles are little known.

With a view to protecting biodiversity, efforts will be made to study the various priority wildlife species in order to determine their optimal living conditions for the purpose of restoring or developing habitats designed to adequately meet their needs. In this context, the government recognizes that it needs a capital budget to be used for rehabilitating certain works or structures that form integral parts of wildlife habitats located in hydric environments.

Similarly, to ensure concrete application in the field of the knowledge and expertise acquired, an assistance program will be created to support community or partner initiatives and projects aimed at acquiring, protecting, or restoring wildlife habitats associated with aquatic, riparian, or wetland environments.

Furthermore, the government plans to encourage the development of more efficient methods in order to improve the cost-benefit performance associated with habitat developments in aquatic environments. To do so, a monitoring program will be set up at the watershed level to measure the effectiveness and economic benefits of these developments.

21. By 2004, to develop and implement an action plan for the protection, restoration, and development of the banks and littoral zones of lakes and watercourses, their floodplains, and wetlands.

First, the wetland inventories will be completed. They will then be characterized and a typology developed with a view to completing the network of protected areas proposed in Québec's Strategy for Protected Areas.

Research into methods of restoring and developing riparian environments and wetlands will be intensified to provide a better structure for these activities and more effective support for various conservation efforts. The publication of guides, as well as training, technical aid, and financial assistance programs will be continued or expanded to meet the needs of organizations active in these areas. The government will encourage wetlands conservation through public or private agencies by facilitating, by means of various measures and in keeping with carefully targeted conservation priorities, land purchases, or donations as well as the signing of legal servitudes.



Source: Camille Rousseau

Pointe-aux-Outardes – The Pointe-aux-Outardes nature park is located on the Manicouagan peninsula in the North Shore region. The park corporation oversees conservation and protection of the site, which maintains one of Québec's largest salt marshes.

Two programs, furthering the measures cited above, have already been established by the government to facilitate protection and conservation on private land. Thus the *Partenaires pour la conservation volontaire* program enables private landowners or organizations to become associated with conservation efforts on private land. In the same vein, the *Programme national pour le développement d'un réseau d'aires protégées* is designed to expand the private network of protected areas through a partnership with the private sector. Furthermore, the recognition of nature reserves on private property allows landowners to become directly involved in the conservation of natural environments, including wetlands.

The government will assess the effectiveness of the legal and regulatory framework for protecting wetlands and riparian environments pursuant to the *Environment Quality Act* and the *Politique de protection des rives, du littoral et des zones inondables*, and will propose reforms if necessary.

Improved knowledge of wetlands and riparian environments will provide better assurance of their conservation. Moreover, amendments to the policy to protect banks, littoral zones, and floodplains will limit exceptions and exemptions in the riparian zone. Furthermore, once integrated into municipal by-laws, these amendments will have a significant impact on the preservation of wetlands and their habitats.

22. To extend application of the policy on ecological reserved flows for the protection of fish and their habitats to other aquatic ecosystem components.

At present, the *Politique de débits réservés écologiques pour la protection du poisson et de ses habitats* is enforced to protect fish and their habitats, among other things, when assessing generating-station, dam, and water-diversion and withdrawal development projects of various types.

In an effort to better protect the entire aquatic ecosystem, the government intends to take into account aquatic ecosystem components apart from fish, such as water quality, plant and wildlife diversity, and recreotourism activities.

As it continues to develop this policy, the government will acquire the tools needed to improve protection and conservation of the various components of aquatic ecosystems in keeping with their support capacity. This commitment will enable optimal development of the resource for the benefit of present and future users, while taking into account not only the environmental, but also the economic, social, and wildlife benefits.

23. By 2005, to set criteria for allocating water withdrawal and watercourse diversions.

The Annex 2001¹¹ negotiations undertaken by the Great Lakes states, Ontario and Québec seek primarily to establish a new standard to govern water withdrawal from the basin. The new standard will be based on the following principles:

- prevention or reduction of basin water losses by restoring removed water and adopting water conservation measures that are environmentally sound and economically viable;
- absence of significant, individual, or cumulative impact on the quantity or quality of the water in the Great Lakes basin and the natural resources dependent on it;
- improvement in the water of the Great Lakes basin and the natural resources dependent on it;
- compliance with state, provincial, and federal legislation, and with applicable treaties.

Upon completion of these negotiations, Québec will evaluate the possibility of adapting these criteria for allocating water removal and watercourse diversions for its entire territory. These future criteria will have to take into account the hydrological characteristics and location of each drainage basin, and regional disparities.

The criteria will also take cumulative impact, as well as the requirements of the policy on reserved flows, into account. A water withdrawal reading will be taken in each watershed to provide input for an information system. The development of criteria for Québec as a whole will also take into account the results of work undertaken in 2001 by the task force formed by the International Joint Commission (IJC) for the purpose of reviewing the currently applicable criteria for regulating water levels in Lake Ontario and the St. Lawrence River.

Lastly, these criteria will allow for better management of current and future needs, and more equitable resource allocation; they will also be used to determine the procedures for implementing the “user-pays” principle and resolving conflicts over use. They will serve mainly for the purpose of granting authorizations and issuing a wide range of permits and certificates.

24. To create a network of “aquatic reserves” in Québec by 2005.

The government will ensure that the protection of watercourses and lakes, as well as brackish or saltwater ecosystems, is henceforth integrated with the protection of Québec’s natural heritage by creating aquatic reserves. Thus, to complement the efforts undertaken in the context of Québec’s biodiversity strategy and its strategy for protected areas, the government undertakes to inventory and characterize the rivers, lakes, St. Lawrence, and estuary and offshore zones representative of the natural provinces of the ecological reference framework. These aquatic reserves will be protected mainly by authorizing activities compatible with the objectives of maintaining biodiversity and the ecological characteristics that enable its integrity



Source: Alain Dumas

Rivière Ashuapmushuan – The Ashuapmushuan river, located in the Saguenay–Lac-Saint-Jean region, was set aside in the summer of 2002 under the Québec Strategy for Protected Areas.

11 *Great Lakes Charter Annex, a rider to the Great Lakes Charter*, signed by the premiers of Québec and Ontario and the governors of the states of Illinois, Michigan, New York, Indiana, Minnesota, Ohio, Pennsylvania, and Wisconsin on June 18, 2001.

to be preserved. A bill on the preservation of our natural heritage and intended to foster implementation of a network of protected areas that is representative of Québec's biodiversity was submitted to the National Assembly for approval.

The government partners will ensure that the interest groups concerned are consulted during the process of designating aquatic reserves, as stipulated in the Québec Strategy for Protected Areas.

Protective measures, management methods, and appropriate legal statutes will be established to protect and develop the natural, heritage, cultural, scenic, or recreational characteristics of watercourses, sections thereof, or lakes that are deemed exceptional. The protection granted to the natural heritage on land will henceforth be extended to aquatic ecosystems in freshwater, saltwater and brackish environments, and wetlands.

25. By 2005, to revise forest management practices with a view to reducing impact on aquatic, riparian, and wetland environments.

This commitment regarding forest management requires that an assessment be made of the effectiveness of government intervention standards with respect to forest management activities. These standards are intended to ensure the protection of watery environments and of transitional environments lying between aquatic environments and forests per se. This assessment will make it possible to identify any remedial measures needed to minimize the impact of forestry activities and practices on these particular environments.

The *Regulation respecting standards of management for forests in the public domain* is currently being revised. During this process, an approach geared to the attainment of objectives rather than the prescription of intervention measures will be favoured with a view to protecting aquatic and riparian environments. This revision process provides an ideal opportunity to move ahead with the same objectives for public land,



Source: Rock Thérault

River seen through trees – The government of Québec has committed to revising forest management practices to mitigate their impact on aquatic, shoreline and wetland environments by 2005.

particularly where current intervention mechanisms are inadequate.

The provisions introduced since the adoption of the above Regulation in 1988, the implementation of the orientations and programs ordered as part of the revision of the forestry system in 2001 (performance indicators, mosaic cutting patterns, and protection and development objectives based on management unit, and strategies identified in the Plans généraux d'aménagement forestier [PGAF], etc.), as well as regional climatic and biophysical characteristics of the forest environment will be taken into account in the process pertaining to this commitment.

Forestry operations and practices on private land should also be assessed and potentially revised. The possibility of harmonizing the rules applicable to private land with those enforced in public forests will be considered, and proposals will be developed as needed.

These measures will help to ensure that interventions in the forestry sector contribute to the attainment of the objectives for water quality and aquatic ecosystems on a watershed-based approach when the situation so requires.

FLOW CONTROL AND FLOODPLAIN PROTECTION

A watercourse has periods of high and low water that form part of the natural water cycle. Though these phenomena are often localized, they are sometimes far-reaching and have a substantial impact on ecosystems, as well as on people or infrastructures situated along the watercourse. The floods that have struck various parts of Québec, especially those that devastated the Saguenay in the summer of 1996, and the low water levels of the Rivière des Mille Îles and the Lac Saint-Charles basin in the summer of 2001 provide vivid, more recent examples of this.

There have long been attempts to reduce the impact of these events by building dams and control facilities as well as dikes and protective structures. The fact that Québec decided as early as 1856 to use hydraulic power as a development tool led to the construction of numerous dams. This trend was stepped up during the first half of the 20th century, when the Streams Commission was authorized to build numerous reservoirs and control structures, primarily to reduce flooding or improve the use of hydraulic power. Québec today has some 5,000 dams¹² one metre or more in height, including over 2,200 considered to be “high-capacity” as defined by the *Dam Safety Act*.

The government has instituted various protective and preventive measures to reduce the risks associated with high and low water levels:

- The *Watercourses Act*, which originates in the 1856 law, specifically requires the owners of a reservoir or water diversion structure to take floodplain rights into account in operating their installation.
- The *Dam Safety Act* adopted recently to follow up on the recommendations of the Commission scientifique et technique sur la gestion des barrages created in the wake of the heavy rains and floods of the summer of 1996, imposes a series of measures designed to improve dam safety and the protection of people and property.
- A list of dams measuring one metre or more in height has been drawn up and is kept up-to-date by the Ministère de l'Environnement's Centre d'expertise hydrique du Québec (CEHQ); the list is available on the Internet.

12. High-capacity dam: height ≥ 2.5 m and impoundment capacity $\geq 30,000$ m³, or height ≥ 1.0 m and impoundment capacity $\geq 1,000,000$ m³, or height ≥ 7.5 m regardless of impoundment capacity.

- The CEHQ manages a system for measuring water levels and flow; this system is comprised of 250 hydro-metric stations that monitor and analyze the behaviour of some 200 lakes and watercourses. This government network is complemented by those of Hydro-Québec and big companies that manage hydraulic structures. The data compiled and analyzed by the Centre is used primarily to manage government dams, determine high-water levels and, in civil defence during flood periods, as a basis for decision-making aimed at minimizing the problems associated with floods.
- From 1976 to 1997 the agreement between the governments of Canada and Québec on mapping and protecting flood zones led to the production of maps of flood zones in 250 municipalities, most of which have incorporated the program's inherent prescriptions into their by-laws.
- Following the catastrophic floods of 1996, the Québec government introduced a new five-year program to determine floods with a 20- and 100-year recurrence interval in some 160 priority intervention areas.

Chapter 6



Chapter 6

CONTINUATION OF WATER CLEAN-UP EFFORTS AND IMPROVED MANAGEMENT OF WATER SERVICES: RECOVERING LOST USES

When the Programme d'assainissement des eaux du Québec (PAEQ) was introduced in 1978, it marked the start of efforts to give healthy watercourses back to Quebecers. This led to substantial progress, yet much remains to be done to return to a level of quality that will allow for full use of our bodies of water. Continuing water clean-up efforts and improving management of water services thus constitute the fourth orientation of the Québec Water Policy. Four courses of action have been selected as the means for pursuing this orientation, namely: intensifying agricultural clean-up efforts, broadening industrial clean-up efforts, supplementing municipal clean-up efforts, and ensuring the sustainability of municipal infrastructures,¹³ while improving the management of water services.

CONCERTED GOVERNMENT EFFORTS TO ENSURE WATER DEPOLLUTION

Several ministries currently share responsibility for government programs relating to water clean-up. These programs are directed at the players involved throughout Québec based on the sector to which they belong (agricultural, industrial, or municipal). In the case of the St. Lawrence River, water clean-up requires the participation of the federal and Ontario governments and those of certain American states.

This approach, combined with limited government coordination, does not always take adequate account of environmental problems or of the cumulative impacts of

human activity on water quality. It is thus important for the government of Québec to improve the effectiveness of its depollution efforts, in order to ensure that collective goals pertaining to the quality of water and of aquatic ecosystems at the watershed level and in the St. Lawrence River, for all sectors (agricultural, municipal and industrial), are attained.

In order to achieve measurable and quantifiable environmental goals relating to preservation and restoration of biological resources and ecosystems, as well as goals relating to the recovery of lost uses of watersheds, the government undertakes:

26. To implement a strategy for cleaning up watercourses at the watershed level.

Depollution goals will be set for each of the high-priority watersheds, and the efforts of all government agencies will be coordinated in order to achieve specific water clean-up objectives. Québec government assistance programs will gradually be adapted to incorporate the concept of ecoconditionality. Public participation in this government effort will be organized through the watershed agencies and the St. Lawrence integrated management committee.

This approach will facilitate optimization and coordination of all government clean-up efforts by focusing them on priority problems and on the objectives to be reached for the protection and restoration of water quality, using watershed-based management. Thus, local and regional partners will be made accountable for the restoration and maintenance of the quality of watercourses.

Water clean-up commitments applicable to each of the sectors (agricultural, industrial, and municipal) are defined in the following courses of action.

¹³ The term "municipal infrastructures" refers to drinking water purification facilities, wastewater treatment plants, and waterworks and sewer systems.

6.1 INTENSIFYING AGRICULTURAL CLEAN-UP EFFORTS

As in many other countries, agricultural clean-up and the control of pollution from agricultural sources represent major challenges. Cleaning up water in the agricultural sector requires that regulations, programs, and other intervention mechanisms tackle both isolated and widely scattered sources of water contamination.

It is therefore necessary to develop an agricultural clean-up strategy in order to recover lost uses of water. A major revision of Québec's agricultural clean-up program in order to ensure harmonization of production goals with environmental protection objectives was in fact one of the main recommendations of the Water Management Commission.

The general objective of an agricultural clean-up strategy is to reestablish and maintain a balance between development of an economically viable and socially acceptable agricultural sector and a high-quality rural environment for current and future generations. This strategy is based on the coordination of actions that give priority to the agro-environmental problem from numerous perspectives, such as information, awareness-raising, education, the introduction of sound agricultural practices, regulatory control, and conditional financial assistance, as well as technological research and development.

The agricultural clean-up strategy is implemented through six categories of actions: respect for soil support capacity, a government investment plan, the establishment of wooded riparian corridors in agricultural areas, application of the principle of ecoconditionality, pesticide management, and a sustainable-development strategy for freshwater fish farming.

RESPECT FOR SOIL SUPPORT CAPACITY

In this connection, the government undertakes:

27. To achieve, by 2010, a state of equilibrium in terms of soil phosphorus-support capacity.

This commitment is implemented notably by means of the *Regulation respecting agricultural operations* (RAO), adopted June 13, 2002, and replacing the *Regulation respecting the reduction of pollution from agricultural sources* (RRPAS). It involves a new approach to phosphorus management by farm. The spreading of these animal wastes will be subject to restrictions on the quantity of waste used, the mode of spreading, location, and time of year. Under the new regulation, the realities of individual agricultural operations will be taken into account. The government wishes to give priority to management of the existing surpluses.

The ultimate goal is to ensure balanced fertilization that takes into account the nutrient requirements of plants, the environmental risk and the actual phosphorus content of animal waste rather than Québec averages. As a first step, the government will require that existing operations meet an intermediate target of



Source: Michel Bouliane, Ministère de l'Environnement

Rivière Yamaska – The government of Québec has committed to achieve balanced phosphorus levels in soil by 2010.

having 50% of their soils in equilibrium by 2005. In the case of any new agricultural operations or increases in herd size, soil equilibrium must be achieved immediately. In addition, the spreading of livestock wastes will have to be carried out on the basis of the characteristics of soils and crops, in accordance with the agro-environmental fertilization plan which the operator must follow. These provisions are aimed at imposing accountability on the entire agricultural sector. Québec's agronomists, who will be responsible for preparing and monitoring these plans, are called upon to play a decisive role.

This regulation also aims to ensure that by 2010, agricultural operations will have watertight storage facilities for livestock waste or an alternative solution approved by the Ministère de l'Environnement. Lastly, this regulation prohibits the spreading of any organic or mineral fertilizers inside a three-metre buffer strip along watercourses, or a one-metre strip along drainage trenches. Moreover, municipalities may impose more stringent by-laws than those provided for under the RAO. A comprehensive report will be issued in 2005 and every five years thereafter, in order to ensure that real environmental gains are achieved, especially in terms of the storage and spreading of solid and liquid manures.

This regulation also provides for a moratorium on the establishment of any new operations in the pig-farming sector. Because of the major growth that has taken place in this sector, its impacts on the environment, its potential risks to public health, the demands of citizens for a healthy environment, concerns about over-fertilization in many watersheds, and the degradation of our watercourses, the government has decided to adopt a more restrictive approach in this sector.

A GOVERNMENT AGRO-ENVIRONMENTAL INVESTMENT PLAN

Attaining the goal of reducing pollution from agricultural sources requires adjustments by agricultural producers as well as government assistance to promote certain agro-environmental initiatives. For this reason, the government has put forward a new three-year investment plan to assist agricultural operations in complying with the new RAO regulations.

This investment plan is designed to support agricultural operations by providing targeted financial assistance, mainly by modifying existing programs. The plan includes six high-priority actions, namely:

1. the implementation of manure-treatment technologies, at both the community and individual levels;
2. support and consolidation of research and development efforts, especially those relating to manure treatment technologies;
3. protection of watercourses and buffer strips;
4. the purchase of spray bars to reduce odours;
5. financing of storage infrastructures;
6. support for advisory services for agricultural operations.

A number of initiatives have been developed by the various players in recent years, including the 1997 adoption, by the Ministère de l'Environnement, of the *Regulation respecting the reduction of pollution from agricultural sources*. These have made the agricultural community more sensitive to the need to improve the quality of the environment. The agricultural clean-up effort is now better structured and better supported. Various plans and programs have this thrust, among them the Prime-Vert financial assistance program of the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation (MAPAQ), the Agro-Environmental Plan for Pork Production in Québec of the Québec Pork Producers Federation (QPPF), the Agro-Environmental Strategy of

the Union des producteurs agricoles (UPA), and the action plan entitled “Un environnement à valoriser” (MAPAQ and several of its partners).

More substantial progress, however, has yet to be made in certain areas and therefore the government undertakes:

28. To pursue and implement the decisions made at the Forum on agriculture and agri-food: “Un environnement à valoriser.”

The general objective of this action plan, enhanced by the consensus and commitments arising from the mid-way meeting held in October 2001, is that by 2005, the 20,000 or so farms representing almost 90% of agricultural activity in Québec will have begun to adopt agricultural practices which respect the environment in the areas of storage and spreading of manures, management of fertilizers, soil conservation, protection of watercourses in agricultural zones, and pesticide use. This involves pursuing actions already under way in connection with this action plan, in particular, the Prime-Vert program administered by the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation.

**ESTABLISHING WOODED RIPARIAN CORRIDORS
IN AGRICULTURAL ENVIRONMENTS**

The changes in agriculture over the past few decades have promoted the development of larger farming operations that are more geographically concentrated and more productive. In many cases, tree vegetation and bush growth, such as hedges, small groves of trees, buffer strips, and farm woodlands, have been eliminated from a large part of their surface area, or have even disappeared completely as a result of intensive agricultural practices. Natural rural landscapes are gradually undergoing a transformation, and the environmental role played by their natural components is becoming less efficient, partly owing to habitat fragmentation. The slow, and in some instances irremediable, degradation of land and aquatic ecosystems has resulted in a significant loss of biodiversity in these environments.

Many subsidy programs, incentives, and technical support and stewardship measures have been created during the last decade in a large number of countries. These programs recognize the importance of maintaining and restoring quality wooded riparian buffer strips in agricultural environments. The reasons cited for supporting these programs include reducing the effect of agricultural practices on soil loss, reducing the use of fertilizers and pesticides in order to preserve the quality of the water, conserving plant and wildlife habitats as well as the related recreotourism uses, regulating flows, stabilizing shorelines, restoring quality agricultural land, and maintaining biodiversity.

Similar measures applied elsewhere around the world have brought results, notably enabling the European Union to enlist the support of more than 900,000 farmers to protect watercourses and enabling a number of states in the United States to establish, to date, over one million kilometres of buffer strips in agricultural environments.

Thus, the government undertakes:

29. To support the establishment, on agricultural land, of wooded riparian corridors that fit in with the natural environments.

As part of a pilot project, the government will evaluate different financial, stewardship, and environmental servitude mechanisms for instituting, maintaining, and conserving wooded riparian corridors in agricultural environments. Moreover, other taxation measures will also be examined as a possible means of encouraging and supporting agricultural practices that allow for the protection of wetland, aquatic, and riparian environments through the establishment of wooded riparian buffer strips.

The carrying-out of this pilot project in a watershed or sub-watershed will make it possible to evaluate different scenarios designed to determine the optimal size and composition of a riparian vegetation corridor in order to restore aquatic ecosystems and maintain their biodiversity, while at the same time taking into account both agriculture-related economic development factors and the protection and development of other natural resources. The project will examine a possible variation in the width of the vegetation strip in correlation with the geographic location, area morphology, characterization of the watercourse, the presence of residual woodlands, particular wildlife features of the environment, as well as the intensity and types of farming. In order to optimize the impact of these buffer zones, the role of the riparian woodlands will be evaluated from the ecological, agronomical, recreotourism, and socio-economic standpoints, and in terms of their value as rural landscapes.

The new measures recommended on completion of the pilot project will be carried out in tandem with those already provided for under the MAPAQ's Prime-Vert program with respect to decreasing the impact of agricultural activities in terms of widely scattered pollution (by stabilizing and reestablishing the vegetation of riverbanks, removing animals from

watercourses, developing watering sites, etc.), and consequently, improving the quality of aquatic ecosystems.

APPLICATION OF THE PRINCIPLE
OF ECOCONDITIONALITY

Publicly funded financial assistance to agriculture must be made conditional upon better environmental performance. Indeed, the many financing and income-stabilization programs play a significant role as levers for ensuring environmental compliance in agricultural production.

In this connection, the government undertakes:

30. To introduce ecoconditionality in a range of financial assistance programs in the agricultural sector.

The government thus undertakes to make its financial assistance programs in the agricultural sector "ecoconditional." Hence it plans to implement the recommendations of the task force that was given a mandate to define a Québec approach to ecoconditionality, with a view to introducing this approach in a range of programs providing direct financial assistance to agricultural producers. This measure supplements the provisions of the *Act to amend the Act respecting the preservation of agricultural land and agricultural activities and other legislative provisions* (Bill 184). It will serve to back up the environmental measures pertaining to the agricultural sector.

In addition, and more specifically, efforts to introduce the concept of ecoconditionality into the assistance programs directed at Québec pork producers will be ongoing. A pilot project is currently under way, and mechanisms for applying ecoconditionality in the pork sector will be introduced in 2004.

Moreover, pursuant to a recent amendment to the *Environment Quality Act* (EQA), the Minister of the Environment will be able to transmit to La Financière agricole du Québec, an agency devoted to financing the agricultural industry, any information that may facilitate compliance with the Act. This measure is

crucial to implementation of the ecoconditionality principle.

MANAGEMENT OF PESTICIDES

The agricultural sector is the main user of pesticides in Québec. Pesticides are substances that can potentially find their way into the water. It is therefore necessary to ensure that they are under careful management and controlled use. From the prevention standpoint, it must also be possible to assess their short- and long-term advantages and risks.

In this regard, the government undertakes:

31. To reduce, by 2010, the pressure exerted on the environment by the use of pesticides in agricultural areas.

With respect to the management of pesticides, the regulatory framework will be complete with the adoption of the *Regulation amending the regulation respecting permits and certificates for the sale and use of pesticides* and of the *Pesticide Management Code*. These two regulatory instruments intended to reduce and rationalize pesticide use will govern practices leading to a reduction in environmental and human health risks, as well as to raise farmers' qualifications.

The *Pesticide Management Code* will establish rules governing:

- facilities for the safe storage, loading and unloading of pesticides;
- the sale of pesticides (domestic use only);
- the use of certain pesticides, regarding, among other things, the minimum distances from underground water intakes serving a waterworks system, wells, the aquatic environment, and inhabited areas.

In order to better understand the issues and the effects of pesticides on the environment and human health, it is necessary to continue and improve efforts to monitor these products. We also need to improve our knowledge about new pesticides that are effective in much smaller

doses than their predecessors, to determine whether they truly help reduce the risks to the environment and to human health.

The *Pesticide Management Code* will cover the storage, loading, and use of pesticides. The *Regulation respecting permits and certificates for the sale and use of pesticides* will be amended, among other things, to broaden the certification obligation to include all farmers. Certification training for farmers will also be enhanced by incorporating the concepts of integrated pest management.

In addition, the government will take measures to increase knowledge about new pesticides in order to reduce the risks to the environment and to human health.

A SUSTAINABLE-DEVELOPMENT STRATEGY FOR FISH FARMING

In the case of freshwater fish farming, a sustainable-development strategy is currently being drafted by the MAPAQ, the MENV, the Syndicat professionnel de l'Association des aquaculteurs du Québec (SPAAQ), and other members of the Table filière en aquaculture d'eau douce. This strategy is expected to achieve a significant reduction in phosphorus discharges over the medium term in all existing freshwater fish-farming operations.

Thus, the government undertakes:

32. To deliver technical and financial support to existing fish-farming operations.

To fulfill this commitment, the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation (MAPAQ) will introduce the Aqua-Bleu assistance program and provide fish farmers with the assistance needed to redesign their operations to reduce phosphorus discharges.

In short, the government is implementing an agricultural clean-up strategy in which all players in rural areas are invited to participate. This strategy is expected to evolve based on the results obtained and assessments made. Other possible actions will also be identified once the report of the BAPE's Commission on sustainable

development in pork production has been tabled. Development of sustainable agriculture thus involves a number of closely coordinated factors: awareness-raising, outreach, regulation, ecoconditionality, appropriate technologies, and land-use planning.

A STUDY OF THE QUALITY OF GROUNDWATER IN SEVEN WATERSHEDS

On March 22, 2001, the Ministère de l'Environnement set in motion, in cooperation with the Institut national de santé publique du Québec, the Ministère de la Santé et des Services sociaux, and the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation, a study to describe the quality of the water in seven watersheds with an excess of manure, in order to evaluate the quality of the groundwater; this exercise is being carried out in combination with a study of environmental health.

This decision of the government came in response to a public health advisory from the Régie régionale de la santé et des services sociaux de Chaudière-Appalaches recommending that an in-depth study be carried out on the environmental and health risks associated with livestock production in the region.

A document entitled *Étude de la qualité de l'eau potable dans sept bassins en surplus de fumier et impacts potentiels sur la santé* will explore possible links between intensive human activity (specifically, agricultural) and the quality of water, as well as the health of individuals consuming it. The main indicators being studied are nitrates and certain clearly targeted micro-organisms. The results will be available in 2003.

The study area includes the entirety of the watersheds of the Chaudière, Etchemin, Boyer, Bayonne, L'Assomption, Yamaska, and Nicolet rivers. The seven watersheds selected constitute the areas most often recognized as having an excess of manure.



Source: Bowater Canada Forest Products Inc.

Bowater Plant – The MENV conducts regular environmental monitoring for all the pulp and paper mills in Québec, in compliance with the Regulation respecting pulp and paper mills.

6.2 BROADENING INDUSTRIAL CLEAN-UP EFFORTS

Since 1978, the efforts undertaken under wastewater treatment programs, Canada–Québec programs, and tighter regulatory controls to eliminate industrial wastes have been significant, but they are as yet insufficient. It will therefore be necessary to continue the depollution efforts undertaken in the industrial sector. Wastewater treatment, reduction at source, and prevention should be given priority.

In 1988, the government introduced under wastewater treatment programs, Canada–Québec programs, and tighter regulatory controls its Industrial Waste Reduction Program (IWRP), which is based on a system of depollution attestation. The objective of this program is to achieve a gradual reduction of contaminant wastes, especially toxic substances, produced as a result of industrial activity. The program consists of an integrated package of interventions applying to the reduction of discharges into

the water, air, and soil. Reduction targets are determined on the basis of the support capacity of the receiving environments, and especially that of aquatic environments. The interventions include pollution prevention measures (reduction of wastes at source by changes to processes, by using different raw materials, or by other methods), as well as wastewater treatment measures.

Depollution attestations are issued on an industrial sector basis, with all of the establishments in a given industrial sector being simultaneously subject to attestation by order in council. To date, the pulp and paper industries and the mining and metallurgical industries have been targeted by the IWRP.

In order to ensure that action is taken with respect to all industries capable of degrading the quality of water, even those not targeted by an order in council under the IWRP, an accountability mechanism must be put into place to deal with industries that do not come under the IWRP. This mechanism will require the development of management tools (regulatory or otherwise) to direct actions. More stringent control of industrial wastes is also needed to complete the picture.

Despite the efforts made by the Ministère des Ressources naturelles du Québec in the mining sector and the amendments made to the *Mining Act*, there are still 4,000 hectares of inactive mine tailing sites that have not been restored, primarily in the Abitibi and Nord-du-Québec regions. Acid drainage sites are the source of greatest concern. The government and its partners will step up the pace of restoration of mining sites.

ASSESSMENT OF THE PULP AND PAPER SECTOR

Establishments in the pulp and paper sector have achieved substantial waste reductions in order to meet the regulatory requirements:

In particular, from 1994 to 2000:

- for conventional pollutants, wastes were reduced by 90% for organic materials and by 47% for suspended particles;
- in terms of toxic materials (production of bleached pulp), AOH (adsorbable organic halides) discharges fell by 46%, and those of dioxins and chlorinated furans by 91%, while production of bleached pulp rose 22%.

From 1990 to 2000, the pulp and paper industry also reduced its wastewater discharges by 17%, to 639 million m³ in 2000.

On March 31, 2002, 60 pulp and paper mills (out of a total of 62 in operation) had received an initial depollution attestation under the IWRP.

The depollution attestations will allow plants in this sector to reduce wastes further and gradually meet environmental goals regarding wastes, which will ensure protection of the receiving environments.

In order to ensure the quality of water and reduce pollution from industrial sources, the government undertakes:

33. To broaden the application of the Industrial Waste Reduction Program (IWRP).

Originally applying only to the pulp and paper industry, and more recently (in May 2002) extended to the mining and primary metallurgy industries, the IWRP will be gradually broadened to include other sectors, in the following sequence: organic and inorganic chemicals industries, surface treatment and secondary metallurgy industries, and the agri-food, wood processing (including sawmill products, wood preserving, and manufacturing of bonded panels) and textiles industries.

This commitment will make it possible to cover all of the major industrial sectors, which will thus be led to adopt practices aimed at greater environmental efficiency.

34. To put into place an accountability mechanism for industries not subject to the IWRP.

This mechanism will require the development of management tools (regulatory or otherwise). It will make it possible to focus actions on industrial wastes that are considered problematic, but which have not yet been the subject of an order in council under the IWRP or which the IWRP will not be targeting.



Source: Thérèse Spiegler, Ministère de l'Environnement

Rehabilitated mine sites – Rehabilitation of the Norbeau Mine site located north of Chibougamau was completed in 1995. Follow-up environmental assessments show that Lac Bourbeau's waters have regained their original quality.

35. To continue efforts to restore mine tailing sites.

The Ministère des Ressources naturelles du Québec, which is responsible for administering the *Mining Act*, together with its partners will continue to restore mining sites that have reverted to the government. Working in partnership with federal, Québec, and mining industry bodies, the Ministère will continue research and development efforts, especially on restoration of tailing storage sites. This will make possible better control of acid drainage from mining, which can have serious impacts on the aquatic environment.

6.3

SUPPLEMENTING MUNICIPAL CLEAN-UP EFFORTS

Between 1978 and 2002, a total of over \$7 billion was invested by the government and municipalities in municipal wastewater treatment systems. These investments allowed 98% of the Québec population served by a sewer system to acquire the infrastructures needed to treat its wastewaters. The rate was only 2% prior to 1978. These investments also contributed to a significant improvement in the quality of water in lakes and watercourses.

However, action is still required to supplement the urban wastewater treatment system and resolve the remaining problems. One need only think of the overflows from municipal sewer systems during rainstorms, of the residual contamination in effluents from municipal treatment plants, and of the wastewaters that go untreated in small municipalities.

COMMUNITY CLEAN-UP

Despite the major efforts made possible by the clean water programs, wastewater discharges still occur in certain municipalities during periods of dry weather. These municipalities will have to take the measures needed to rectify the situation. They will also have to eliminate overflows in combined sewer systems during rainstorms. These overflows have a negative impact on the quality of the environment and can give rise to public health problems. They also reduce the environmental gains obtained by building wastewater treatment plants.

About 300 small municipalities still lack sewer systems; roughly 100 others have a sewer system covering all or part of their territory but are not equipped with wastewater treatment infrastructures. These municipalities therefore discharge all or part of their wastewaters into the environment without treatment. This exacerbates the deterioration in the quality of the receiving watercourses, increases the danger of bacteriological contamination, and puts certain uses of water at risk. In many of the municipalities concerned, individual septic systems could be installed at a reasonable cost. In the case of municipalities where physical constraints rule out this option, wastewater treatment facilities will have to be built.

Furthermore, certain mechanical purification plants lack disinfection equipment, and the processes they use do not provide a significant reduction in the bacteriological contamination present in the treated waters discharged into the watercourses. The resulting bacteriological contamination can give rise to public health problems in the case of plants located upstream of certain raw water collection points. It can also cause public health problems in the case of plants whose discharges affect uses involving contact



Source: Ministère de l'Environnement

Major investments – From 1978 to 2002, the government of Québec and municipalities invested a total of seven billion dollars in municipal wastewater clean-up operations.

with the water, especially swimming and aquatic activities. In addition, a recent study¹⁴ revealed that the effluents from certain existing treatment plants could have a toxic potential for aquatic wildlife, particularly because of the ammoniacal nitrogen inherent to the treatment process used.

The Programme d'assainissement des eaux du Québec (PAEQ) and its successors (PADEM and Eaux Vives) have allowed Québec to make up, in a period of 25 years, a significant lag in the area of wastewater treatment. It is essential, however, to ensure that the installations remain in permanent compliance with the technical specifications and environmental discharge objectives (EDOs) that governed their design. The environmental gains from wastewater treatment thus depend on the effectiveness of wastewater treatment plants.

INDIVIDUAL CLEAN-UP

Close to 600,000 residences are not hooked up to a municipal sewer system, but rather, to standalone treatment systems. Despite the new provisions contained in the *Regulation amending the regulation respecting wastewater disposal and treatment for isolated dwellings* adopted in July 2000, obsolete or inadequate installations persist, contributing to groundwater contamination problems and to deterioration in the quality of surface water. They can also give rise to unsanitary conditions and contaminate private drinking-water wells. These installations must therefore be modified or replaced. Studies have shown that equipment performance depends on the accuracy of the analyses carried out prior to their installation. There is therefore good reason to conduct analyses in order to better assess the quality of the equipment installed.

In order to supplement municipal wastewater treatment efforts, the government undertakes:

36. To induce and help municipalities to reduce by 20%, by 2007, the frequency of overflows in combined sewer systems during rainstorms.

The government will encourage the installation of infrastructures and other mechanisms designed to achieve a reduction in overflows of wastewaters into the environment. It will also promote the installation of new infrastructures, such as retention ponds, which will allow overflow problems to be solved. It will also encourage optimization of existing systems by taking advantage of the retention capacity of the existing sewer lines and by using more effective management systems. These efforts, which are to be carried out most notably on Québec City's Rivière Saint-Charles, will result in better protection of watercourses, especially for swimming and other recreational uses.

14 Ministère de l'Environnement du Québec and Environment Canada 2001. *Assessment of the Toxic Potential of Municipal Wastewater Treatment Plant Effluents in Québec – Final Report*. St. Lawrence Vision 2000, Phase III – Industrial and Urban Component. Report (136 pages) and appendices (222 pages).

37. To eliminate, by 2007, wastewater discharges during periods of dry weather.

The government will require municipalities to come up with action plans to meet this commitment. These plans will focus specifically on eliminating illegal hook-ups and intersecting sewer lines.

38. To supplement, by 2007, the wastewater treatment program in over 50 small municipalities so as to eliminate the direct discharge of wastewaters into watercourses.

This program will make it possible to resolve, as a priority, problems of public health and environmental contamination. Projects will be ranked on the basis of health risks, the environmental impact of wastewater spills, the sensitivity of the environment, and protection of uses.

Certain funds in the infrastructure programs will be set aside to allow for the installation of facilities for collecting and treating wastewaters in some 50 municipalities.

39. To ensure the disinfection of wastewaters from treatment plants, where justified to protect uses.

The government's financial assistance programs must also cover the installation of equipment to disinfect the effluents of treatment plants that need it. Such disinfection will be required for plants where the process used does not allow sufficient reduction of the bacterial load. This will make it possible to protect drinking water intakes, as well as bodies of water and watercourses used by the public for recreational activities such as those involving direct contact with the water (swimming, water sports). Disinfection of the water of the Montréal treatment plant is one of the priority actions intended.

40. To reduce the toxicity of effluents by 2005, by developing and implementing an action plan.

The government will establish rejection criteria for certain toxic parameters in order to reduce the toxicity of effluents from treatment plants. More specifically, it will support research into new technologies making it possible to reduce ammoniacal nitrogen discharges from aerated ponds. It will promote, through its financial assistance programs, early interventions aimed at reducing toxic substance discharges into sewer systems. It will also strengthen enforcement of municipal by-laws that have been adopted in this area. All of these measures are directed at reducing the impact of toxic substances on water, on the food chain, and, consequently, on human beings.

41. To put into place a strategy governing urban discharges in Québec.

The efforts made under government wastewater treatment programs have resulted in a tangible improvement in water quality and the recovery of uses. However, in the case of certain watercourses, achievement of environmental goals remains compromised, in particular as a result of urban discharges during rainstorms (overflows from combined sewer systems and storm sewers) and of the toxicity of certain municipal effluents.

The government will therefore put into place a strategy governing urban discharges, including long-term environmental targets for discharges, a mechanism for issuing renewable depollution attestations, and environmental guidelines for grant programs.

A renewable and flexible attestation will be issued by order in council to municipal treatment plants where it is justified. In particular, this attestation will contain a description of the problems remaining, the corrective measures required, and the environmental targets for discharges as determined on the basis of the objectives to be achieved, using a watershed-based approach.

42. To assist municipalities in enforcing compliance of wastewater treatment systems for isolated dwellings.

The government will cover part of the costs of the assessments and analyses required by the municipalities to ensure the compliance of wastewater treatment systems for isolated dwellings. This assistance could take the form of a home improvement program or an income tax credit. It will be determined on the basis of specific problems, such as lake eutrophication, degradation of watercourses, the recovery of uses, etc.

6.4

ENSURING THE SUSTAINABILITY OF MUNICIPAL INFRASTRUCTURES AND IMPROVING THE MANAGEMENT OF WATER SERVICES

Québec municipalities have equipped themselves with water and sewer infrastructure systems in order to meet the demands of urbanization. From the mid-1940s to the 1990s, 80% of infrastructure budget allocations went to construction of new infrastructures, with only 20% going to rehabilitation. Today, certain infrastructures need to be replaced because the materials used when they were built and soil conditions have accelerated their ageing. In this connection, despite substantial government funding, municipal investments in corresponding projects to renew the systems are inadequate. Additional funds are needed to ensure sustainability of the infrastructures, guarantee protection of public health and aquatic ecosystems, protect public investments, and maintain Québec expertise.

This is why municipalities will need to develop and implement an intervention plan. In this connection, this is a good time for municipalities to improve their knowledge of their systems by taking inventory of their infrastructures and formulating a diagnosis that describes their condition. Better knowledge of the condition of their systems will allow them to schedule the work to be done over time and determine the financing required. It

will also encourage the use of techniques in order to achieve their goals for improving their systems.

This intervention plan will have to include actions making it possible to optimize management of water services in order to maintain or even improve the quality of the services offered. Improving knowledge about the costs of water services, using performance benchmarking tools, applying best practices in water services management, and implementing measures promoting conservation of drinking water are examples of the kinds of actions that should be included in the intervention plan.

In addition, the intervention plan will allow municipalities to give priority to the work required each year in terms of an infrastructure renewal percentage and to allocate sufficient financial resources for infrastructure work. It will also allow them to determine their infrastructures maintenance deficit and report it in their financial statements.

The government will gradually introduce a requirement, between now and 2007, for submission of an intervention plan before giving consideration to municipal applications for financial assistance under infrastructure programs.

SUSTAINABILITY OF MUNICIPAL INFRASTRUCTURES

Municipalities have to know more about the condition of their waterworks and sewer systems. The “invisible” nature of underground infrastructures and the short-term planning horizon for public investments have all too often led to underestimation of the expenses involved in the diagnostics for waterworks and sewer systems and the related repairs. Many municipalities have to acquire the knowledge, human resources, and technical and financial means to draw up an accurate picture of their infrastructures. For this reason, a physical inventory and a diagnosis of the condition of the infrastructures are essential to the development of informed intervention plans and to all planning of investments.

Greater use than at present must be made of techniques for reconditioning these systems. In this regard, an increase in the volume of reconditioning projects would definitely make the investments pay off.

As an incentive for municipalities to keep their infrastructures in good condition, the government of Québec undertakes:

43. To induce all municipalities to achieve an infrastructure renewal rate of 0.8% per annum by 2007 and a rate of 1% per annum by 2012.

In order to promote efforts to repair and recondition infrastructure systems, the government will make the granting of any financial assistance under an eventual infrastructure program conditional upon achievement, by the municipalities, of a minimum threshold of capital items for system repairs and reconditioning projects.

Beginning in 2007, the government will require that any application for financial assistance for infrastructure projects be supported by a prioritization of the projects carried out on the basis of the intervention plan. It will also take into consideration special problems as well as each municipality's past investments in order to encourage responsible management practices.

This measure should make it possible to ensure the sustainability of infrastructures for present and future generations.

44. To ensure compliance with quality standards during the construction, reconditioning, and replacement of existing infrastructures.

In order to ensure quality in the restoration of existing systems and in the construction of new works, it would appear essential to establish and maintain preventive measures. To this end, the design, reconditioning and replacement of infrastructures must remain subject to regulations, standards, and guidelines whose application is controlled and monitored. The government will contribute to the development and implementation of quality standards governing materials, rehabilitation techniques, and the deployment of infrastructures. It will also enforce their application.

45. To achieve, beginning in 2005, a 25% utilization rate of infrastructure reconditioning techniques as opposed to replacement techniques.

As a result of a shortfall in municipal applications for infrastructure reconditioning projects, the cost of these types of interventions is less competitive than that of replacement projects. Beginning in 2005, however, municipalities will be required to target a reconditioning rate of 25%. In the meantime, the government will support municipalities and industry in developing expertise in this area.

MANAGEMENT OF WATER SERVICES

The sustainability of infrastructures for drinking-water purification and for wastewater treatment also depends on improving management practices in this area, mainly with regard to knowledge of costs, the use of new technologies, and thrifter water consumption. The government will thus make its financial contributions conditional on improvement of these practices.

Financing water services accounts for a large portion of municipal budgets. The amount of funding will remain the same in the future because of infrastructure ageing and the cost of bringing equipment up to standards. Thus, it is important for municipalities to continue ensuring sufficient funding for water services.

New methods for calculating water costs must provide a more accurate reflection of the costs of this resource. In fact, current methods do not include infrastructure depreciation costs. This situation may explain in part why per capita consumption in Québec is considerably higher than that generally observed elsewhere in the world.

The government plans to provide municipalities with indicators that will enable them to measure their performance or compare it to that of other municipalities. Such indicators would allow them to maintain or even improve the quality of water services, to manage proactively, and to develop their expertise in this area. These indicators would also give the public access to relevant information on the performance of their municipal water services.

In Québec, management of water services is a public function. The private sector is involved by means of contracts to operate drinking water purification facilities and wastewater treatment plants. These contracts are limited in scope, i.e. they are short-term and cover only the operation of the plants and facilities. They do not usually require the private companies responsible for operating the plants and facilities to carry out preventive maintenance on the equipment, which may result in increased medium- and long-term costs for water services.

Thus, in order to optimize the management of water services, the government undertakes:

46. To develop, in 2003, a means of calculating the cost of water services.

This commitment is aimed at improving the knowledge that municipalities have of water service production costs in order to help them determine their funding needs. In this respect, municipalities must be able to make a proper calculation of the capital costs already incurred, i.e. those required in order to cover an adequate renewal rate and operating expenses. This tool will allow municipalities to calculate the cost of water services, including expenditures relating to amortization of the infrastructure systems, and to include it in their financial planning. Where needed, adjustments could be made to municipal water service rates in order to render apparent the actual cost of water.

47. To measure performance in the management of water services by developing appropriate tools.

This commitment aims at improving productivity of the water services offered by municipalities by providing them with tools that allow them to compare their own performance with that of the water services of other municipalities. For the sake of transparency in management, it also aims at making information on the performance of water services available to citizens.

48. To increase Québec's expertise in water services by promoting the use of new technologies and best practices.

This commitment aims at promoting use of the best available technologies and of best practices in the management of municipal infrastructures. Through the infrastructure programs, it places a premium on experimentation with new technologies in order to resolve the most prevalent and serious problems.

49. To develop a Québec strategy for the conservation of drinking water which makes the allocation of any financial assistance contingent upon the adoption, by municipalities, of measures to conserve water and reduce leakage.

Per capita volumes of water produced by Québec municipalities are higher than the North American and European averages, which results in an unnecessary increase in operating costs. This being so, it seems necessary to ensure that municipalities do not unnecessarily increase the capacity of their infrastructure systems or build new ones, if it can be avoided.

The government will develop, in cooperation with the municipalities, a Québec water conservation strategy for industrial, commercial, and institutional users as well as citizens. Various means may be studied, including recycling, the installation of reduced-flow equipment, water meters, regulations, education and awareness campaigns, to name but a few.

This strategy must aim for a reduction, within 7 years, of at least 20% in average per capita water consumption for all of Québec, and for a reduction in water losses through leakage, within 10 years, to no more than 20% of the total volume of water produced. These measures will encourage the production of sectoral assessments of water losses, which in turn will allow for targeted leakage-detection programs. Such a strategy will promote the putting in place of measures to reduce water consumption and increase user awareness of the value of water.

50. To establish a water-conservation program in government buildings.

As part of Québec's strategy for the conservation of drinking water, the government will set an example by launching a water-conservation program in its own buildings. Thus, every new public building will be equipped with a water meter. Subsequently, beginning in 2004, meters will gradually be installed in existing buildings, which will make it possible, as a first step, to measure actual consumption, and eventually to have the water used be paid for at its true cost. Also, from a perspective of environmental management of collective resources, and in cooperation with the Société immobilière du Québec, a renewal plan will be put into place, beginning in 2005, for the installation of appliances with low water consumption.

51. To create a framework for the delegation of management functions to the private sector by promoting the use of standard form contracts for management and monitoring.

This commitment is aimed at assisting municipalities in better supervising management responsibilities delegated to private companies and at supporting the drafting and monitoring of contracts awarded for the operation of drinking water purification facilities and wastewater treatment plants. In this connection, it is critical that the condition of the equipment not be allowed to deteriorate because of inadequate contracts or poor monitoring.

WATER SERVICES IN QUÉBEC: UNDER PUBLIC MANAGEMENT

Water is the commodity most essential to life. It is a collective resource, and the infrastructures needed for its production, treatment, distribution, and purification have been paid for by the public, who rightly regards it as part of its heritage. Water must also remain accessible to all citizens. It is therefore imperative that the infrastructures remain public property, like control over water services. Within these strict guidelines, private management of water services, where it exists, must ensure the sustainability of infrastructures, improve the quality of services, and result in a lower cost of services.

In order to correct the deficiencies observed in the management of contracts for the operation of water services, in particular drinking-water purification facilities and wastewater treatment plants, the government will draft a standard form operating contract that will impose basic obligations on contractors. The contract will have to ensure sustainability of equipment and compliance with the standards applicable to drinking water and the environment. The government will also require plant operators to have the required training and to be certified. It is therefore mandatory that the public receive high-quality service and that the sustainability of the equipment not be put at risk by poorly defined contracts or lax monitoring.

Chapter 7



Chapter 7

PROMOTION OF WATER-RELATED RECREOTOURISM ACTIVITIES: THE PLEASURES OF WATER

Water represents a major asset for the Québec economy and accounts for a very high percentage of Québec's tourism revenues. For example, the excursion cruise, pleasure boating and yachting, fishing, adventure tourism, nature interpretation, and resort sectors generate over \$2 billion of revenue per year either directly or indirectly.

Hence the promotion of recreotourism activities constitutes the fifth orientation of the Québec Water Policy. This orientation implies three courses of action: expanding access to water and promoting the development of sportfishing in Québec, encouraging water safety, and promoting nautical tourism.

7.1 EXPANDING ACCESS TO WATER AND PROMOTING SPORTFISHING

Improvements in water quality over the years, combined with the growing popularity of outdoor activities, are reviving the recreational use of lakes, rivers, and the St. Lawrence. However, we are witnessing a decline in the number of areas open to the public due to waterfront privatization and resort development.

Until recently, sportfishing was practiced by nearly one million Quebecers. A source of major economic spin-offs for Québec's different regions, a decline has nonetheless been noted in this sport and in the number of sportsfishers. While a number of reasons can be cited to explain this phenomenon, including the lack of public access points, this decline remains a concern due to the economic stakes involved both for the government and for the industry related to the practice of this sport.

Several initiatives have already been taken to counteract this trend. Among them are the *Pêcheurs en herbe* program, the *Fête de la pêche*, and the extension of the use of fishing permits to include families.



Source: Denis Jomphe

Boardwalk on the old wharf at Sept-Îles – The wooden boardwalk on the public wharf at Sept-Îles offers a magnificent view of the St. Lawrence River.

The federal government's disengagement with respect to marine transport and some of the port facilities along the St. Lawrence River has obliged the Québec government and municipalities to review their commitments in these areas. For generations, numerous wharves along the St. Lawrence have provided public access for launching boats, fishing, lounging, or simply gazing at the river. Ten years ago, the federal government owned over 300 small wharves in Québec. Fisheries and Oceans Canada owned wharves used for commercial fishing and others with no commercial purpose. After establishing a transfer program for these infrastructures, the Department intends to hang on to about 50 wharves useful for the commercial fishing industry. Around 150 wharves have been transferred to municipalities, while others were closed.

THE SOCIO-ECONOMIC SPIN-OFFS OF SPORTFISHING

As a living environment for aquatic wildlife, water supports recreational activities such as fishing that have major socio-economic spin-offs. Sportfishing alone generates close to one billion dollars of spending per year in Québec. According to the survey conducted in 2000 by the Société de la faune et des parcs du Québec (FAPAQ) in conjunction with Fisheries and Oceans Canada, annual sportfishing catches are estimated at approximately 57 million fish, including all species. Moreover, slightly over 800,000 sportsfishers spent more than 11.1 million days fishing in Québec in 2000. For example, in the Saguenay–Lac-Saint-Jean region, 22 outfitters, ten controlled harvesting zones (ZECs) and one wildlife reserve together constitute key driving forces behind the region's economy, with spin-offs estimated at more than \$35 million per year. All regions of Québec attract sportsfishers.

Meanwhile the federal government is divesting itself of certain shipping ports in British Columbia, Ontario, Québec, and Atlantic Canada. These ports are classified by order of importance. Creation of the Ports Divestiture Program in 1996 enabled the transfer of some local and regional facilities owned by Transport Canada, preferably to the provincial governments or, failing that, to other parties. The Program led to the Québec government's June 2000 acquisition of ten ferry terminals considered to be strategic. As for the commercial ports classified as "regional and local," the Québec government is seeking either their transfer or a federal government commitment to maintain facilities whose use is essential for regional development; ten Québec ports are involved. Moreover, pursuant to the *Canada Marine Act* (June 1998), five ports, namely Sept-Îles, Saguenay, Québec City, Trois-Rivières, and Montréal, were given special status by becoming Canada Port Authorities (CPA). Still owned by the Government of Canada, the CPAs are autonomous, but remain subject to the legislation in force.

In its *Québec Marine Transportation Policy – Québec at the Helm*¹⁵ (summer 2001), the government announced its intention to increase usage of the St. Lawrence River as a shipping and trade route, particularly through coordinated and integrated management of maritime and port activities with a view to sustainable development. It also intends to use the advantages offered by the St. Lawrence as socio-economic development tools for Québec regions,

primarily by creating a strategic network of dedicated shipping ports in Québec. In addition, it plans to develop maritime activities and the St. Lawrence. The Québec government, through the Société des traversiers du Québec, presently owns 15 ferry terminals.

In keeping with this marine transportation policy, the government wants to take into account initiatives aimed at providing diversified and greater access to the St. Lawrence and its tributaries (bicycle paths, beaches, fishing, diving, etc.) insofar as they are harmonized with transportation imperatives and environmental concerns.

It should also be pointed out that through zoning by-laws, municipalities have the power to develop and reserve public access points to water. They may even resort to expropriation to provide public use and access sites. Thus, land may be set aside to create areas of public interest (such as beaches or parks) or ecological observation sites.

By way of example, here are brief descriptions of three water and waterfront access projects launched by Québec municipalities in the two large urban centres (Montréal and Québec City) on the St. Lawrence River: "Blue and Green" Greater Montréal, Promenade Champlain, and the effort to restore and clean up Québec City's Rivière Saint-Charles.

15 Ministère des Transports du Québec, *Québec Marine Transportation Policy – Québec at the Helm*, 2001.

MONTREAL AREA

Within the framework of the recent agreement on sustainable development signed with the Québec government, the Montréal Metropolitan Community is currently reviving the Blue and Green Greater Montréal project. The program is intended to make conservation and development projects possible for riverbanks, islands, and watercourses as well as the revitalization of riverside neighbourhoods, particularly their woodlands.

To this end, the Montréal Metropolitan Community has set up a new metropolitan development fund that will be managed by its Secrétariat métropolitain de mise en valeur des espaces bleus et verts. In 2002, \$6 million will be injected into the fund, with half coming from Québec government coffers and the balance from contributions made by Montréal Metropolitan Community member municipalities.

The six main bodies of water in the region are Lac des Deux-Montagnes, Rivière des Mille Îles, Rivière des Prairies, Lac Saint-Louis, Bassin de La Prairie and the river corridor to the Îles de Contrecoeur. The Lachine and Soulanges canals are also part of the target territory along with other nearby rivers, including the Richelieu.

The guidelines for developing the Montréal metropolitan area set objectives related to improving the aquatic potential of the region. These are: protection and coordinated development of the major basins in the metropolitan area and greater public access to the waterfront, bodies of water, and certain river islands in Greater Montréal, such as Île Sainte-Thérèse, insofar as access is consistent with biodiversity and the conservation of threatened or vulnerable species and their habitats. Given the importance of the Rivière des Prairies and Rivière des Mille Îles watersheds, the government is open to proposals specific to these areas. These actions will be implemented by the Montréal Metropolitan Community's Secrétariat métropolitain de mise en valeur des espaces bleus et verts. The partners already involved in creating green and blue spaces, such as the Corporation de promotion et de développement du Croissant de l'Est, Nature



Source: Société d'animation de la Promenade Bellerive

Promenade Bellerive – Montréal's Promenade Bellerive is a multi-use waterfront facility that provides congenial access to the St. Lawrence River.

Conservancy, and Ducks Unlimited will be associated with this venture along with numerous organizations active in protection, restoration and enhancement.

Source: Benoît Gauthier



Promenade Champlain – Once completed, the proposed Promenade Champlain connecting the Pierre-Laporte Bridge with Old Québec will permit ready access to the St. Lawrence River for Québec City residents.

QUÉBEC CITY AREA

With Québec government approval, the Commission de la capitale nationale du Québec (CCNQ) is working on carrying out an extraordinary development project on the stretch of the St. Lawrence shore along Boulevard Champlain between Pierre-Laporte Bridge and Old Québec. The project, intended to give the river back to Quebecers, is entirely consistent with the spirit of this Policy. Given the green light in spring 2000 to reserve land in this area, the CCNQ will develop the riverside area, known as “Promenade Champlain,” one of its biggest projects for the next six years.

The CCNQ has a clear goal: to make these shores a waterfront worthy of a capital city and one that meets the expectations of the local population, which many years ago lost its access to the St. Lawrence. The Commission has scheduled completion of the Promenade Champlain facilities for 2008, in time for the 400th anniversary of the founding of Québec City.

The City of Québec and its partners have also started to restore to their original look the banks of Rivière Saint-Charles. So far the city has restored 1,225 metres of

shoreline by making the slopes gentler, promoting seagrass planting in parts of the river, and landscaping the banks. The remaining work (2004-2007) will restore an additional 6,000 metres along the 6.8 kilometres of shoreline that are still paved. To clean up the river water, a number of retention ponds are to be built between 2002 and 2007. The funding for Phase I (Myrand, Talus, Plessis, Laurentien, Saint-Sacrement, Suète and Jones reservoirs) has already been approved by the government and the City of Québec. All this work, including subsequent-phase projects also on the list of government priorities, will clean up the water in Rivière Saint-Charles, foster the restoration of biodiversity, and give new life to this urban watercourse. People will again be able to engage in activities such as canoeing, pedal-boating, fishing, and wildlife observation.

These three major initiatives, with the government's financial backing, will enable thousands of Quebecers to regain access to the water and enjoy a variety of recreational activities and sports.



Source: Serge Hébert, Ministère de l'Environnement

Canoeing on rivière Saint-Charles – The Saint-Charles River, located in the Québec City region, has received the attention of an ambitious clean-up project scheduled for completion in 2007.

To further support the development and enhancement of public access to water, the government undertakes:

52. To develop an assistance program for municipalities and community organizations in order to create a network of points for public access to the St. Lawrence River, as well as to other bodies of water and watercourses in Québec.

The purpose of this commitment is to support municipalities and community organizations in their efforts to develop, redevelop, and enhance public access to bodies of water and watercourses in Québec so that people can enjoy more recreational activities related to aquatic and riparian environments.

To promote public access to the St. Lawrence, the government intends to establish a financial assistance program for riparian municipalities to enable the development of structures and sites with recreotourism and ecological potential. This program could be implemented within the framework of integrated management of the St. Lawrence.

As for other rivers and lakes, municipalities will receive financial assistance through implementation of the master plans for water (MPW) developed by the watershed agencies.

To promote the development of sportfishing, while preserving biodiversity and the tranquility of bodies of water, financial assistance will be granted to community players (municipalities, associations, and developers) as part of the implementation of the actions identified in the different regional development plans for wildlife resources, drawn up by the Société de la faune et des parcs du Québec.

The assistance program for the development of a network of public access points will be set up by the government in association with its recreotourism partners (Tourisme Québec, *conseil régionaux de développement* or CRDs, regional tourism associations, or other hunting and fishing federations and associations).

To promote sportfishing, the government undertakes:

53. To formulate a strategy for developing sportfishing in Québec.

The government has mandated the Société de la faune et des parcs du Québec to formulate a provincial strategy for developing sportfishing in Québec by means of the following courses of action:

- identifying public expectations regarding environment-friendly sportfishing;
- ensuring respect for biodiversity and the tranquility of bodies of water;
- engaging in effective marketing on the provincial and international levels;
- developing packages tailored to the needs of different clienteles, mainly those in the cultural communities and young families;
- improving the fish supply for sportfishing;
- disseminating information tailored to different clienteles, particularly on nutritional value and the prescribed eating limits for the main species of fish.

The strategy formulated will seek to halt the decline in the practice of sportfishing by encouraging a new generation of sportsfishers from among young families and cultural communities.

Source: Camille Rousseau



Lac Memphrémagog – Pursuant to the adoption of the Regulation respecting the protection of the waters of Lac Memphrémagog from discharge from pleasure boats, pumpout stations were set up around the lake to improve the water quality.

7.2

PROMOTING WATER SAFETY AND THE QUALITY OF LIFE ON LAKES AND IN WATERCOURSES

In April 1999 the Comité de consultation sur la sécurité nautique et la qualité de vie sur les lacs et les cours d'eau du Québec tabled its final report, which contained 39 recommendations for improving the safety of people engaging in activities on lakes and in watercourses.

Today, many of these recommendations have been implemented in order to:

- allow municipalities to set speed limits for boats within a 50-metre-wide strip from any shore;
- encourage Québec manufacturers of pleasure craft and two-stroke engines to market safer and less polluting products;
- establish new federal regulations on the competency of the operators of pleasure craft under four metres in length, including jetskis;
- adopt a new law on the organization of police services, making water safety mandatory for anyone who is pleasure boating on a body of water.

It should be emphasized that navigation is regulated by the federal government through the *Canada Shipping Act* and various related regulations, especially the one that sets restrictions on boating.

Hence the Québec government wants to institute a variety of measures to ensure public safety and protect the quality of life of citizens on bodies of water and watercourses. In this regard, within the limits of its fields of jurisdiction, the government undertakes:

54. To continue implementing the recommendations of the Comité de consultation sur la sécurité nautique et la qualité de vie sur les lacs et les cours d'eau du Québec.

The government is mandating the Ministère de l'Environnement du Québec to follow through on implementing the committee's recommendations in the following areas:

- protection of water quality and ecosystems;
- better enforcement of regulations;
- knowledge and management of navigational rules;
- protection of pleasure boaters and swimmers;
- skills development for pleasure boaters;
- improvements to the quality of life around Québec lakes and watercourses.

In the event of a clash with the federal government in this area, Québec will assert the prevalence of its jurisdiction over the protection of human health and safety, as well as public health.

In this regard, the government will specifically study the problem of lakes used as drinking water reservoirs, as well as that of wastewater discharges from pleasure craft. It plans to prohibit the use of gasoline motorboats on lakes under 1 km² or 4 km² when used for drinking water. The government also intends to require boats with sanitary facilities to be equipped with a wastewater recovery system to prevent the

discharge of this substance (black water) into lakes and watercourses. An action plan will be released next year.

Other undertakings already mentioned in this policy, such as protecting surface sources of water collection and technical support for riparian associations (lake monitoring network), will provide additional support for implementing the recommendations of the Comité de consultation sur la sécurité nautique et la qualité de vie sur les lacs et les cours d'eau.

7.3

PROMOTING NAUTICAL TOURISM

In March 1997, representatives of Québec's tourism industry were invited to attend a forum for the first time since 1978. Participants mainly agreed to recognize:

- the tourism industry's growth potential on a global scale;
- the boom in Québec's tourism industry;
- the necessity for the Québec government to support the industry;
- the growth of foreign tourism in Québec;
- tourism's valuable contribution to jobs, regional economies, and Québec's international reputation;
- tourism's key contribution to the preservation and development of Québec's cultural and natural heritage.

In its 1998 policy on tourism development and its 2001-2002 action plan, Tourisme Québec sets forth a growth strategy that favours certain courses of action with a special focus on nautical tourism. The development of nautical tourism is in keeping with the aim of highlighting the scenic and cultural heritage of Québec's bodies of water and the St. Lawrence. It favours respect for biodiversity, the peace of riverside residents, and outdoor activities.

NAUTICAL TOURISM

In the past few years, tourism related to outdoor activities of an ecotourism nature has developed extensively across North America and in Québec. New linear concepts have been developed, and the Route verte and the National Trail are in operation, and demand for this type of activity is rising sharply. One of these concepts, which is still underdeveloped in Québec, is that of the boat trail. At present there are over 30 boat or maritime (saltwater) trails in the United States and certain Canadian provinces.

A boat trail is a network of access points, rest areas, food and lodging services, and/or wilderness camping areas. It is a navigable trail specifically designed for small craft (with shallow draught) such as ocean kayaks, certain sailboats, or small rowboats or motorboats.



Source: Michel Julien

Kayaking at Percé – The government of Québec has committed, jointly with the Fédération québécoise du canot et du kayak and regional tourism associations, to the development of boat trails in Québec.

The St. Lawrence and the Saguenay have, among other things, shorelines with a variety of breathtaking scenery as well as diverse habitats and ecosystems capable of supporting this new form of nautical tourism.

Given the growing number of enthusiasts for this form of recreation and emerging initiatives in this field, the government undertakes:

55. In association with the Fédération québécoise du canot et du kayak and regional tourism associations, to support the development of boat trails in Québec.

The objective pursued by the development of boat trails in Québec implies developing and facilitating access to the St. Lawrence River and its islands from a standpoint of sustainable development, through the practice of responsible nautical ecotourism. This commitment will make it possible to interest, among users and the public at large, in protecting ecosystems related to the St. Lawrence and some of its tributaries through an information and education process.

Furthermore, nautical tourism related to international cruises also has exceptional potential for Québec. In the spirit of sustainable development, the government undertakes:

56. With a view to sustainable development, to draft a development plan for nautical tourism in the realm of international cruises by 2005.

To be developed jointly by Tourisme Québec and its private and public partners, the plan will include a promotional strategy as well as proposals for exploring the potential of certain sites of interest such as the islands in the St. Lawrence and the Îles-de-la-Madeleine.

Nautical tourism, through the recreotourism- and heritage-oriented development of bodies of water, has appealing underdeveloped potential. This is particularly true of the St. Lawrence, one of the world's great rivers. Tourisme Québec will encourage initiatives promoting access to and the development of bodies of

water by producing awareness-raising material and various technical tools for the partners most closely involved such as municipalities, regional county municipalities, developers, and certain government departments.

Development of river tourism is also an objective included in the action strategies of Québec's Marine Transportation Policy, which calls for the government to adopt measures aimed at supporting a viable tourist industry built around currently existing and potential new attractions offered by the St. Lawrence and its major tributaries.

PROPOSALS¹⁶ MADE BY THE QUÉBEC MARINE TRANSPORTATION POLICY WITH REGARD TO RIVER TOURISM

The government of Québec will promote the development of cruise and nautical activity on the St. Lawrence by:

- Participating in market studies on cruises from or to ports of the St. Lawrence, including ports in Labrador and Northern Québec, for cold water cruises;
- Supporting the creation or adaptation of adequate services to accommodate international cruises as well as cruises on the St. Lawrence;
- Working in partnership with Tourisme Québec to update the profile of the cruise-excursion industry and evaluate the development potential of nautical activity on the St. Lawrence;
- Developing the cruise sector in conjunction with regional tourist associations and creating a work group made up of representatives from Tourisme Québec, regional tourist boards, MRCs and the Ministère des Transports;
- Consider extending existing tax breaks for Québec seafarers involved in freight transportation to those who work in the international cruise sector;
- Promoting tourism in Native communities in the context of intensified tourism on the St. Lawrence.

16 These proposals are taken directly from the *Québec Marine Transportation Policy* (page 44).

Chapter 8



Chapter 8

IMPLEMENTATION

The Commission sur la gestion de l'eau, which submitted its report to the Minister of the Environment in May 2000, put forward numerous observations, opinions, views, and recommendations regarding the problems raised at the local, regional, national, and international levels. The conclusion contains eight short-term (1 year), four medium-term (1 to 3 years), and one long-term (3 to 7 years) recommendations.

With the adoption of this Policy, it can now be said that several of the recommendations have already been implemented, or are soon to be so.

The following measures attest to this achievement:

- adoption of the *Regulation respecting the quality of drinking water*;
- adoption of the *Regulation respecting groundwater catchment*;
- adoption of the *Regulation amending the Regulation respecting wastewater disposal for isolated dwellings*;
- adoption of the *Regulation respecting agricultural operations*;
- adoption of the *Act to amend the Water Resources Preservation Act*;
- the commitment to making water a part of our collective heritage;
- the government commitment to develop and implement a system of charges for the use of Québec's water resources;
- maintenance of municipal control over drinking-water purification and distribution as well as wastewater treatment;
- the signing of two historic agreements with the Cree and Inuit nations;

- appointment of a Minister of State for the Environment and Water.

8.1

GOVERNMENT COORDINATION AND PUBLIC PARTICIPATION

The Québec government, as the people's representative, trustee of water and aquatic ecosystems, and manager of this resource, has a responsibility to chart the course required to improve water governance, through both its own actions and those of its citizens and partners.

The task of government coordination will be entrusted to the Minister of State for the Environment and Water. The Minister will be responsible for ensuring the consistency of all water-related government actions, whether they involve government policies, programs or committees, or international bodies with an influence on water and aquatic ecosystems. He will also be responsible for implementing integrated management by watershed and integrated management of the St. Lawrence River, and for coordinating development of the legal, economic, and administrative tools that will be used to apply the Policy.

The Minister will be supported in this task by the ministers concerned by water management in keeping with their respective fields of expertise and pursuant to the laws and regulations under their responsibility. The task of coordinating government actions will be assumed by the Table interministérielle sur la Politique nationale de l'eau, which was set up in the fall of 2001 at the initiative of the Ministère de l'Environnement.

A number of Québec government ministries and agencies are involved in water management and in land-use development, and will therefore be directly affected by the implementation of this Policy. The Québec Water Policy seeks to achieve more effective coordination of these actions, under the responsibility of the Minister of State for the Environment and Water working in conjunction with the ministers concerned. For example, the government of Québec plans to take into greater account the

environmental advantages of marine transport in its policies and interventions. The government's initiatives will consist mainly of ensuring ongoing coordination between the Ministère des Transports and the Ministère de l'Environnement.

Moreover, the Minister will give citizens, regional and local decision-makers, and all other partners a major role. Their participation and involvement will be favoured as a means of fulfilling many of the commitments made in this Policy. Thus citizens will be invited to actively participate in policy implementation, most notably:

- acquisition of knowledge about lakes, rivers, and the St. Lawrence in particular;
- awareness and educational campaigns for water-management players;
- integrated management by watershed, the development of water master plans, and watershed agreements;
- integrated management of the St. Lawrence River, membership on zonal committees, development of integrated management plans, and zone contracts;
- lake restoration and action plans proposed by riparian associations;
- determination of measures to protect lakes used for drinking water and to ensure safe boating on bodies of water;
- determination of measures to protect, restore, and develop shorelines;
- census of exceptional aquatic and river reserves;
- creation of a network of public access points to bodies of water and watercourses in Québec;
- development of recreotourism activities and boat trails along the St. Lawrence and other Québec watercourses.

All the undertakings related to agricultural, industrial, and municipal clean-up will also call for grassroots involvement. In fact, much of the Québec Water Policy cannot be implemented without public participation.

8.2

FORMULATION OF QUÉBEC'S EXPECTATIONS AS CONCERNS THE FEDERAL GOVERNMENT

Through the commitments made in this Policy, the Québec government is asserting its leadership and areas of jurisdiction in managing Québec's water. While recognizing the areas of responsibility of other government partners, the Québec government nonetheless considers itself the leader of water management in its territory. Hence it wishes to inform the federal government of some of its expectations with respect to implementation of this Policy. In particular, it will seek assurance that federal efforts will, as a priority, work towards attainment of the objectives sought by the Québec people as set forth in the Québec Water Policy.

WATER – A 21ST-CENTURY ISSUE

The Québec government wants to be an integral part of the major international discussions. It therefore intends to take steps to ensure that the federal government involves Québec closely in any international discussions on water management.

Many of the water-related non-binding commitments made at the 2002 World Summit for Sustainable Development fall under Québec jurisdiction. A number of them are already included in government actions as well as in this Policy. Consequently, Québec wishes to be present at, and party to, any negotiation of binding international instruments in areas under its jurisdiction. Moreover, it wants to take advantage of these major international meetings to develop and strengthen its ties with federated states.

KNOWLEDGE

Québec recognizes the extent of federal involvement in research, particularly on the St. Lawrence River. It hopes to continue sharing this mutually beneficial knowledge.

INTEGRATED MANAGEMENT OF THE ST. LAWRENCE RIVER

The Québec government is putting in place integrated management of the St. Lawrence River. It hopes that Ottawa will participate in the process and actively contribute to its implementation. To avoid duplication in management structures, action plans, and recruitment of players, the government also wants assurance that its federal counterpart will take Québec priorities for integrated management of the St. Lawrence into consideration in carrying out its own mandates.

WATER AND ECOSYSTEM QUALITY

The protection of ecosystems and sources of drinking water is a Québec responsibility. Laws and regulations arise from this responsibility and make it possible to control and monitor the quality of water and ecosystems.

In recent years, the federal government has intensified its efforts in environmental matters without necessarily taking into account Québec's actions and jurisdictions in this area. By way of illustration, under the *Canadian Environmental Protection Act*, Ottawa is attempting to establish standards and guidelines for toxic substance discharges applicable to municipal wastewater effluent.

Yet in implementing its Water Policy, the Québec government is prepared to negotiate agreements with Ottawa that respect the orientations of this Policy while optimizing the intervention of both levels of government in line with the responsibilities of each.

WATER CLEAN-UP

With regard to water clean-up, the Québec government intends to continue fully shouldering its responsibilities in the municipal, agricultural, and industrial sectors.

Based on the experience of the pulp and paper industry, the Québec government hopes to negotiate bilateral administrative agreements with the federal government, particularly with respect to the enforcement of certain regulations in the industrial sector in order to avoid subjecting enterprises to redundant reporting requirements.

Québec reiterates the importance of a greater federal contribution to the funding of municipal water-treatment infrastructure projects while respecting Québec priorities and control.

COMMERCIAL NAVIGATION AND SAFETY ON BODIES OF WATER

In the realm of commercial navigation, Québec wants the federal government to pursue the concerted efforts made through the St. Lawrence Vision (SLV) 2000 program. The Québec government also wants Ottawa to continue the dialogue on the transfer of regional ports, which is essential for attaining the objectives of the Québec *Marine Transportation Policy*.

Lastly, Québec hopes for federal cooperation in implementing the recommendations of the Comité sur la sécurité nautique et la qualité de vie sur les lacs et les cours d'eau.

8.3 POLICY EVALUATION AND MONITORING

A number of government commitments have been set out in the preceding chapters in an effort to give concrete form to its orientations with respect to water. It will therefore be necessary to monitor the progress made with regard to these undertakings.

As recommended in June 2000 by the Commission sur la gestion de l'eau, an evaluation of this Policy's implementation will be carried out. Thus, knowledge of the progress being made with respect to the government's commitments and of their effectiveness in terms of the orientations and principles set forth in the Policy should allow appropriate adjustments to be made, if necessary, to the various implementation components (intervention mechanisms, reference framework, strategic plan, and so on).

In this regard, the Québec government undertakes:

57. To develop indicators for monitoring the Policy and to publish an evaluation report every five years.

The continuous monitoring of the Québec Water Policy requires the development of economic, social, administrative, and environmental indicators to measure the attainment of objectives and fulfillment of the government commitments made in this Policy.

The process of monitoring the Policy and its implementation above all implies the involvement of the various watershed-management agencies, those responsible for the integrated management of the St. Lawrence, municipal authorities, and the government ministries concerned.

A list of all the government undertakings enunciated in this Policy is found in Appendix 2.

Conclusion

The government of Québec has made the issue of water a province-wide priority. The Québec Water Policy represents an essential step towards preserving this vital resource for present and future generations, and fits in with the global determination to ensure better management of this collective asset. The challenge posed by the Policy is first and foremost that of meeting the needs and wishes of the Québec population, and second, of ensuring the best-possible concerted efforts by all water-management players to guarantee the successful attainment of the Policy's objectives.

A symposium was therefore held in 1997, followed by the widespread rallying of citizens in the context of public consultations in 2000. These activities laid the groundwork for implementation of this Policy, for which the primary start-up mechanisms include government coordination, grassroots participation, and Québec's expectations as concerns the federal government. The Policy also gives concrete form and forceful expression to the government's commitment to provide Quebecers throughout the province with excellent quality water in sufficient quantity to meet all their basic needs.

Moreover, the government's commitments are concretely defined in terms of five major orientations, which are the reform of water governance, the integrated management of the St. Lawrence River, the protection of water quality and aquatic ecosystems, the continuation of water clean-up and improved management of water services, and lastly, the promotion of water-related recreotourism activities.

Endowed with an irreplaceable natural asset, Québec must act with determination in a global context where accessibility to water as well as water quality are fast becoming key issues in human development. The government thus wishes to ensure that all Quebecers benefit from high-quality drinking water; to protect our aquatic ecosystems and their biodiversity; to implement integrated management of our watercourses and particularly the St. Lawrence River; to assert the public nature of water service management; to clean up our watercourses by exercising better control over human activities; to reinforce our international partnerships as well as those with Aboriginal nations; and to maximize public access to our water resources. The government of Québec therefore intends to assume its full leadership role with respect to this most valuable resource for all Quebecers. In this way, water takes on its full meaning as the collective heritage of Quebecers and the cornerstone of this Policy.

List of abbreviations and acronyms

BAPE	Bureau d'audiences publiques sur l'environnement	PARE	Plan d'action et de réhabilitation écologique
CCNQ	Commission de la capitale nationale	PGAF	Plans généraux d'aménagement forestier
CEHQ	Centre d'expertise hydrique du Québec	QPPF	Québec Pork Producers Federation
CPA	Canada Port Authority	R&D	Research and Development
EQA	Environmental Quality Act	RAO	Regulation respecting agricultural operations
FAPAQ	Société de la faune et des parcs du Québec	RCM	Regional County Municipality
IJC	International Joint Committee	ROBVQ	Regroupement des organismes de bassin versant du Québec
INRS	Institut national de la recherche scientifique	RRPAS	Regulation respecting the reduction of pollution from agricultural sources
INWO	International Network of Watershed Organizations	SLV-2000	St. Lawrence Vision 2000
IWRP	Industrial Waste Reduction Program	SPAAQ	Syndicat professionnel de l'Association des aquaculteurs du Québec
MAPAQ	Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec	UN	United Nations
MENV	Ministère de l'Environnement	UNESCO	United Nations Educational, Scientific and Cultural Organization
MPW	Master Plan for Water	UPA	Union des producteurs agricoles
MRN	Ministère des Ressources naturelles	WA	Watercourses Act
NAAEC	North American Agreement on Environmental Cooperation	WSSD	World Summit on Sustainable Development
NAFTA	North American Free Trade Agreement	ZEC	Controlled harvest zone
NGO	Non-governmental organization	ZIP	Priority intervention zone
PADEM	Programme d'assainissement des eaux municipales		
PAEQ	Programme d'assainissement des eaux du Québec		

Appendix 1

THE MAIN USES OF WATER

The uses we make of water are many, and the related issues are complex and varied. Domestic, recreational, and agricultural uses on the one hand, and industrial, energy, and commercial uses on the other, are some of the uses made of this increasingly coveted resource. Because of the growing pressure placed on water, it has come to be a source of conflict among its various users. To give the reader an idea of water's importance, this appendix outlines its many and varied uses.

MUNICIPAL USES

The St. Lawrence River serves as the source of drinking water for 45% of the Québec population, while another 35% of the population relies on surface water from lakes and rivers, and the remaining 20% uses groundwater.

Surface water, drawn from the St. Lawrence or from lakes and watercourses, is delivered to some 5.5 million people through huge municipal water supply systems. As for groundwater, which is abundant in Québec although still poorly inventoried, it supplies almost 1.5 million people spread out over 90% of Québec's territory. Half of this water is delivered through collective water distribution systems, while the other half is supplied by catchment works for domestic use (private wells).

According to the latest data, the total quantity of water drawn for residential use is almost 1,712 million m³ per year. Of this total, withdrawals of surface water account for almost 1,476 million m³ per year, while annual groundwater withdrawals amount to some 236 million m³.

Though difficult to measure precisely, the level of residential consumption observed in Québec is among the highest in the world, at approximately 400 litres per person per day (l/p/d). By way of comparison, the Canadian average would be on the order of 350 l/p/d.¹⁷ In the United States, it is 425 l/p/d, while the figures for the

United Kingdom and France are 200 l/p/d and 150 l/p/d respectively. Of the total amount of drinking water consumed domestically, barely 1% is used for human consumption per se. The other domestic uses are cooking, laundry, personal hygiene, plumbing fixtures, fire protection, swimming pools, and washing cars.

AGRI-FOOD USES

Farming and livestock production in Québec are concentrated on the St. Lawrence plain, with its fertile soils and abundant precipitation. It is also in this area where the population is concentrated and the ecosystems with the greatest biodiversity are found. High-quality agricultural soils represent barely 2% of the total land area, or about 25,000 km². Like that of other countries of the Western world, Québec's agricultural landscape has been shaped by the production methods which the agricultural sector has adopted over the years and by technical revolutions. As for water consumption, it must be pointed out that irrigation and watering are very little used in Québec. On the contrary, many agricultural producers have suffered from an excess of water and have had to set up drainage systems for their fields. The fish-farming sector, however, stands apart in its high water consumption.

Commercial salt-water fisheries constitute one of the economic engines in certain regions of Québec. In all, 33 processing plants distributed throughout the territory provide seasonal work for some 2,000 workers. Commercial fishing and aquaculture provide seasonal employment for 9,000 people in Québec's maritime regions, which include the Gaspé Peninsula, the Îles-de-la-Madeleine, the North Shore, and Northern Québec. Employment in the commercial fishing industry accounts for 19% of total employment in the Gaspé Peninsula and Îles-de-la-Madeleine region, 5% on the North Shore and in Northern Québec, and as high as 44% on the lower North Shore.

The North Shore and Anticosti region has a very active fishing industry, with 742 fishers, 12 processing plants, 1,267 plant workers, and 10 companies specializing in

17 Environment Canada. Municipal Water Use Database (MUD) – Web site.

aquaculture. In the Gaspé region, commercial fishing employs 653 fishers. The economy of the Îles-de-la-Madeleine is based primarily on fishing, which is the activity that brings in the highest revenues for the region and has the strongest influence on the life of the inhabitants. In 1997, there were 396 owner-operators, 752 fisher helpers, 9 plants with processing permits, and 928 plant employees, which together brought economic benefits valued at over \$54 million.

Fish-farming production stands at 2,000 tonnes, about 50% of which goes to stocking bodies of water for recreational fishing. In addition, mariculture (sea farming) is carried out by some 20 companies, but is still in the embryonic stage. It is focused on production of mollusks, especially mussels and scallops, and is concentrated in the Îles-de-la-Madeleine and Gaspé Peninsula region.

In Québec, the term “commercial water” is used to refer to bottled water and water sold in bulk. The industry in Québec bottles three types of water: spring water (96% of production), mineral water (1% of production), and treated water (3% of production). Spring water and mineral waters come from groundwater. This industry is greatly dependent on the exceptional quality of the water it taps and markets. The water supplied to the commercial water industry represents about 0.08% of the groundwater collected in Québec, i.e. less than the amount consumed by roughly 900 households. Until the late 1990s, about 33% of the groundwater drawn by bottlers here was marketed outside Québec. In 1996, sales in the bottled water industry stood at close to \$128.4 million, for an increase of 9.5% over 1994. This growth was made possible by the increasing proportion of sales outside Québec, which soared from 9.8% in 1993 to 22.7% in 1994, and finally, to 33.4% in 1996.

INDUSTRIAL USES

In Québec, the ready availability of water has favoured the establishment of enterprises for which this resource is essential. The presence of companies in the pulp and paper, petroleum, primary metallurgy, and organic and inorganic chemicals sectors has contributed to a signifi-

cant increase in overall water consumption. It is estimated that, in 1994, these industries used approximately 996 million m³ of water (not including the island of Montréal). Of this total, 69% was accounted for by the pulp and paper sector and 21% by the primary metallurgy sector, while the other sectors shared the remaining 10%. On the island of Montréal, 210 companies involved in surface treatment of manufactured products (painting, chrome-plating, etc.) are reported to have consumed 20.8 million m³ of water in 1993.¹⁸

Although the Québec pulp and paper industry has reduced its water consumption in recent years, it continues to be a voracious consumer of this resource.

With respect to the mining industry, there are no statistics on the overall quantity of water used, but this type of industry is known to consume great quantities. However, the Québec Mining Association collects data on water use during the processing of copper and zinc, gold, iron, and industrial minerals. According to the 1995 data, water use in the gold industry would appear to total 6.6 million m³/year. In the base metals sector, water consumption would be 11.9 billion¹⁹ m³/year.

ENERGY USES

As of January 1, 2000, Québec had 145 small, medium, and large generating stations situated on some 50 rivers in just over 30 watersheds. This means that, out of a total of 525 rivers listed in studies of hydroelectric potential, around 9% have been harnessed for hydroelectric production. In its 2002-2006 strategic plan, Hydro-Québec has set itself the goal of increasing its annual production capacity by at least 12 terawatthours (TWh) and investing \$1.7 billion.

The government considers that the continued development of its hydroelectric resources, together with the development of wind energy and energy-saving measures, constitutes a priority environmentally responsible choice, particularly from the global perspective of fighting air pollution and greenhouse gas emissions.

18 Symposium on Water Management in Québec, fall 1997.

19 Ibid.

RECREATIONAL USES

As a result of the efforts and investments made for wastewater treatment, the quality of water in Québec's lakes and watercourses has improved considerably. Because of this quality and the growing popularity of outdoor activities, the public is gradually going back to its lakes and rivers. Thus, various bodies of water are increasingly used by vacationers, fishers, and water sport enthusiasts. Given the significant increase in water quality in Québec, there is now reason to believe that recreational uses of bodies of water and their development constitute an interesting source of economic growth in the various regions.

The St. Lawrence River and the many lakes and rivers in Québec offer an exceptional recreational potential for activities taking place directly in the water (swimming, sailboarding, water skiing, and underwater diving), on the water (pleasure boating, canoeing, kayaking, observing marine mammals, hunting, and sportfishing), or ones involving visual contact with water from riverside parks, hiking trails, and bicycle paths. In this connection, the St. Lawrence is still the main thoroughfare for discovering some of the most beautiful panoramas. In Québec, according to a survey on the importance of nature for Canadians, slightly over 500,000 people take part in canoeing, kayaking, and sailing. Almost 400,000 people have used powerboats, and one million people engage in swimming and beach activities.

Sportfishing is a popular activity practiced on virtually all bodies of water and watercourses in Québec, notably, the St. Lawrence River. In fact, more than 800,000 people engage in sportfishing each year. Like sportfishing, camping, hunting, and wildlife watching are often associated with aquatic environments. The managers of wildlife territories, such as controlled harvesting zones (ZECs), outfitters, and wildlife reserves that oversee and promote the practice of these activities, are concerned with preserving good-quality aquatic environments.

Appendix 2

LIST OF GOVERNMENT COMMITMENTS

No. GOVERNMENT COMMITMENTS

Legal framework governing water

- 1 To effect a revision of the legal framework as regards water and to develop the legal instruments needed to implement its Policy.

Integrated watershed-based management

- 2 To gradually implement integrated watershed-based management.
- 3 To provide financial and technical support for the operation of 33 watershed agencies.

Knowledge of water

- 4 To assemble and develop the information on water and aquatic ecosystems essential for water governance.
- 5 To conduct an inventory of Québec's major aquifers.
- 6 To broaden and enrich our knowledge of Québec's major watersheds, and to provide support for the updating of relevant information on a permanent basis.
- 7 To provide support to riparian property owner associations on recreational lakes.
- 8 To develop and implement awareness-raising and education programs directed at the various water-management players.

Water charges

- 9 To develop and gradually implement, beginning in 2003, a system of charges for the use (withdrawal and disposal) of Québec's water resources.

Relations with Québec's partners

- 10 To ensure the participation of Aboriginal nations and communities in water management, within the framework of the agreements signed and those to be signed between them and the government of Québec.
- 11 To strengthen Québec's participation in international organizations concerned with management of the Great Lakes–St. Lawrence River basin.
- 12 To strengthen, in all relevant areas pertaining to water, the participation and representation of the Québec government, in order to promote its interests and share its expertise in international agreements, organizations, and forums.
- 13 To step up Québec's efforts on the international scene by supporting and facilitating the export of its public and private expertise in the areas of water resources technology, management, and protection.

Integrated management of the St. Lawrence River

- 14 To enshrine, through official recognition, its vision of the St. Lawrence River as a national heritage to be protected, developed, and valued.
- 15 To implement integrated management of the St. Lawrence River.
- 16 To sign a new Canada-Québec agreement on the St. Lawrence and ensure its implementation.

Drinking water

- 17 To provide financial assistance over the next five years for bringing all drinking water supply and treatment facilities up to standard.
- 18 By 2004, to develop a strategy for protecting surface water collection sources.
- 19 To increase and improve the ability of regional public health branches to intervene, investigate, and assess risks or impacts whenever water quality standards are violated or waterborne illnesses break out.

Protection of aquatic ecosystems

- 20 To step up knowledge-acquisition and development activities that support interventions aimed at protecting and restoring wildlife habitats in aquatic, riparian, and wetland environments.
- 21 By 2004, to develop and implement an action plan for the protection, restoration, and development of the banks and littoral zones of lakes and watercourses, their floodplains, and wetlands.
- 22 To extend application of the policy on ecological reserved flows for the protection of fish and their habitats to other aquatic ecosystem components.
- 23 By 2005, to set criteria for allocating water withdrawal and watercourse diversions.
- 24 To create a network of “aquatic reserves” in Québec by 2005.
- 25 By 2005, to revise forest management practices with a view to reducing impact on aquatic, riparian, and wetland environments.

Water clean-up

- 26 To implement a strategy for cleaning up watercourses at the watershed level.

Agricultural sector

- 27 To achieve, by 2010, a state of equilibrium in terms of soil phosphorus-support capacity.
- 28 To pursue and implement the decisions made at the Forum on agriculture and agri-food: “Un environnement à valoriser.”
- 29 To support the establishment, on agricultural land, of wooded riparian corridors that fit in with the natural environments.
- 30 To introduce ecoconditionality in a range of financial assistance programs in the agricultural sector.
- 31 To reduce, by 2010, the pressure exerted on the environment by the use of pesticides in agricultural areas.

- 32 To deliver technical and financial support to existing fish-farming operations.

Industrial sector

- 33 To broaden the application of the Industrial Waste Reduction Program (IWRP).
- 34 To put into place an accountability mechanism for industries not subject to the IWRP.
- 35 To continue efforts to restore mine tailing sites.

Municipal sector

- 36 To induce and help municipalities to reduce by 20%, by 2007, the frequency of overflows in combined sewer systems during rainstorms.
- 37 To eliminate, by 2007, wastewater discharges during periods of dry weather.
- 38 To supplement, by 2007, the wastewater treatment program in over 50 small municipalities so as to eliminate the direct discharge of wastewaters into watercourses.
- 39 To ensure the disinfection of wastewaters from treatment plants, where justified to protect uses.
- 40 To reduce the toxicity of effluents by 2005, by developing and implementing an action plan.
- 41 To put into place a strategy governing urban discharges in Québec.
- 42 To assist municipalities in enforcing compliance of wastewater treatment systems for isolated dwellings.

Municipal infrastructures and water services

- 43 To induce all municipalities to achieve an infrastructure renewal rate of 0.8% per annum by 2007 and a rate of 1% per annum by 2012.
- 44 To ensure compliance with quality standards during the construction, reconditioning, and replacement of existing infrastructures.

- 45 To achieve, beginning in 2005, a 25% utilization rate of infrastructure reconditioning techniques as opposed to replacement techniques.
- 46 To develop, in 2003, a means of calculating the cost of water services.
- 47 To measure performance in the management of water services by developing appropriate tools.
- 48 To increase Québec's expertise in water services by promoting the use of new technologies and best practices.
- 49 To develop a Québec strategy for the conservation of drinking water which makes the allocation of any financial assistance contingent upon the adoption, by municipalities, of measures to conserve water and reduce leakage.
- 50 To establish a water-conservation program in government buildings.
- 51 To create a framework for the delegation of management functions to the private sector by promoting the use of standard form contracts for management and monitoring.

Water-related recreotourism activities

- 52 To develop an assistance program for municipalities and community organizations in order to create a network of points for public access to the St. Lawrence River, as well as to other bodies of water and watercourses in Québec.
- 53 To formulate a strategy for developing sportfishing in Québec.
- 54 To continue implementing the recommendations of the Comité de consultation sur la sécurité nautique et la qualité de vie sur les lacs et les cours d'eau du Québec.
- 55 In association with the Fédération québécoise du canot et du kayak and regional tourism associations, to support the development of boat trails in Québec.
- 56 With a view to sustainable development, to draft a development plan for nautical tourism in the realm of international cruises by 2005.

Monitoring the Policy

- 57 To develop indicators for monitoring the Policy and to publish an evaluation report every five years.

