

## **Water in North America: Rising Tensions**

Notes for Remarks by Adèle M. Hurley  
to the Royal Society of Canada Symposium  
on Water in Canada and the World:  
Rising Tensions in the 21st Century:  
Issues and Solutions

November 17, 2006  
Canada Science and Technology Museum  
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**In April 2001, the Program on Water Issues was launched at the University of Toronto's Munk Centre for International Studies. The Program is dedicated to giving voice to those who would bring transparency and breadth of knowledge to the understanding and protection of this valuable resource.**

**The Program Director is Adèle Hurley. The Program's location within the Munk Centre for International Studies at the University of Toronto provides access to rich analytic resources, state-of-the-art information technology, and international expertise, and creates opportunities for talented members of the private, public, academic and not-for-profit sectors to join in collaborative research and education.**

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## **Water in North America: Rising Tensions**

Before I begin I would like to just take a minute to recognize Andrew Miall for the many hours, make that days, that he devoted to bringing us together. As with most things, this symposium began with an idea. That idea was discussed by a number of people and given shape. Eventually, a steering committee generated plenty of information and enthusiasm. But, in the end, it was Andrew who bore the final responsibility for any ‘dropped threads’, and who deserves our thanks and recognition for his enthusiasm, attention to detail, and good temper.

During the next 20 minutes I am going to talk about the rising tensions associated with water in North America. But I’d like to begin this talk with its conclusion—which is as follows:

**To an increasingly alarming extent, Canadians have spent much of the last century being vigilant on matters of significance to the use of water in our bilateral relationship with the United States. This has distracted us from getting on with the job of managing our water resources in this country, for our own purposes, and for generations to come.**

**There is no more running room for this uneven focus of attention. The once seemingly generous North American continental water resource is now stretched in a number of places. Going forward, Canada must manage the domestic and bilateral water files with a conscious sense of their interrelatedness. The two need to be mutually aligned. The first order of business is an immediate need to get on with the task of updating and implementing a National Water Policy which was last visited in 1987.**

**That is where I am going to end today’s remarks. What follows is the story that led to this conclusion.**

Congenial relations between the United States and Canada have long been a source of pride for both countries. We characteristically speak about being each other’s largest trading partners, and about the degree to which we have a shared, peaceful border.

We also frequently reference the fact that Canada has become the largest supplier of energy to the U.S., surpassing the Middle East. As a result, the countries have created a number of mechanisms for dealing with cross-boundary environmental matters including air, water and migratory wildlife.

Water policies, in particular, have enjoyed much bilateral cooperation. The International Joint Commission has provided a mechanism for joint management of the St. Lawrence Seaway, the Great Lakes, and other cross-border waters. Two binational agreements, The Great Lakes Water Quality Agreement and the Boundary Waters Treaty of 1909 have provided a framework for IJC undertakings.

But, like water, Canadian and American relations ebb and flow and at any given time a basket of disagreements on everything from softwood lumber, border security, the war in Iraq, and Devils Lake can converge and threaten to swamp the relationship.

Ongoing and potential conflict over water, or trade that is dependent on water has become a political reality in Canada. Water scarcity has already affected many areas of the United States, and a few parts of Canada. The reasons for these shortages include increasing population, industrial development, climate warming, poor agricultural practices, poor prevention of water pollution, and watershed modification.

Canadians nervously keep watch on American attempts to take our water. History shows that we would be well served if we spent an equal amount of time keeping tabs on the Canadians who are trying to sell the water.

Let's look at how we manage water in this country.

The Canadian legal system's approach to water issues is heavily influenced by the enduring myth of endless water. As a result, our laws and policies mostly fail to provide the level of water security sought by Canadians.

Canada diverts more water from one river basin to another than any other nation in the world.

We do this largely in order to reap the economic benefits of selling power to the United States.

This is our history. And the past, as they say, is prologue.

Today, new hydroelectric developments are underway in James Bay that are designed to supply clients in the U.S. Northeast, and that threaten, yet again, another large piece of aboriginal territory in northern Canada. Also underway is the oil sands development in Alberta—another energy-for-export-to- the-United

States-project. It too, is changing forever the once mighty Athabasca River and the largest boreal delta in the world that lies downstream.

Plumes of sulphur and nitrogen oxides continue to drift across the border from American industrial centers and to acidify Canadian freshwaters and soils. While it is true that the pollutants from these emissions have declined slowly over time, current emissions are still keeping many lakes acidic, and causing a small proportion to acidify even more. Canada's domestic reliance on coal and its demands for US power from dirty plants during the summer months undermines national and provincial efforts to negotiate stronger emission control legislation.

In recent years, the story of how Canada manages groundwater has drawn increased interest—not the least from the Office of the Auditor General. Canada knows relatively little about its groundwater—certainly not as much as the United States knows about its groundwater as a result of the work of the US Geological Survey. Our country is a patchwork quilt of policies, programs and regulations with one province, British Columbia, not even requiring licenses to pump groundwater. In arid parts of Canada, such as Southern Alberta, where groundwater is bound to become increasingly important, oil and gas companies have been given permits to drill for Coal Bed Methane before aquifer characterization has been completed. Large parts of the country are flying blind when it comes to knowing about the water that lies beneath.

In addition to these rising domestic water tensions there has been a spate of bilateral water issues. Let's take a look at four of these.

1) Massive algal blooms have raised concerns about the health of Lake Winnipeg. Much of the nutrient load that causes this problem originates in the Red River drainage basin that extends into the fertile farming country of the U.S. The cities of Fargo, Grand Forks, Moorhead and Winnipeg, all discharge sewage to the Red River, which ultimately drains to Lake Winnipeg.

2) In 2005, the State of North Dakota decided to divert Devils Lake into the Sheyenne River, a tributary to the Red River, in order to keep the lake from flooding surrounding lands. The U.S. Army Corps of Engineers has also proposed to connect Devil's Lake to the Missouri River, to stabilize and freshen the lake. This would connect the Mississippi-Missouri river system with the Nelson River, which drains Canadian waters from the Rockies to north-central Ontario. Issues

ranging from the invasion of Alien species, the disruption of natural food webs and the loss of the fishery in Lake Winnipeg are in play as a result of this proposed diversion. Those of us who work in the water field know that the Devils Lake diversion faced stiff opposition from both Manitoba and the federal government. Fewer know that at an earlier time Canada turned down a proposal by the Americans to have the issue of Devils Lake referred to the International Joint Commission.

3) In arid southern Alberta and northern Montana, competition is underway for the scarce waters of the Milk and St. Mary's rivers that are critical to livestock and irrigation in both countries. A 1921 agreement apportioned the waters between Alberta and Montana. However, Montana, which is one of the least efficient irrigators states, has recently asked the IJC to review the agreement, claiming that it should be entitled to more of the rivers' water.

4) In British Columbia, the Columbia River originates in Canada but eventually flows to the U.S. The 1964 Columbia River Treaty required Canada to build three dams on the upper Columbia to control flooding and maximize power production in the U.S. portion of the watershed. Half the power generated was to have remained in Canada. Instead, the British Columbia government negotiated a lump payment of \$254 million dollars. Over the years it turned out that this sum did not even pay the costs associated with construction of the dams. Moreover, these dams carried additional liabilities when it came to protecting the health of the Columbia Basin ecosystem. The dams completely blocked salmon runs on the Canadian portion of the Columbia River. The treaty led to considerable damage on Canadian agricultural lands and forests, and failed to recognize the rights of first nations and local communities. The Columbia River Treaty will soon be renegotiated. This time, it needs to be revisited with a view to equalizing benefits.

All of the aforementioned has had to do with domestic and bilateral water tensions to this point in our history. In future, climate change and increased demand for water in some parts of the continent are expected to exacerbate levels of water tension experienced in North America.

Climate warming will likely cause governments to re-examine all existing transboundary water agreements, including inter-provincial agreements.

Climate warming has already increased the pressure on water supplies in arid areas such as the Great Plains and populous areas such as the Great Lakes and Greater Puget Sound area. The U.S. Global Change Research Program recently concluded

in a regional paper “Rocky Mountain/Great Basin Region (water resources) that, “There will be increasing competition for already limited water supplies and all water-using sectors.”

As Dr. David Schindler summarized in a recent paper “The Great Plains of the western U.S. and Canada lie in the rain shadow of the Rocky Mountains and are semi-arid at the best of times. Annual average precipitation in this area ranges from less than 300mm to as much as 500mm. In general, average evaporation equals or exceeds precipitation, so there is little or no net water generated to flow from the area. Fortunately, some of the area receives flow from rivers or aquifers that originate high in the Rockies, where precipitation is higher. Economically important rivers that originate in the snow packs and glaciers of the Rockies include the Colorado, the Missouri and the Platte rivers in the U.S. and the Saskatchewan, Athabasca and Peace rivers in Canada. In the 20<sup>th</sup> century, the Great Plains has come to rely on these mountain flows. Cities like Denver and Calgary and surrounding agriculture rely on these mountain “water towers.”

But much of the Great Plains has already warmed from 1 to 3 degrees C. Evaporation has increased in proportion. Recent paleoecology studies show that intense droughts lasting for a decade or more were common in the Great Plains before the 20<sup>th</sup> century, which was unusually wet. Even the “dirty 30s,” widely referenced as an example of the hardships of drought on the prairies, was a minor drought compared to earlier centuries. Few humans of European descent ever witnessed the effects of these earlier droughts. The relatively few aboriginal inhabitants of the Great Plains were nomadic and simply moved during times of drought. But even long-lasting droughts displaced or eradicated these well-adapted peoples.”

These earlier droughts occurred under much cooler climatic conditions than occur today, or than, according to the Intergovernmental Panel on Climate Change, are anticipated in decades to come. Given the large numbers of European settlers, huge populations of livestock, and vast areas of croplands the economies of the Great Plains are much more vulnerable to drought than ever before.

Warming temperatures have also affected mountain water supplies. Glaciers supply relatively small proportions of the total downstream flow in most rivers. But they release their water during the critical midsummer period when annual snow packs have melted, evaporation is at its highest, and when fish and other organisms are stressed by high temperatures and oxygen deficits at lower elevations. The demand for water among irrigators is also greatest at this time.



Many glaciers will have disappeared by 2100 or before. Once gone, they will not return, at least not until the next ice age.

Altogether, climate warming will cause the already scarce waters of the Great Plains to dwindle.

Climate will have a somewhat different effect on the Great Lakes/St. Lawrence River region. Many unrealistically consider the Great Lakes to be nearly inexhaustible sources of freshwater.

But the apparent vast water supply of the Great Lakes is deceiving. The waters are not renewed very rapidly. Only a small proportion of Great Lakes water can be used sustainably, and climate warming (generally already a degree or two at various places in the basin) will gradually reduce that which is available for sustainable use. Some climate models suggest that lake levels could drop by as much as a meter, and outflows could be reduced by 30% in the next half century.

Efforts to export Great Lakes water, divert it to arid areas, and otherwise sell it outside the basin have been successfully defeated in the past for good reason. Even small reductions to lake levels and outflows can cause millions of lost dollars to shipping and hydroelectric production.

As a result of the recent election in the United States, American policies and legislation on climate change are expected to change. Canada's window for capturing the lead on climate-change-related technologies and leadership is closing. California and New England are poised to assume the leadership for climate change policy-making in the US. It is now more likely that Canada will be running to find its place in the continental green house gas cap-and-trade and emissions offsets programs that the Americans are about to usher in.

Climate change is also testing Canada's role with respect to the Northwest Passage. Waters that were previously frozen for many months of the year are now becoming open to tanker traffic and present a challenge to Canada's arctic sovereignty and security.

In addition to Climate Change demand for water is also expected to influence levels of water stress in certain areas of the continent.

Many people are surprised to learn that demand for water in the United States has actually decreased. This is a direct result of the changes in industrial products and

processes, particularly in the area known as the ‘rust belt’. But in other areas of North America water is in increasingly short supply. Migration of people from the “rust belt” states of the Great Lakes, to the eastern slopes of the Rockies and the adjacent Great Plains has stressed existing water supplies. In Canada, a similar migration has occurred. People are moving to wealthy Alberta, where jobs in the oil industry and construction are plentiful. Alberta’s urban footprint is changing at a rate and scale that is unprecedented. Population growth and industrial demands just outside the Great Lakes basin in Ohio, Michigan and Pennsylvania have also compromised the water supplies of the Great Lakes. Many out of basin communities have already exceeded sustainable water uses, or have polluted their surface and ground waters too much to use for drinking water. The traditional solution to these water needs has been not to invest in water efficiency or water conservation measures but to build more treatment plants and pump more groundwater. The US Geological Survey has reported that demand in some areas has actually reversed the direction of flow of groundwater, so that groundwater that used to flow to the Great Lakes now flows away from it.

In the past, grand schemes to move water from the large rivers and lakes of the Canadian north to water-scarce regions of the US have made headlines. In 1999 a Conservative government in Ontario issued a five-year permit to tank water from Lake Superior to Asia. In recent years the government of Newfoundland has expressed repeated interest in selling water to the oil-rich yet water-poor Middle East. Throughout the 1990s the government of British Columbia entertained more than a dozen proposals to export water. The Canadian public loudly opposed and defeated these ventures yet the idea of turning water into a source of state revenue remains a temptation for many Canadian governments and their bureaucracies.

Today such schemes are given little credibility. Several studies have unmasked the dubious economics and harmful environmental impacts of such projects. Consequently any future attempts to divert or export Canadian water will be more surreptitious and less grandiose.

What has been the involvement of the Canadian government in all of this?

In recent years, the federal government appears to be abdicating many of its Canada-U.S. water responsibilities. The Annex 2001 process to develop bilateral rules for diversion and withdrawals from the Great Lakes is a good example. It took articles in the Toronto Star, and a Canadian Senate hearing to pull the federal government into public view on the Annex Agreements. The issue of diversions from boundary waters is clearly a federal responsibility. Yet during the Annex

process, the federal government was essentially silent while Ontario and Quebec bargained with eight U.S. states in an 8 to 2 negotiating situation. Public scrutiny of the Annex agreements led to improvements in the final text but subjects such as unresolved bottled water takings and vague references to commingling of groundwater are predictable indicators of trouble down the road. The Annex Agreements must now be accepted by each of the eight Great Lakes state legislatures.

Before the signing of the North American Free Trade Agreement in the early nineties, Canada came close to protecting its freshwater supplies. In 1988, the governing Conservative Party introduced the Canada Water Preservation Act to prevent large-scale diversions and exports of water. Due to an election call the legislation was never passed, and never reintroduced. Even so, it seemed reasonable to expect that a clause exempting water could have been inserted in the Free Trade Agreement when it was being drafted. This was not done, for reasons that have never been clearly explained. As a result of these ambiguities, there is still considerable controversy over whether or not water exports are subject to NAFTA regulations. Potatoes and logs were exempted. Water was not.

In recent years Canadian water policy has become increasingly vague and ambiguous. Canadian governments of both dominant political parties have chosen to avoid legislation specifically preventing the export of freshwater. The Canadian economy is largely based on the export of raw materials. Canada has placed little emphasis on creating industries that could add value to the country's raw resources.

Most of these industries are in other countries, where cheap Canadian raw materials make it possible to reap profits from secondary industries. But Canada's supply of conventional oil, gas, and forest products is declining. Climate and land availability limit agricultural exports. As we deplete or saturate these resources, the temptation among politicians to sell more hydropower, or even water, to wealthy US customers will grow.

How will Canada protect its limited water supplies and watersheds from its continental neighbour if it has not addressed its domestic water concerns?

In 1970, Canada passed the Canada Water Act, which is largely devoted to federal-provincial management and monitoring of water. At the same time, new programs in Environment Canada (including what would later become the Department of Fisheries and Oceans) placed Canada at the forefront of freshwater research. Water appeared to rise in priority for the next 20 years, culminating in the Inquiry on

Federal Water Policy in 1984, which proposed a framework for federal water policies for the future. The final report of the Inquiry offered 55 recommendations for more coherent federal water policies and administration. The issues ranged from drinking water safety and water export, to research support and intergovernmental arrangements. In 1987, a Federal Water Policy was tabled in Parliament. It was never fully implemented, for reasons that remain obscure. Since that time, water policy initiatives have been de-emphasized in Canada under both Liberal and Conservative governments. Research has been severely cut in both the Department of Environment and the Department of Fisheries and Oceans. The Inland Waters Directorate of Environment Canada, which was to implement most of the new policy, was disbanded in the early 1990s.

In view of the now-recognized domestic and bilateral water issues outlined above, and the impending stresses associated with increased water demand and climate warming, these actions appear to be high risk and short-sighted. It is no coincidence that in 2001, the Auditor General's office reported that Canada's water protection capabilities are adrift.

And so, to end where we began:

**To an increasingly alarming extent, Canadians have spent much of the last century being vigilant on matters of significance to the use of water in our bilateral relationship with the United States. This has distracted us from getting on with the job of managing our water resources in this country, for our own purposes, and for generations to come. There is no more running room for this uneven focus of attention. The once seemingly generous North American continental water resource is now stretched in a number of places. Going forward, Canada must manage the domestic and bilateral water files with a conscious sense of their interrelatedness. The two need to be mutually aligned. The first order of business is the task of updating and implementing a National Water Policy which was last visited in 1987.**