



September 19, 2000

NAFTA Effects on Water: Testing for NAFTA Effects in the Great Lakes Basin

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Summary

The Great Lakes region's greatest economic, recreational, and spiritual asset is its water. Though vast, the Great Lakes have a relatively small drainage basin relative to surface area and an accordingly small renewal rate of only 1 percent. This margin of sustainability is slim: climate change and human activities together have the potential to significantly degrade the quantity of this resource, just as human activity alone has severely damaged its water quality and nearly extirpated its natural fishery.

The region is not prepared for stresses on its water resources generated by NAFTA-induced economic growth. Regional water use data are seven years out of date; projections for growth in water use are therefore based on pre-NAFTA trends. The latest assessment of regional water use growth, provided by the International Joint Commission, does not mention NAFTA as a possibly significant factor, despite the clearly substantial increase in economic activity that has already been generated by the agreement.

Poor data and related analysis are compounded by the possibility of regional climate change, whose projected impacts on Great Lakes levels range up to a drop of 70 centimetres (more than 2 feet) in just thirty years. Outflow to the St. Lawrence River could drop by as much as a quarter in just fifty years.

One bright spot for protection of the resource is a joint effort by the region's states and provinces, which have primary but not sole responsibility for managing the region's water resources. The governments are working to redraw the region's water use practices for the purpose of conserving the resource and protecting the elements of the ecosystem dependent on it. However, the effort faces significant political hurdles and the likelihood of its ultimate success is not known.

The Great Lakes contain nearly 20 percent of the world's accessible fresh water. In a global context of increasing water shortage induced by rises in population and average living standard, decision-makers must seriously consider the pressure of trade in water as significant environmental stressors on the Great Lakes. NAFTA may also facilitate privatization of water services, which might undercut regional conservation efforts and further stress the resource. The Commission on Environmental Cooperation should assess the signatory governments' declaration on NAFTA's applicability to natural waters and determine the potential for NAFTA-induced stress on the resource related to trade in water and water services.

The Commission should also assist in the development of water quantity and quality indicators of environmental health and stress to avoid the negative effects of trade in goods, services and investment, while optimizing the potential for environmental sustainability and quality in the Great Lakes basin.

Should the region's governments create a collective agreement for managing the Great Lakes resource for the purpose of ecosystem protection, that agreement, together with other measures, should be listed as a binational environmental agreement under NAFTA Article 104.

Introduction

In response to the North American Commission for Environmental Cooperation (CEC) Call for Papers relating to the Analytic Framework for Assessing the Environmental Effects of NAFTA, the Sierra Club of Canada on behalf of our research partners Great Lakes United and the Sierra Club Eastern Canada Chapter, are pleased to submit: Testing for NAFTA Effects on Water in The Great Lakes Basin

The waters of the Great Lakes have been called the lifeblood of the region. This paper tests for NAFTA impacts to these important waters. This paper also tests the test for assessing NAFTA Effects. The first part introduces the

research team and highlights our findings to improve in general the Framework for Assessing NAFTA Effects. The second part describes NAFTA impacts related to the Great Lakes Basin in three main areas: bulk water exports and use, privatization of water services and water quality, especially related to the growth in intensive livestock operations in southern Ontario.

This paper features the elements for a new Common Standard to Protect the Great Lakes, that we recommend, among other things, be listed as a paramount environmental agreement under NAFTA Article 104. The incorporation of the Common Standard by legislation in the appropriate jurisdictions, together with enforcement that includes a community based approach, are key to resolving growing pressures on this exhaustible resource. In addition, we feature a Case Study that directly applies the Framework to the tragic Walkerton water-crisis in Ontario, following the downloading of government responsibility for clean water testing to private facilities. The emerging human right to clean water and a healthy environment is described as a focus of strategies for water in this century. We conclude that the Framework, while helpful in identifying NAFTA impacts, requires significant improvements to fulfil the CEC mandate to protect the North American environment.

Part I

A. The Research Team and Process

The Sierra Club of Canada is a national environmental organization with extensive trade-related expertise, and a member of the Canadian Water Watch Network. The Club's efforts in preparing this paper were complemented by the excellent binational work of Reg Gilbert of Great Lakes United, especially as it relates to Great Lakes institutions and organizations, including the International Joint Commission.

To feed in the essential work at the grass roots, particularly relating to water quality, the Sierra Club Eastern Canada Chapter in Ontario contributed greatly to this paper. Particular mention is made of the efforts of Juli Abouchar of Birchall Northey who conducted the Walkerton Case Study, where a direct link is made to NAFTA induced beef and hog production in Ontario and the withdrawal of government from clean water protection. The energy and vision of the Chapter's Clean Water Campaigner Kirsten Valentine Cadieux is also gratefully acknowledged as well as that of Eric Wilson, Chapter staffperson. Special recognition of our volunteers, the Club's true strength is also due to: Johnny Lo, Kate Kempton, and Sarah Bradley and Catherine McTeer of Queen's University Environmental Law Students Society. In addition to our water experts, this project would not have been complete without the careful analysis of Robert Gibson and Anita Walker of the University of Waterloo, Environment and Resource Studies on Assessing the CEC Assessment, Appendix 1 below. Special thanks are also extended to Sarah Richardson and Elizabeth May.

In preparation for this paper, the research team hosted a public Workshop in Toronto, September 11, 2000 where aspects of the paper were presented and discussed. A full list of the attendees to the Workshop is presented in Appendix 1. The many comments and suggestions we have received improved the paper and we extend our thanks to all participants, and sponsors, including the CEC and the Canadian Union of Public Employees, for the opportunity to conduct the workshop and present these findings on NAFTA Effects to water, water being an essential element to all living things.

B. Assessing the CEC Assessment of NAFTA Effects

The purpose of the CEC Call for Papers is to apply the draft Analytic Framework for Assessing the Environmental Effects of NAFTA to particular issues or sectors of concern. The hope is to identify linkages, mitigate negative

impacts and contribute to our knowledge about important variables. The framework does not pretend to be static. Thus the papers should identify areas for further research and framework refinement.

Prior to application of the framework to water, however, it is prudent to analyze the structure and content of the overall Final Analytic Framework (See Appendix 2). Some assessment processes are narrowly designed and applied as a means of identifying and mitigating significantly adverse biophysical effects of economic activity. However, environmental assessment thinking and practice have moved towards becoming more ambitious, more integrative and more comprehensive. Indeed then, the Final Analytic Framework should strive to follow this trend and approach environmental assessment in an ecosystemic and participative nature. A set of basic environmental assessment principles can be drawn from the last 30 years of environmental assessment experience and associated learning can be examined in light of these principles to determine whether they have been incorporated. The principles include respecting uncertainty, adopting sustainability as the central objective, setting clear rules for application and implementation, ensuring transparency and openness and facilitating public participation, monitoring the results and applying the lessons, and being efficient.

When these principles are applied to the Final Analytic Framework, it is found that there are three major areas within the Framework that need to be addressed in order to achieve a higher level of environmental assessment that is credible, efficient and appropriately focused on sustainability issues. First, the purpose of the Framework should be expanded to allow a realistically integrated approach centred on achieving sustainability. This entails broadening the focus of the Framework from the ambient environment to include social, economic and ecological factors, and broadening the scope of the assessments to move beyond considering adverse effects to considering taking positive steps towards greater sustainability. Secondly, the Framework should ensure consideration of alternative immediate responses and alternative trade arrangements that might be worthy of adoption in revisions to NAFTA or in the design of new trade arrangements for North America or elsewhere. Thirdly, the process should be more open and participative. Local knowledge and other contribution from a variety of stakeholders should be valued and included throughout the process. It is important to consider these built-in limiting factors when applying the Framework to any issue.

Part II

Applying the Framework to Water

In this part we apply the Framework to water in the Great Lakes basin. Despite the sparse amount of information, we consider the question posed in the Framework relating to whether the NAFTA context is reinforcing the pollution haven effect, i.e. that economic activity tends to concentrate in areas without adequate technical, management, physical infrastructure and/or institutional capacity. In addition we consider whether NAFTA is leading to a regulatory and/or migratory race to the bottom in terms of investment and production facilities and processes, with negative impacts on the water quantity, and public access to clean drinking water. We identify two examples where NAFTA is clearly having negative impacts on both water quantity and quality. We suggest that a new Common Standard to protect the Great Lakes is necessary in order to ensure sustainable water management. A business as usual case where NAFTA effects and the global water crisis go unaddressed, can only lead to the further depletion and contamination of these Lakes and other freshwater resources in North America.

A. Water Facts : Great Lakes – St. Lawrence River basin

In this part of the paper we describe how the CEC Analytic Framework was applied to specific issues around fresh water, in particular: water exports and use, privatization, and water quality. An outline of the basic facts around the

Great Lakes basin as they are currently understood by the leading institutional players is provided. Attention turns to the best evidence available on climate change impacts associated with this region in order to more fully appreciate the unique and exhaustible nature of this major resource. After this context, we then turn to the environmental stress to the resource as a result of NAFTA related economic activity.

A.1. Institutional Setting and State of Play

Before describing some basic water facts, this section briefly describes the complex institutional framework that currently manages this resource. The Great Lakes Basin lies within eight states and two provinces and comprises the lakes, connecting channels, tributaries, and groundwater that drain through the international section of the St. Lawrence River up to Trois-Rivieres and out to the Atlantic ocean. Major outflows from the Great Lakes currently provide needed freshwater input to fish populations as far away as the Gulf of Maine. The Great Lakes and St. Lawrence river basin is an ecosystem that includes the interacting components of air, land, water and living organisms, including humans and their economic and social activity. Approximately one quarter of Canada's population and 10 percent of the US population live in the basin, 80 percent of whom get their water from the Lakes.

More than a dozen federal agencies in both countries have responsibilities for the system's resources management. Additionally, numerous municipalities, and local agencies have jurisdiction in matters related directly to water levels and qualities issues. The Great Lakes are managed by the 1909 International Boundary Waters Treaty by the International Joint Commission (IJC). The Commission rules upon applications for approval of projects affecting boundary or transboundary waters and may regulate the operation of these projects; it assists the governments of Canada and the United States of America in the resolving of disputes, and in the protection of the transboundary environment, including air quality and the implementation of the Great Lakes Water Quality Agreement.

Under the Treaty, boundary waters (i.e., the waters along which the boundary passes) are treated differently from transboundary rivers or tributaries. With some exceptions, Article III provides that the use, diversion, or obstruction of boundary waters must be approved by the Commission if water levels or flows on the other side of the boundary are to be affected. With respect to tributaries of boundary waters and transboundary rivers, however, Article II states each nation reserves "the exclusive jurisdiction and control over [their] use and diversion." The treaty does not explicitly refer to groundwater. Thus the Treaty does not deal with all waters of the Great Lakes basin in the same way leading to fragmentation of policy development for the ecosystem as a whole. The IJC can not therefore address issues regarding Lake Michigan and its tributaries because the Lake is wholly within US territory, despite its flows into the boundary waters between Canada and the US. Moreover, the Commission unlike the CEC is not accessible to public complaints regarding compliance with the Treaty obligations.

A.1.a. 1999 IJC Reference on Bulk Water Exports

In February, 1999 the two governments submitted a reference to the IJC on the protection of the waters of the Great Lakes, largely in response to the public outcry over a permit granted by the Ontario government in 1998 to NOVA Group to take up to 600 million litres (160 million gallons/ a lot!) of water annually from Lakes Superior for export via ships to Asian markets. Ontario later revoked the permit but the concerns around bulk water exports out of the Basin remain. Based on a public consultation, the IJC submitted its final report to governments in March, 2000.¹ This paper will respond to some of the major findings and recommendations.

The Boundary Waters Treaty is buttressed by the Great Lakes Water Quality Agreement, which the governments of Canada and the United States of America (US) signed in 1978. The objective of that agreement is to protect the

physical, chemical, and biological integrity of the waters of the Great Lakes Basin ecosystem, based on an ecosystem approach. Prior to this Agreement, the US entered into the Great Lakes Basin Compact, which was agreed to by the eight Great Lakes states and approved by the U.S. Congress in 1968. The Compact created the Great Lakes Commission, and provides, among other things, for joint or cooperative action to promote the orderly, integrated, and comprehensive development, use, and conservation of the water resources of the Great Lakes Basin. It has developed a role to plan for the welfare and development of the Great Lakes Charter, currently a non-binding instrument.

The 1985 Great Lakes Charter is an arrangement among the Great Lakes states and the provinces of Ontario and Quebec. Although the Charter is voluntary, it focuses the Great Lakes states and provinces on a number of resource issues and fosters cooperation among them. The Charter provides that the planning and management of the water resources of the Great Lakes Basin should be founded upon the “integrity” of the natural resources and ecosystem of the Great Lakes Basin. Moreover, the Charter stipulates that the water resources of the Basin should be treated as a single hydrologic system that transcends political boundaries in the Basin. New or increased major diversions and consumptive use of the water resources of the Great Lakes are said to be matters of serious and common concern².

In addition, the US government enacted federal legislation. The Water Resources Development Act of 1986 (WRDA) is a US federal law that prohibits any further diversion of water from any U.S. portion of the Great Lakes or their tributaries for use outside the Basin unless such diversion is approved by the governors of all Great Lakes states. It also prohibits federal studies of diversions without the concurrence of the governors. The impetus for the Charter and for WRDA was the concern in the U.S. portion of the Great Lakes Basin, in the early 1980s, that there would be major demands for Great Lakes Basin water from the agricultural and energy sectors of the western and southern United States. Given North American economic integration, the geographic scope of water demand pressures have extended even further south and west to Mexico.

A.1.b. Triggers to Limit New Use

In principle, the Charter provides that no state or province will approve or permit any major new or increased diversion or consumptive use of the water resources of the Great Lakes Basin without notifying and consulting with and seeking the consent and concurrence of all affected Great Lakes states and provinces. The trigger point for notification and for seeking the consent and concurrence of other Great Lakes states and provinces is an average use of 5 million gallons (19 million litres) per day in any 30-day period. While environmental groups are cautious that the Charter not be turned into a licensing agreement to permit water diversions or exports where the trigger requirements are met, nevertheless advocate for the lowering of the trigger level from 19 to 3.8 million litres (5 to 1 million gallons) per day.³

According to the IJC, typically, the level of withdrawal that triggers US state permitting requirements is well below that which triggers review under the Great Lakes Charter. Although some Basin states (Minnesota, New York, and Wisconsin) include a statutory provision that specifically requires consultations with the other Great Lakes states and provinces in the event of diversions from the Basin that fall within the Charter’s trigger provision, others have not provided for this explicitly.

The implementing resolutions for the Great Lakes Charter that were approved by the Great Lakes governors and premiers in 1987 outlined a review process for diversion proposals. A process has evolved for reviewing and approving diversions pursuant to the Charter and the WRDA, noted above. A custom and usage has developed of employing the Charter procedures regarding consultation for diversion proposals covered by WRDA that do not meet the Charter trigger point, so that the provinces are consulted although they have no rights under WRDA. The WRDA applies only to diversions in the United States, does not address consumptive use, contains no criteria for the governors to use in considering proposals, contains no appeal procedure, and may not cover groundwater

But the fears on both sides of the border around the Ontario government's approval of NOVA Group's bulk water export project made it clear that the Charter's trigger for consideration of significant proposed new diversions and consumptive use was too high to encourage the degree of consultation regarding the use of Great Lakes water that is needed to assure the sustainable use of these resources. Even if the Nova's export plans did not include North American markets, the prospect that all trade and investment agreements could lock in a practice and expectation of freshwater access for export was and is a real one. The weakness of a voluntary approach was also evident. The Charter does not require the consent of all Great Lakes states and provinces before allowing a new diversion or consumptive use, including exports to proceed, it does not establish standards for when such consent should be given or withheld, and it does not provide for public involvement during the consultation process.

A.1.c. The Promise of a New Common Standard

In response to these developments, on October 15, 1999, the Great Lakes governors issued a statement, endorsed by the premiers, renewing their commitment to the principles contained in the Great Lakes Charter, and pledged to develop a new common standard, based on the protection of the integrity of the Great Lakes ecosystem, against which water projects will be reviewed.⁴ Environmental groups in both Canada and the US have responded positively to this challenge and opportunity, keeping in mind that even a good Common Standard for Protecting the Great Lakes will not be sustainable if it fails to deal effectively with NAFTA impacts on the waters.

A.2. Water Availability: Levels and Flows

Water from the most northern point of the basin - Lake Superior - flows into Lake Huron through the St. Marys River. From Lakes Huron-Michigan, water flows through the St. Clair River, Lake St. Clair and the Detroit River into Lake Erie. Lake Erie, the most shallow Lake, discharges through the Niagara River and the Welland Canal into Lake Ontario. The portion of flow diverted to Lake Ontario through the Welland Canal many years ago is relatively small (about 4 to 5 percent of the total Lake Erie outflow). Water from Lake Ontario flows to the Atlantic Ocean through the St. Lawrence River. The average St. Lawrence River flow, recorded at Cornwall, Ontario, during the period 1900-95, is 6,910 cubic metres (244,000 cubic feet) per second. This average outflow is said to be relatively small (less than 1 percent per year) in comparison to the total volume of water contained in the system.⁵

Upon careful consideration, it appears that this one percent outflow rate is the basis by which Canadian governments at least, maintains that the Great Lakes waters are a renewable resource, and therefore the hydroelectricity power produced by the lakes is also a renewable energy source. The one percent "renewability factor" also appears relevant for decision-making about minimum lake levels and in stream flow rates when approving water projects. The CEC is well aware of issues around Canadian approaches to and the effectiveness of water use management plans.⁶

A.2.a. Lack of Sound Data

It is our conclusion that the data upon which water policy and project decisions are based is seriously flawed. The data is old and unreliable given the uncertainty that all water takings and uses are known, knowable and regulated. What we do know is that the pressure for additional water takings will increase and that climate change impacts alone, without any further development, are likely to reduce lake levels 70 centimetres (2.2 feet!) by 2030, only 30 short years away.

In fact the current lack of verifiable information on the basin's actual water quantity and rejuvenative capacity, despite records having been kept on water levels and outflows since the late 1800s, is likely the number one challenge in effective sustainable water management. Yet this information is critical in determining adequate "use-to-resource ratios" - the annual water withdrawals divided by annual renewable water resources - providing an overall gauge of the average physical pressure on available resources authorities use for approving on-going and new water uses. A

related formula that is also highly uncertain is the recharge rate, the quantity of water per unit of time that replenishes or refills an acquirer, and the interconnected relationship with other components of the ecosystem.

Determining the accuracy of these formulas is daunting given fragmented and dated information. Equally important is the problem of lack of transparency on how these formulas are designed and applied. Indeed the underlying approach to water project decision-making is inaccessible to the local public most at risk from reduced or altered water levels, flows and water quality. Recognising this, the Great Lakes Commission, now a binational agency of US and Canadian federal and provincial, state, including First Nation authorities, and other regional interests, announced a new two year project on Great Lakes water use and management. The purpose is to “lay the framework of data, information and process required to ensure timely and well-informed public policy decisions concerning the use and management of surface and groundwater resources”.⁷

Importantly the project promises to conduct a status assessment of the abundance and threats to the resource, taking an inventory of current water withdrawals, in-stream uses and consumptive use. Based on this data the seventeen member project team purposes to inform policy-makers on how ecological evaluations and cumulative impact analysis as a management regime can be designed and implemented. Currently there are no plans for public input into this broad mandate to protect the ecological system for future generations.

Given that the Great Lakes Commission does not intend to report its findings until late 2002, and the negotiations for a new Common Standard are on-going, any decisions by authorities for additional new water projects would be imprudent, even if the current water budget of the Lakes is blessed as manageable by the IJC.⁸ Moreover, the GLC’s project will lack any creditability with the public unless invited to participate and to test the design of refined water management tools including triggers and use to resource ratios. We call for a moratorium on new water projects until institutional mechanisms and water management tools are agreed to ensure sustainability.

A.2.a.i. Sustainable Water Management

The GLC project promises to consider how ecological impacts “might be accommodated” in water removal, withdrawal and use decision-making. But will this emphasis reach the end-state of sustainable water management? Sustainability in this context is best understood as human beings living on the natural “interest” of the resource and not unduly drawing down the natural capital. In other words, sustainability requires that human activity not destroy the regenerative capacity of natural capital or irreversibly stress atmospheric, hydrological or terrestrial ecosystems with waste and pollution.⁹ The water ethic environmental groups seek is this: We must live within the capacity of the waters naturally available within the watersheds where we live.¹⁰

Rather than exploiting a resource to its limit, the ecological focus is on reducing throughput levels – flows of water, materials and energy into and wastes out of production and consumption activities – towards levels that are within the renewable resource flows and assimilative capacities of ecosystems. Throughput levels are driven by growing economies, trade and consumption patterns, population growth, technologies and other factors that need to be kept within the carry capacity of our environment. To maintain Great Lakes use - the water level and intensity of human activity - within its regenerative level of capacity is the main challenge before us.

A.2.a.ii. The Renewability Factor

In four successive cold periods of the Pleistocene, ending 10,000 to 15,000 years ago, vast masses of ice moved across Ontario scraping off much of the unconsolidated material and breaking off pieces of the bedrock itself. These ice sheets then rode over the top of the debris, further crushing and moulding the entrained fragments, creating the Great Lakes. It is reported that only 2.7 percent of the earth’s water is freshwater, with Canada holding about 20 percent of it. But this 20 percent is mostly “fossil” water, e.g. melted water from the glaciers retained in lakes, underground aquifers, permanent ice and glaciers.¹¹ This water is a one-time gift, once removed it is gone forever.

It is considered more accurate by Environment Canada to say Canada has 9% of the world's renewable supply of fresh water where renewable is understood to mean renewed by the hydrological cycle, i.e. the average renewed annually by precipitation, surface water runoff, and inflow, which replaces the water taken and which flows out and evaporates.¹² More than half of this water drains northward into the Arctic Ocean and Hudson Bay. As a result, it is unavailable to the 90% of the Canadian population who live within 300 kilometres of the country's southern border. That means the remaining supply, while still abundant, is heavily used and often overly stressed.

Yet Environment Canada considers water to be an "inexhaustible resource" because "the total supply of water in the biosphere is not affected by human activities...water is not destroyed by human uses, although it may be held for a time in combination with other chemicals. To be useful, however, water must be in a particular place and of a certain quality, and so it must be regarded as a renewable, and often scarce, resource, with cycling times that depend on its location and use" (emphasis added).¹³

But freshwater is not an inexhaustible resource when it is not returned to its original watershed and not returned to its original or indeed, an improved quality. We know that lake levels and thus the amount that is renewed are influenced by the combined factors of: precipitation (the primary source of natural water supply to the Great Lakes), upstream inflows, groundwater, surface water runoff, evaporation, diversions into and out of the system, consumptive use, dredging, and water level regulation Human activity that creates out-of-basin diversions or other removals and consumptive uses reduce water levels and flows in the system.¹⁴ For example, the dredging of the St. Clair and Detroit rivers resulted in the waters of Lake Michigan and Huron to drop 40 centimetres or sixteen inches.

The IJC, however, maintains that the waters of the Great Lakes are, for the most part, a non-renewable resource.¹⁵ They are composed of numerous aquifers (groundwater) that have filled with water over the centuries, waters that flow in the tributaries of the Great Lakes, and waters that fill the lakes themselves. Although the total volume in the lakes is vast, the IJC restates that on average less than one percent of the waters of the Great Lakes —approximately 613 billion litres per day (162 billion US gallons per day) is reported to be renewed annually by precipitation, surface water runoff, and inflow from groundwater sources.

The one percent renewable value is derived by dividing the average annual outflow from the Great Lakes (i.e. the outflow at Cornwall) into the total volume of water in the Great Lakes. As revealed below, based on the Canadian Centre for Climate Modelling and Analysis¹⁶, by 2030 the renewable portion will decline to 4/5 percent, and by 2050 it will further decline to 3/4 percent. Thus if water is a renewable resource, it is only to the extent that the base water levels, the natural capital, remain constant in that region. Any reduction in the base means a reduction in the amount of renewed water resources, the interest, to the point of not being renewed at all! The healthy functioning of the Great lakes freshwater ecosystems depend upon the quantities of water levels in them, within natural fluctuations, remaining undisturbed. When water is removed from the Lakes, it draws down the natural capital, represents an externalized cost at the expense of the environment and thus reduces opportunities for sustainable water development in the region.

Whether this resource is renewable or not is relevant to the strength of the environmental case to be made in anticipated trade and investment disputes regarding bulk water export bans and other measures.¹⁷ This question is also relevant to environmental aspects of North American Electricity Restructuring, the subject of an Article 13 CEC Secretariate Report. This fact finding should address a current trade irritant/dispute about whether Canadian hydroelectricity power should qualify for certain US renewable energy requirements and programs in place to ensure environmental improvement. Because hydropower production is proportional to the amount of water available to be pumped through the system, how can hydropower be considered a renewable energy source when the fuel resource it is based upon is in fact exhaustible?¹⁸ In addition, how can hydropower be considered a renewable energy resource when it can have such significantly negative environmental and social impacts?¹⁹

In principle a renewable resource should be one that is replenishable and is in fact replenished. Conversely, a resource is not renewable if it is not replenished. Removals from the Great Lakes basin reduce the capacity of the Lakes to replenish themselves, contrary to notions of sustainability.

But at best, the numbers on water availability in the Great Lakes, and their rejuvenative capacity are uncertain, and inconclusive for decision-making purposes and at most misleading. If reliance by authorities in water policy and project approvals is placed on maintaining an annual freshwater renewability factor of one percent then this assumption is dangerously misplaced given increasing consumptive use, removals and climate change impacts on the Great Lakes, unquestionably an exhaustible resource.

A.2.a.iii. Climate Change

As we have seen, climatic conditions control precipitation (and thus groundwater recharge), runoff, and direct supply to the lakes, as well as the rate of evaporation. These are the primary driving factors in determining water levels. The IJC acknowledged that the rate of increase in concentrations of greenhouse gases in the atmosphere is related to human activity²⁰, and, at a minimum, a doubling of carbon dioxide concentrations in the atmosphere will occur in the 21st century, with a corresponding increase in the average global temperature of 1–4 degrees C.²¹ While finding growing evidence that the changing composition of the atmosphere is beginning to influence specific components of the hydrologic cycle, the IJC was not able to differentiate such effects from the natural variability of Great Lakes levels. Because of the vast water surface area, water levels of the Great Lakes remain remarkably steady, with a normal fluctuation ranging from 30 to 60 cm (12-24 in.) in a single year.

There is no doubt that the water levels of the Great Lakes fluctuate. But during the 12-month drought period from April 1998 to May 1999, the volume of water in the Great Lakes decreased by about 120 cubic kilometres. This is equivalent to close to two years of flow over the Niagara Falls, or 42 additional Chicago Diversions.²² The IJC did recognize how quickly/non-linear water levels can change in response to climatic conditions when it recalled that during this drought, the water levels of Lakes Michigan-Huron dropped 57 cm (22 in.).

Early impact assessments, based on equilibrium 2 x CO₂ scenarios, suggest global warming will result in a lowering of water supplies and lake levels and in a reduction of outflows from the Basin. Based on projections using several state-of-the-art models²³, experts from the U.S. National Oceanic and Atmospheric Administration (NOAA) and Environment Canada believe that global warming could result in a lowering of lake level regimes by up to 70 centimetres or 2.2 feet or more by 2030, a development that would cause severe economic, environmental, and social impacts throughout the Great Lakes region. Identified impacts include: losses in hydroelectricity power generation²⁴, reduced shipping, increased dredging, flood damage, infrastructure declines (e.g. docking facilities, shoreline properties) and human health.²⁵ Existing regulation plans for the Great Lakes are not designed for expected climate change scenarios with low net basin supplies and connecting channel flows, with declines in lakes levels of 70 cm to 2.2m and annual runoff and in stream flows decreases of up to 50 percent.²⁶

The decrease in lake levels will vary with location. For example, the most recent studies suggest a decrease in Lake Michigan water levels by 0.72 metres in 2030 (only 30 years away!), and by 1.01 metres by 2050.²⁷ By 2030 Lake Ontario levels decline by up to 1.30 metres, a dramatic decrease in water availability. By 2030 water levels in the freshwater portion of the St. Lawrence river may decrease by a meter (3.3 feet), a 23 percent reduction in mean flow.²⁸ It was recognized by the IJC that the reductions of freshwater discharges into the St. Lawrence estuary, the gulf and beyond, would also affect the Atlantic ecosystem. For example, reduced lake level outflows could lead to saltwater encroachment from the Atlantic Ocean up to and through the St. Lawrence river. This could have dramatic impacts on the freshwater ecology as well as contaminating the drinking supplies for Montreal and surrounding communities in Quebec.²⁹ A decrease in water quality is expected because of the resurfacing and dredging of buried contaminated sediments, with less water available for dilution of toxic substances.

Surely climate change seniors of such large magnitude and sheer common sense indicates that anticipated climate change impacts are beyond historic periods of normal variability in Great Lakes levels.³⁰ The IJC did questioned whether, in the long term, increases in evaporation due to global warming will significantly offset expected increases in precipitation, thereby reducing net water supplies.³¹ And it did recognized that the timing and regional climate change patterns of precipitation and run off could have “a dramatic effect on water levels and outflows” and recommended “considerable caution with respect to factors potentially reducing water levels and outflows”. At a minimum, the IJC agreed that cost-effective measures should be taken that would modify human activities that contribute to climate change and other unsustainable environmental impacts on resources” (emphasis added).

Since the IJC Final Report, a new US report: Climate Change Impacts on Great Lakes Basin Water Resources³² concludes:

- Up to 1.38 meter (4.5 feet!) drop in lake levels by 2090 — so big that it is outside the 150-year historical fluctuation of the lakes (2m, i.e.1m above and below the mean). Two models were used throughout the paper, the Canadian CGCM and the Hadley HadCM2.
- “Dramatic declines in water levels and flows by 2030, according to CGCM1” — rather than the later years, 2050 and 2090, of previous studies.
- “Drastic reductions in ice cover” under both CGCM1 and HadCM2. Under CGCM1 Lake Erie would go to 96% of winters completely ice-free by 2090.
- “Some concern is warranted for the water supplies derived from aquifers in the Great Lakes basin”.
- “Water resource strategies/policies should be developed which are robust enough to cope with either the high or low water supplies projected for the future by the two models.”

Indeed current evidence suggests that it will be the extremes of climate change events that could be the most crippling to the region. Indeed as early as 2030, current climate change scenarios point to tremendous impacts on the levels and flows throughout the basin which are not taken into account in regional water policy or project approvals.³³

B. Water Use: Consumption, Withdrawals and Removals

Turning from water levels to uses, it is important to define the terms adopted by the IJC. A water withdrawal is considered a water taking from either surface or groundwater for uses such as municipal, industrial and electricity generation that is returned to the basin, while often not in the same quality or at the temperature. Consumptive use is that portion of water withdrawn which is evaporated, transpired from plants, incorporated into products or otherwise lost, and thus is not available for further use in the basin. For example, water taken from the basin in bottles, beverages and slurries are consumptive uses, representing a loss to the Great Lakes. Removals, on the other hand, are considered to be bulk quantities of water conveyed outside its basin by any means, including diversions, tanker ships or trucks that carry water out in large volumes.

Importantly the IJC, nor the government of the province of Ontario, consider water “incorporated into products or otherwise bottled for retail sale” to be a removal, despite the cumulative impacts and the fact that water leaves the basin, lowering levels and flows in the system. This failure to count consumptive use as a removal is a legal fiction that hides the water intensity of economic sectors that incorporate water into products and production processes, including industry and agriculture. This fiction reinforces and indeed facilitates unsustainable water use, environmental degradation, trade and investment. But we cannot reach a 21st century concept of sustainable water management with a 19th century concept of abundant supplies for the taking of Great Lakes water.

B.1. Current Use Data Unreliable

The Commission determined that 1993 consumption data would be the basis for its final report. The average consumption rate of basin withdrawals, considering all types of uses, was said to be approximately 5 percent. The 1993 data shows:

By country: Canada, 33 percent, and the United States, 67 percent, with per capita consumptive use being approximately equal. • By jurisdiction: Ontario, 27 percent; Michigan, 21 percent; Wisconsin, 20 percent; Indiana, 7 percent; New York, Quebec and Ohio, 6 percent each; Illinois, 4 percent; Minnesota, 2 percent; Pennsylvania, 1 percent. • By type of water use: irrigation, 29 percent; public water supply 28 percent; industrial use 24 percent; fossil fuel thermoelectric and nuclear uses, 6 percent each; self-supplied domestic use 4 percent; and livestock watering, 3 percent.

The percentage of withdrawn water that is consumed within the Great Lakes system varies with the type of use to which the water is put. When water is used for irrigation, over 70 percent is consumed. This percentage increased to 94% for US by 1995. ³⁴At the other extreme, when water is used for thermoelectric power, less than 1 percent is consumed. This conclusion ignores, *inter alia*, increased temperatures of returned waters, causing evaporation and thus water to leave the system.³⁵ The percentage of water lost to the Basin when it is used for public supply and for industrial purposes—other large water-using categories—is said to be of the order of 10 percent for each. Ontario, Wisconsin and Michigan took over 70% of the water consumed in the Great lakes basin. More recent information for Lake Ontario in particular, shows mean outflow for 1918-98 as 6980 CMS with consumption at about 1.7% of outflow, and annual consumption equivalent to about 0.01%-0.02% of total volume of Great Lakes.³⁶ By 1996 agricultural uses in Ontario accounted for 32 percent of total water consumption in the province.³⁷

The IJC advised that future water demand projections identified a possible increase of 20% overall consumption in all sectors over the next 20 years based on current trends.³⁸ Interestingly, the IJC found that industrial and commercial use had declined given a change in industrial mix from heavy industry to other sectors. The US Environmental Protection Agency found, however, that US manufacturing companies used about four percent more water in 1995 than in 1990.³⁹ Canadian industry, on the other hand, remains both water intensive and water dependent. Indeed these industries significantly contribute to the fact that Canadian per capita water use is among the highest in the world.⁴⁰ Whereas heavy industry may have moved south, resource based industries did not have the option to relocate and instead focused on removing regulatory barriers, downsizing their workforces and privatization schemes.⁴¹

It can now be observed that at best the average consumption rate of the Great Lakes basin withdrawals, considering all types of uses, is approximately 5 percent, that does not include groundwater consumption. ⁴² The IJC found consumptive use in the Great Lakes Basin was estimated to be 121 cms (4,270 cf.) as compared to a withdrawal of about 2,493 CMS (88,060 cf.). ⁴³ It was estimated that existing consumptive uses have lowered the levels of the Great Lakes from less than 1 cm (0.4 in.) to 6 cm (2.4 in.). The trend is towards increasing consumptive uses. In 1992, for example, consumptive use in the Great Lakes increased by 37% from the year before.⁴⁴ As soon as the Great Lakes Commission reports its finding from the new Inventory Project, described above, the trends related to consumption should become more evident. The 1993 data, that pre-dates NAFTA, is available to serve a baseline for further analysis.

It is also important to emphasise that if only 1 percent is renewable from an ever-declining base, immediate conservation and the prohibition of unsustainable consumptive use is required.

B.2. Removals

The IJC frames public concerns that the potential movement of freshwater in bulk beyond the Great Lakes Basin will be by ocean tankers alone, rather than the broader concern with the removal of water by any means, including by consumptive use. Given the narrow scope of inquiry, the IJC was able to report that: “To date, no contracts are in place, and no regular trade has begun to ship water in bulk from the Great Lakes Basin or from North America as a whole”⁴⁵. The IJC did find that entrepreneurs have actively pursued foreign markets and have sought approval to export from jurisdictions on both the west and east coasts. When the IJC’s Interim Report was written, Alaska, Newfoundland, and Quebec were considering proposals to export freshwater in bulk by ocean tankers, although both Newfoundland and Quebec since moved to prohibit such exports subject to certain exceptions.⁴⁶ The IJC concluded that the cost of export shipments makes it unlikely that there will be serious efforts to take Great Lakes water to foreign markets. At most the IJC believes that companies in these jurisdictions have captured only small markets for small-scale bottled water removal, finding that the basin imports more bottled water than it exports.⁴⁷ Trade in other types of beverages is believed to be of a similar order of magnitude.⁴⁸

Considering the alleged small magnitude of trade in bottled water and other beverages, it appeared to the IJC both impractical and unnecessary to treat bottled water and other beverages any differently than any other products that either include water or use water in their production processes. This conclusion about the limited scale of these removals of water is understandable given the legal fiction that water incorporated into products is not “consumed”, even if the water is no longer available for use in the basin. Given the uncertain data on current and future water availability and use, together with climate change impacts, the IJC is exposed to criticism for ignoring consumptive use impacts to the water when bottled or contained, and when incorporated in a production process such as in slurries, and then taken from the basin. In addition the IJC largely ignored the ease of removal of basin water by truck and by rail, presumably the least cost approach to water trade.

Finally, the IJC dismissed public anxiety over renewed interest in major diversions out of the basin especially to the south-western US states – by canal, pipeline, channel – as not being “economically, environmentally or socially feasible in the foreseeable future”. The mega-projects era was declared over, barring significant climate change, technology and other factors. It is commendable that the IJC recognized the environmental costs of big projects are enormous. The suggested course was to price water at its “true value”, making it more cost effective to increase the available supply of water by using existing supplies more efficiently as they are allocated among basin interests. Conservation techniques were identified to reduce use by 50 percent⁴⁹ and water rights markets in the west coast of the US were said to shift available water from agricultural to urban uses.⁵⁰ We take up the issues of water pricing below.

The IJC found, however, that neighbouring communities in Ohio, Indiana and Wisconsin may look to the Great Lakes for water supplies in the future. Such diversions, the IJC acknowledged, would require the approval of the Great Lakes governors under the Water Resources Development Act of 1986 (WRDA), and would fall within the provisions of the Great Lakes Charter.

B.2.a. Cumulative Impacts and the Precautionary Approach

There are interactions among various water uses, bringing about cumulative impacts. The IJC acknowledged that even modest changes induced by individual, discrete actions have incremental and other cumulative impacts on both a localized and system-wide basis. These implications become more pronounced as one proceeds downstream through the Great Lakes–St. Lawrence system; Lake Ontario is the lowest of the Lakes.

The IJC conceded, however, how difficult it is to quantify with any degree of precision the ecological impacts of most water withdrawals, consumptive uses, and removals⁵¹. In particular, impact assessment data is lacking with

respect to fisheries productivity and composition, the extent and range of coastal wetlands, near-shore water quality, habitat and the degree of slope lakeward of the habitat, and biodiversity. But we know, for example, that healthy wetlands are critical to the recharge fresh groundwater supplies. We also know that over one fifth of Canada's 71,000 species live in fresh water, where most endangered and threatened freshwater fishes and molluscs occur in southern Ontario and British Columbia.⁵²

Nevertheless the IJC urged "great caution" regarding likely demand factors such as future consumptive use, small-scale removals of water, and climate change. Despite the uncertainty, present indications are that all three factors are likely to place downward pressures on water levels, with reinforcing and cumulative impacts. In the end the IJC adopted the precautionary approach that dictates removals should not be authorised unless it can be shown, with confidence, that they will not adversely affect the integrity of the Great Lakes Basin ecosystem.⁵³ At this time, removal from the Basin of water in containers of 20 litres or less should not be considered, *prima facie*, to endanger the integrity of the ecosystem of the Great Lakes. However, the IJC urged caution should be taken to properly assess the possible significant local impacts of removals in containers. Removal of water for short-term humanitarian purposes, according to the IJC, should be exempt from the above restriction. No recommendation was made to better account for and where necessary limit production processes that incorporate water into products that leave the region, as facilitated by trade and investment agreements.

But the problem with relying on how much impact a community can tolerate by the withdrawal of water is that it assumes a linear relation between levels, flow and impact. Such a model implies a threshold effect, whereby there is some safe level of water to remove whereby the ecology is essentially unimpacted. There is no good evidence to support this approach. Rather no matter how much water is removed from a system, the ecology will be impacted to some degree. If the goal of Great Lakes management as proclaimed by the IJC and the Great Lakes governors and premiers is to protect the integrity of the Great Lakes system, then a basin-wide water budget or "use to resource ratio" for water project approval should use/take no more water than can be renewed, taking into account the best estimates of impacts, including climate change, to the waters both at the local watershed level as well as system-wide.

Our research indicates that we cannot assume that any additional large scale or multiple small-scale consumptive uses and removals will not threaten the ecosystem integrity of the basin. The current numbers just do not add up to a sustainable water management regime. The total annual withdrawal and consumption of Great Lakes basin waters, based on 1993 levels, that does not reflect NAFTA related economic growth⁵⁴, and does not account for climate change to current lake levels and river flows. Even assuming the 1 percent annual renewability number is correct, there is no foundation for ignoring the scale effects of growing consumptive uses in and removal of the waters from the region.

B.2.b. Amending the Great Lakes Charter Campaign

The premiers and governors of the Great Lakes provinces and states are nearing agreement on changing basin water management so that water use proposals are judged by their effects on the ecosystem. The hope is to provide a better basis than current law for defeating proposals to export or divert bulk water out of the Great Lakes basin. Current state and provincial water use laws are designed to prevent harm to other users of water, with little consideration given to the effects of water use projects on the ecosystem, plant or animal life. In some jurisdictions this purpose is not even enforced through government permitting, but by "common law" - non-statutory general principles enforced in the courts. This regional provincial and state effort would change all that.

The IJC recommended, without prejudice to the authority of the federal governments of the United States and Canada, the Great Lakes States and Ontario and Quebec, in carrying out their responsibilities under the Great Lakes Charter, should develop, within 24 months, with full public involvement and in an open process, the standards and

the procedures that would be used to make decisions concerning removals or major new or increased consumptive uses.⁵⁵ The IJC suggested that federal, state, and provincial governments should not approve or permit any new removals and should exercise caution with respect to major new or increased consumptive use until such standards have been promulgated or until 24 months have passed, whichever comes first.

A draft of the proposal so-called “Annex 2000” released by Governor John Engler of Michigan lays out the basic guidelines that would be used for assessing proposed new or increased “withdrawals” of water from anywhere in the basin water system: “The aforementioned agreement(s) will include a standard that no State or Province will allow a new or increased withdrawal of the Waters of the Great Lakes Basin unless the applicant for the withdrawal establishes that its proposal, together with any existing use being increased: A. Results in an improvement to the Waters and Water-Dependent Natural Resources of the Great Lakes Basin; and B. Does not, individually or cumulatively, cause significant adverse impact to the quantity or quality; and C. Includes implementation of all reasonable and appropriate water conservation measures; and D. Complies with all applicable laws.

The new system is being proposed as an amendment to the Great Lakes Charter, a 1985 nonbinding document signed by the states and provinces that, among other things, provides for consultations among the jurisdictions on proposals to divert more than 5 million gallons of water a day out of the Great Lakes basin. Among other important provisions, the governors and premiers’ proposal would make the new elements of the charter binding and formally include the public in future water-related decision-making. The intention is to protect the basin from the full range of insults to the region’s water-system-dependent ecology, including future export and diversion proposals that are sure to increase in number and seriousness as the continent gets drier in coming decades:⁵⁶

While the effort is welcomed by environmental groups because the proposal would require *both* no significant damage *and* improvement in order to obtain a water use permit., there are still many weakness.⁵⁷ The Michigan proposal contains significant omissions, most significantly in failing to call for an overall plan for conserving Great Lakes waters and restoring damage already done to the Great Lakes water system. ⁵⁸Without such a plan, any future improvements under the state’s proposal will be haphazard and potentially result in no overall benefit to the system contrary to for example the expectations created under the 1992 Biodiversity Convention or recent improvements to international agreements on transboundary waters. This could keep the region vulnerable to trade challenges claiming that basin water protection measures are really disguised barriers to trade. Basin residents will know our waters are protected from harmful forces both inside and outside the region only when the Great Lakes states and provinces create a ‘master plan’ for protecting the lakes, reducing water use and restoring past damage to the natural water system.

The definition of the term “improvement” in Michigan’s proposal is too broad, implicitly including virtually any form of positive environmental action, not necessarily water-related. The water conservation provisions of Michigan’s proposal are weak. The states and provinces should require maximum achievable water conservation measures before new or increased uses are approved. Indeed, strong conservation measures are the cornerstone of both effective environmental protection of the Great Lakes and international credibility that we are truly attempting to protect the lakes for their own sake, rather than for the benefit of local economic interests.

The scope of human water-related actions affected by state and provincial scrutiny should go beyond mere water “withdrawals” (that is, taking water out of lakes, rivers, or the ground) to include the full range of human actions that damage the basin water system and the living things that depend on it. For example, simply slowing down a river’s flow can make it impossible for certain fish to reproduce in the river. Public involvement must be broadened to include both creation of the initial state and provincial agreement as well as design of the individual provincial and state policies following up on that agreement.⁵⁹

Public involvement should also include local governments, because they must eventually play a lead role in the implementation of most water protection measures. The Great Lakes basin should be defined to include the St. Lawrence River. Being the farthest downstream, the province of Québec is the jurisdiction most vulnerable to abuses of the Great Lakes water system; it needs to be centrally involved in protecting it. The Great Lakes Charter and any new binding agreements for managing the basin's water uses should include the basin's First Nations and tribes, who have sovereign rights to basin waters and a long history of concern for environmental protection. If improved, the proposal governors and premiers are now considering could potentially be the most sweeping change in regional environmental law in a generation.

It is absolutely advisable to ensure that "Annex 2000" - a new Common Standard on water use - be improved and implemented into the domestic law of all applicable jurisdictions. Recall that the CEC was unable to find that the Great Lakes Water Quality Agreement was "environmental law" for the purposes of a public submission on enforcement matters under Article 14 of the North American Environmental Cooperation Agreement. It found that those international obligations had not been imported into domestic law by way of statute or regulation pursuant to a statute.⁶⁰ Given the absence of opportunities for the public to make submission to the IJC about the lack of enforcement of Great Lakes agreements, and the fact that NAFTA facilitates trade and investment in water-related activities, it would be appropriate for the CEC to be the lead North American agency to monitor the enforcement of the new Common Standard by basin jurisdictions. This recommendation is not intended to preclude direct public interest actions to ensure enforcement in local jurisdictions. Early press reports indicate that the governments of Ontario and Quebec are not currently on board with the Annex 2000 proposal as currently designed. It should also be noted, unlike Quebec, the government of Ontario has yet seen fit to undertake the trade and environmental related obligations associated with the NAAEC, despite its enthusiastic support of the NAFTA.

B.3. Trade Proofing a New Common Standard on Water Use and Bulk Water Export Bans

Before undertaking this analysis, it is important to note that the new Common Standard on Great Lakes protection needs to be assessed not only for trade-related challenges/impacts but also whether it complies with the spirit of other binding international agreements and customary international law, such as the Biodiversity Convention, ratified by over 170 nations, the Law of the Seas Convention, Ramsar, as well as agreements relating to world culture, natural heritage and international human rights law and practice. We take up the emerging right to water shortly.

Having said that, it is true that the status of water under the terms of North American Free Trade Agreement are at best ambiguous. Water is included in the definition of a "good" under the General Agreement on Tariffs and Trade⁶¹, which in turn has been incorporated into the North American Free Trade Agreement.⁶² But it is not clear at what point on the continuum from natural state through human economic process that water becomes a good. The NAFTA signatories issued a joint statement addressing the issue, but the status of the statement as an enforceable part of NAFTA is a matter of debate. Despite calls to at least amend the NAFTA to further clarify the ambiguities, disputes around water trade already exist.

Clearly the most straightforward approach to ensuring that protection of water and/or any other common property resources is not eroded by trade agreements is to re-negotiate or remove Canada from them. NAFTA's existence does nothing to help protect water, but it can undermine our ability to protect both the quantity and quality of Canada's water.⁶³

The Canadian government considers water in its natural state not a good and therefore not subject to Canada's trade obligations.⁶⁴ Accordingly it has proposed a limited form of ban on the export of water from Canada's main watersheds. Two credible nongovernmental analyses of trade and water from a policy perspective both disagree with the government

of Canada, but in different ways. A group of lawyers contracted by the Great Lakes Protection Fund submitted an opinion to the Council of Great Lakes Governors that NAFTA does not apply to international trade in water due to the joint statement issued by the signatories excluding water in its natural state from the purview of the agreement; but concluded that the General Agreement on Tariffs and Trade substantially limits the ability of basin and federal governments to unilaterally limit trade in water of the Great Lakes Basin.⁶⁵

The West Coast Environmental Law Association concurs, but considers NAFTA a more powerful restriction on such government action due to its investment and services sections; the Association considers the joint statement by the NAFTA signatories on water unlikely to be legally enforceable and, in addition to recommending clear Canadian federal legislation to ban water exports, suggests the NAFTA be amended to clearly carve out water from its scope.

Ambiguities about water in trade agreements have concerned citizens and nongovernmental organizations in the Great Lakes and St. Lawrence River basin because they have struggled since the early 1980s to prevent large alterations to basin water systems, such as dams, large takings, erosion control projects, flow control structures, and diversions of water from the basin. Ambiguities about water in trade agreements threatened to make diversions, in the form of tanker, pipeline, bulk export, and multiple small scale removals and consumptive uses impossible to prevent. As a result, they have called upon the NAFTA signatories to resolve the ambiguities surrounding trade in water. In addition work has begun on a proposal for non-discriminatory, ecosystem-based management of human water use in the Great Lakes and St. Lawrence River basin that could serve as a model for ecosystem conservation and protection in other North American regions. Given recent tribunal decisions under NAFTA Chapter 11's investor-state dispute mechanism, even non-discriminatory measures are open to challenge.

In this section we outline parts of a strategy to trade proof a new Great Lakes common standard on protecting the Great Lakes, especially respecting bulk water removal and exports. Importantly this common standard could form the basis of a new Canada-US bilateral environmental or conservation agreement to be listed in Annex 104.1 NAFTA that could override inconsistent NAFTA obligations, including those related to investment and services, without requiring the direct amendment of NAFTA. Like the Montreal Protocol and its presumed coverage by the general exception in the GATT Article XX, this new regional environmental agreement could make distinctions between parties and non-parties, and parties (together with those sub-national jurisdictions or enterprises subject to the agreement) found to be out of compliance with it.⁶⁶

The IJC concluded it is unlikely that water in its natural state (e.g., in a lake, river, or aquifer) is included within the scope of any of trade agreements since it is not a product or good. The IJC relied in great part on the fact that the NAFTA parties issued a statement to this effect⁶⁷. Following the signing of NAFTA, the three parties issued a joint declaration that NAFTA creates no rights to the natural water resources of any party; that unless water, in any form, has entered into commerce and has become a good or product, it is not covered by the provisions of any trade agreement, including NAFTA. The IJC maintained that international rights and obligations respecting water in its natural state are contained in separate treaties, such as the Boundary Waters Treaty, negotiated for that purpose. This position appears to consider the Boundary Waters Treaty, and perhaps the new common standard, an environmental agreement appropriate for listing under NAFTA Article 104.

B.3.a. WTO/GATT/GATS

The key GATT provision with significance for water exports is the prohibition of quantitative restrictions in Article XI⁶⁸. The GATT, however, creates a number of exceptions. Of these, the most relevant to trade in water would appear to be those in Article XX related to measures "necessary to protect human, animal, or plant life or health" (Article XX (b) the "health exception") or "relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption" (Article XX

(g) the “conservation exception”). The IJC concedes that there may be a question as to whether water is an exhaustible natural resource, although this raises less of a problem in the case of a discrete ecosystem such as the Great Lakes Basin, where only a small part of the resource is replenished annually. Both exceptions are qualified by a requirement that they “[not] be applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade.”

Although dispute-settlement panels considering these GATT exceptions have affirmed, in principle, that trade interests may have to give way to legitimate environmental concerns, it is also true that the same panels have questioned very closely whether measures nominally taken for environmental reasons have underlying protectionist elements. Many public submissions to the IJC in this reference noted that to date, in all the cases before the WTO involving issues of protecting environmental or natural resource interests, the WTO had ruled against those interests.

Since the IJC’s reference, and after Seattle, the WTO ruled that the French ban on Canadian asbestos could be upheld on public health grounds under Article XX(b).⁶⁹ This is the first time any public health measure has survived the GATT and should be acknowledged as such.⁷⁰ But if this result represents the floor required before a general exception to trade obligations can succeed, there remains serious doubt that Article XX has developed adequately to ensure the observance of legitimate domestic objectives, including Great Lakes water protection. The WTO decision-making process remains non transparent.

Relying on the GATT/WTO general exceptions, the IJC concluded “Clearly the achievement of a coherent and consistent approach to water conservation and management in the Great Lakes Basin—an approach clearly grounded in environmental policy—would be an important step in addressing any trade-related concerns with respect to the use of Basin waters”. Indeed this recommendation has been taken up by the Great Lakes Governors and indeed environmental groups such as Great Lakes United to develop a Common Standard on water use and removals that is focused on the environmental aspects of conserving the resource in hope of coming within the GATT/NAFTA general exceptions.

In addition to this effort, the WTO Committee on Trade and Environment could consider whether the new Great Lakes Common Standard might be recognized as a regional environmental agreement for the purposes of its mandate around accommodating multilateral environmental agreements in general.

B.3.b. NAFTA Effects

The IJC agreed that NAFTA trade obligations with respect to goods, while rooted in the GATT, appear to constrain the availability of certain GATT exceptions—including the conservation exception—in some important ways⁷¹, in effect making it more difficult to “turn off the tap” once trade in water has been established. According to the IJC, these constraints do not apply to the health exception, and the NAFTA wording of that exception specifically provides that it is understood by the parties to include environmental measures. The IJC was able to reach this conclusion, however, by the narrow scope of its inquiry – to water as a good, and not to water as a service and as an investment.

The IJC recognized that in the United States, the Dormant Commerce Clause Doctrine could be a constitutional restraint on state efforts, as opposed to federal efforts, to protect the resources of the Great Lakes.⁷² However, it need not prevent genuine, well-supported cooperative management and conservation and co-operation among the Great Lakes states and provinces. According to the IJC, and submissions received by the two federal governments, “the potential restraint is reduced considerably if the states can agree on common standards for the use and protection of Great Lakes waters and can co-ordinate their water-management programs with federal and binational efforts.” This is the current challenge and opportunity to protect the Lakes.

The Commission conceded, however, that when water is “captured” and enters into commerce, it may attract obligations under the WTO/GATT, the FTA, and the NAFTA. Indeed the NAFTA and WTO agreements contain provisions prohibiting export restrictions and discrimination between nationals and foreigners who are entitled to national treatment under those treaties. According to the IJC, sales of water that are allowed could not be restricted to the domestic market unless they fit within the health and conservation exceptions referred to above. The conclusions of the IJC are limited, however, to a review of trade obligations concerning water as a good. It did not develop the critique that free trade in services, including investment, both at the WTO and NAFTA facilitates out of jurisdiction service providers to engage in water-related services, including development, delivery and treatment on terms “no less favourable” than domestic service providers.⁷³

B.3.b.i. Investor Rights and Trade in Water

Even if water in its natural state might be considered as falling outside the definition of a good, there is no doubt that it could still be considered a NAFTA protected investment and a service. The IJC agreed that with respect to water diversions or sales that nationalize or expropriate an investment of a foreigner can lead to a claim under Chapter 11 of NAFTA. Indeed the Chapter gives extensive national treatment and minimum treatment rights to NAFTA investors. The investor-state dispute mechanism therein gives private investors of one country the right to commence proceedings against another country for injuries to the rights accorded private investors under the agreement. In all other cases, claims under the WTO agreements or the NAFTA must be brought by a government Party to the agreement

In fact there is a pending NAFTA Chapter 11 dispute between Sun Belt Inc. of California and the Canadian government for \$10.5 billion compensation for British Columbia’s decision to prevent Sun Belt from exporting billions of litres of fresh water from BC to California. The bulk water ban was imposed under the BC Water Protection Act, which restricts shipments of water to bottled water and water in tanker trucks.⁷⁴ Some speculate that the decision of the NAFTA tribunal will wait until after expected BC and Canadian federal elections.⁷⁵

NAFTA investment rights to national treatment ensure that once governments allow water to be used, withdrawn or removed from its natural state, as they have done on countless occasions for commercial, hydroelectric and various consumptive uses, the same rights of access to water must be accorded to NAFTA investors, provided that these investors are “in like circumstances” to domestic investors in water related trade, services and investment.⁷⁶ While it might be possible that a NAFTA investment tribunal in a dispute to conclude that an out of basin claimant is not “in like circumstances” either because of geography or because it is from a jurisdiction that has not implemented the new Great Lakes Common Standard, there is no assurance of such an outcome.

Indeed the recent Pope and Talbot tribunal decision under NAFTA’s investor-state dispute mechanism offered an assessment of the NAFTA provision on expropriation which is chilling by concluding that even non-discriminatory measures concerning the trade in goods, and having no direct bearing on foreign investment, could nevertheless be considered expropriation. The company claimed the way the Canadian government implemented the softwood lumber agreement was unfair and discriminated against the company because it is only applied in four provinces but not others. Under pressure from U.S. lumber producers, Canada agreed to limit its soft-wood exports to the United States in return for trade peace. The five-year agreement ends in 2001. The Agreement’s scheme of offering no export fee and reduced fee advantages for firms that stick within the quota was not considered by the Tribunal to be a prohibited performance requirement.⁷⁷ On the other hand, and despite the assurances by the Canadian government that regulatory powers in the public interest are beyond expropriation claims, the Tribunal took a very wide view of its jurisdiction. The Tribunal upheld its right to declare as a compensatable expropriation, even non-discriminatory regulatory measures that affect an investment.⁷⁸

The result of this case turned in great part because the company was still able to export some softwood lumber so that the regulatory interference’s with its investment were not seem as substantial enough to constitute an expropriation.

While managed trade agreements that merely restrict trade such as the Softwood Lumber Agreement might pass the investor's rights test, those that would prohibit trade altogether such as water and unprocessed fish export bans, may very well be found to significantly interfere with an investment.

It is also disturbing that in sorting out the details of expropriation and the meaning of the term "tantamount to expropriation" that the Tribunal relied heavily on US law sources and legal principles - "creeping expropriation" and the state's "police powers" that are not really part of the Canadian judicial lexicon with respect to expropriation.⁷⁹

B.3.b.ii. National Treatment, Non-Discrimination and Resource Protection

Contrary to the evidence otherwise, the IJC maintains that trade and investment agreements do not constrain or affect the sovereign right of a government to decide whether or not it will allow natural resources within its jurisdiction to be exploited and, if a natural resource is allowed to be exploited, the pace and manner of such exploitation. Moreover, even if there were sales or diversions of water from the Great Lakes Basin in the past, the IJC claims governments could still decide not to allow new and additional sales or diversions in the future. On the other hand the IJC did emphasise how important it was for a new Common Standard to protect the integrity of the Great Lakes Basin be based on decision-making about water development that does not discriminate against individuals from other countries in the application of those measures.

The national treatment and non-discrimination standards are the key disciplines in the goods, services and investment provisions of NAFTA. But do these standards serve environmental purposes very well? Should these standards be applied at all to all sectors of industry or resource development, or should some sectors be excluded from their application completely. In sustainability terms, this is a question that largely goes to the issue of scale, to promoting sustainable investments, and identifying areas where this is best done by allowing preferential access or rights to national or in the case of the Great Lakes, regional investors and service providers.⁸⁰ Indeed the right to exploit a resource is directly related to the duty to conserve it, which most often is achieved locally. If the 1993 Statement excluding water from NAFTA obligations is reliable, there are no national treatment obligations respecting water as a good, investment or service.

In the end, the IJC recommended that the governments in Canada and the United States avoid creating undue expectations by clearly articulating their water-management policies in a fully transparent manner, by acting in a manner that is entirely consistent with their stated policy, and by limiting the time for which authorisations are valid.⁸¹ Indeed the elements of the Great Lakes United proposal emphasise how important it is that true conservation and resource improvement be achieved of this undeniably exhaustible natural resource in order to avoid claims of discrimination and economic protectionism.⁸²

It is also advisable that the Great Lakes Common Standard should clearly assert the paramountcy of its provisions should conflicts arise with other international agreements including those concerning trade, investment and services.⁸³ This issue was a major dispute when negotiating the Biosafety Protocol to the Biodiversity Convention. In the end the parties agreed to language in the preamble clarifying the intent was not to subordinate the Protocol to other international agreements, an indirect reference to trade agreements. Like the Biosafety Protocol, the new Common Standard can create the agreed international standard for the use and quality of the waters, to be recognized as such by the harmonization requirements of the NAFTA and WTO agreements on Technical Barriers to Trade and Sanitary and Phytosanitary Standards.

B.3.b.iii. Listing Great Lakes Common Standard Under NAFTA Article 104

In addition to relying on the 1993 Statement, the general NAFTA and GATT/WTO environmental exceptions, and the hope that a investment tribunals will distinguish between in and out of basin water –related investors and service

providers, consideration should be given to listing a new Great Lakes common standard to protect the Great Lakes especially from bulk water removal and exports under NAFTA Article 104.⁸⁴ This agreement could be added by the federal governments of Canada and the US as an executive agreement to Annex 104.1 without actually amending the NAFTA itself. Such as listing could override inconsistent NAFTA obligations, including those related to national treatment and non-discrimination obligations concerning investment and services.

Article 104 provides express permission to employ trade restrictions to achieve international environmental goals pursuant to specific international conservation and environmental agreements. Where there is a conflict between the trade obligations in listed environmental agreements and those of the NAFTA, those environmental agreements prevail to the extent of the inconsistency. The anticipated inclusion of further bilateral and multilateral environmental agreements in Article 104, via Annex 104.1, implies that efforts to conclude such agreements between the NAFTA Parties are to precede, and indeed replace, any resort to unilateral trade actions.⁸⁵ In effect, Article 104 deems trade measures taken under the listed international environmental agreements to be measures relating to legitimate environmental objectives and deems them necessary.

Such a strategy would also facilitate the choice of forum for possible NAFTA state party disputes related to the common standard. As a general matter, NAFTA trade disputes may be resolved under either NAFTA or WTO auspices at the option of the complaining Party. An important exception exist, however, to this choice-of-forum option. Article 2005.3 provides that if the responding Party claims that its action is governed by the agreements listed in Article 104, and requests that the matter be resolved under NAFTA Chapter Twenty, the complaining Party thereafter can have recourse solely to the NAFTA dispute settlement procedures. We have already indicated a preference for the CEC to provide a public forum on matters of compliance with the domestic implementation of the new Common Standard.

Although the parties fully believe that article 104 preserves their ability to take actions that would otherwise be inconsistent under the NAFTA, environmentalists fear that article 104's "least inconsistent" language can be used to challenge such actions⁸⁶. Some argue that article 104 only protects the environmental agreement proper and not the domestic laws of the NAFTA parties implementing those agreements; the implementing laws of the parties are still required to be "least inconsistent with the other provisions of [the NAFTA]." Thus, while the terms of a listed environmental agreements may prevail, the law implementing the them may not.

Environmental groups have expressed concern that the requirement of unanimity to add additional environmental agreements 98 may also unnecessarily hinder the ability of the parties to list other environmental agreements. Although the requirement of unanimous consent raises serious concerns, the parties have succeeded in adding at least two bilateral treaties to this list⁸⁷. In the future, however, because NAFTA's accession clause does not require acceding parties to also accede to the agreements listed under article 104, as the number of NAFTA parties grows, the requirement of unanimity could prove increasingly troublesome. In the meantime, there is the danger that listing certain treaties leaves all unlisted treaties open to challenge without any additional protection.

Despite the limitations of article 104's protection for environmental agreements, the provision affirms the belief of three important nations within the world trade system that there are instances where trade restrictions are both necessary and proper to advance environmental goals. It is appropriate to test how solid this commitment is by demanding the listing of the new Common Standard under NAFTA Article 104.

B.3.b.iv. Legislative Response To NAFTA Stress

According to the IJC, legislation was introduced in the U.S. Congress in 1999 to impose a moratorium on the export of water from the U.S. portion of the Great Lakes and, from elsewhere in the United States pending the development

of agreed principles and procedures that would protect the water resources of the Great Lakes Basin. To date, there has not been final Congressional action on these legislative initiatives. Reliance is still placed on the Water Resources Development Act, 1986, providing federal veto power over any export, diversion or withdraw from the Lakes.

On November 22, 1999, the Canadian Minister of Foreign Affairs introduced proposed amendments to the International Boundary Waters Treaty Act (Bill 15) that, if enacted, will impose a prohibition on removals of boundary waters from their water basins, covering five very large basins. Moreover, the amendments will require persons to obtain a license from the Minister of Foreign Affairs for the use, obstruction, or diversion of boundary waters in a manner that in any way affects, or is likely to affect, the natural level or flow of boundary waters on the other side of the international boundary. This licensing requirement does not, however, apply to the ordinary use of waters for domestic or sanitary purposes or in cases for which exceptions have been established by regulations.

As part of the Canadian strategy, the Minister of the Environment seeks the endorsement by provinces and territories of a Canada-wide Accord prohibiting bulk water removals to ensure that all of Canada's "major watersheds" are protected. The Canadian Environmental Law Association generally agreed with the strategy that water in its natural state is not a good, and that the purpose of prohibiting bulk removals is to protect water basin integrity.⁸⁸ But in addition to including consumption reduction targets within the Accord, the definition of "basin" should be at the individual Great Lake or river watershed scale and include inland waters. Bill 15 has also been criticised for allowing the Minister of International Trade to issue water taking licenses, rather than the Minister of the Environment.⁸⁹

Besides the federal government's legislative powers, it also exercises certain proprietary rights that involve a water-management role. These rights include ownership of specified public works such as canals (and connected lands and water power), public harbours, lighthouses and piers, river and lake improvements, lands set apart for general public purposes, and national parks.

Although the federal government exercises jurisdiction over water management primarily through its legislative authority under the Constitution Act, provinces also derive important authority from their proprietary rights.⁹⁰ In Quebec, the Civil Code contains provisions concerning the use of water, including the rights of riparian owners. Moreover, Quebec's Environmental Quality Act, which is concerned primarily with contamination and withdrawals that have a significant effect on the environment, imposes constraints on the use of water. In November of 1999 the Quebec National Assembly assented to a Water Resources Preservation Act, put forward as an interim measure to prevent adverse effects on the environment from water transfers outside Quebec. The Act prohibits the transfer outside Quebec of surface or groundwater taken in Quebec except for (1) water to produce electric power, (2) water to be marketed for human consumption that is packaged in Quebec in containers of 25 litres or less, (3) water to supply potable water to establishments or dwellings situated "in a bordering zone," and (4) water to supply vehicles. Moreover, the government may lift the prohibition on the grounds of urgency, for humanitarian reasons, or for any other reason considered to be in the public interest.

B.4. NAFTA, Water Taking and Ontario Practice

The Ontario Water Resources Act (OWRA) prohibits the withdrawal of more than 50,000 litres (13,209 gal.) of water a day from a well or from surface waters without a permit. Ontario's recently issued a Water Taking and Transfer Regulation, which took effect on April 30, 1999, and among other things, prohibits the transfer of surface and groundwater out of the Great Lakes Basin and other major basins within the province, again subject to certain exceptions.⁹¹ The exceptions carve out the regulation of water taking when used to manufacture or produce a product, or ballast waters and packaged in containers of 20 litres or less.⁹²

All of these exceptions are potentially major water exports, that increase the consumptive use of waters taken from the region. It is apparent that the legal fiction employed by the IJC in denying that consumptive uses of water, including water incorporated into production processes or bottled in containers and traded in North American and world markets, is somehow not a removal from or a taking of waters out of the basin, also forms the basis for the Ontario scheme.

Despite claims to the contrary, including the signing of the Federal Provincial Water Accord in 1999, the Ontario government continues to issue water taking permits that could endanger the integrity of the Great Lakes ecosystem. In practice, water taking permits, even where there is a requirement to obtain them, are routinely issued with almost no public scrutiny of these decisions. The formulas adopted to determine minimum in-stream flow rates and “use to resource” ratios are totally inaccessible and untransparent. The process is unaccountable in any meaningful way to the public. Little efforts is made to keep track of the number and location of all of the permits. There is no permanent data base to track permits already granted. In practice the allocation of water is on a “first come-first served” basis that rarely considers the cumulative impacts of water takings in Ontario.⁹³

There have been many high profile disputes about water taking permits from groundwater supplies for removal by truck out of the country to commercial bottling operations in the US.⁹⁴ There is no good evidence that water taken in bottles, in trucks and in products is not increasing dramatically. Many of the companies involved are not listed in public securities records that could provide a better insight to their production process and exporting activities.

B.4.a. Water Taking Case Study: The Taking of the Tay River

On August 24, 2000 the Ontario Ministry of Environment issued a permit to take water despite overwhelming public objection and evidence of environmental harm to the local ecosystem.⁹⁵ Importantly the Ontario director deferred to Parks Canada, a federal agency with jurisdiction to control the water levels of the Rideau Canal, on the question whether the taking would cause significant environmental impacts to the Tay river or to the upstream watershed.

The Tay river is a small scenic river that flows into the Rideau river, into the Ottawa river and then out to the St. Lawrence river. It is part of the Great Lakes basin. OMYA (Canada) Inc, an American owned company mines calcium carbonate, a chalky white substance found in nearby limestone, mixes it/incorporates it with large amounts of water into a slurry, and then trucks the product to the US as a thickener in paper and paint manufacturing. For many years OMYA obtained water from groundwater sources but because of plans to substantially expand its facilities over the next decade it determined it needed more water for use in operations and in calcite slurry products. The company’s projected water needs (4,500 cubic metres per day by 2009) are as high as the entire Town of Perth, almost a million gallons a day, and located just downstream from the operation.

The Tay River Watershed Plan is a community-based group representing residents, cottagers, landowners, businesses, interest groups, government agencies and other stakeholders throughout the watershed, with responsibility to promote and protect the Tay river system. The watershed’s principle reservoir lake, Bob’s Lakes, was two feet below normal this spring, the outflow is at an all time low. There was and is wide-spread concern that OMYA’s taking of large amounts of water from the Tay river would negatively impact the whole watershed, including Perth’s water supplies, fish and wildlife habitats, groundwater recharge and adjacent wetlands.

The company based its proposal on an engineering report from the Glen Tay gauge; however, the gauge has not been used since 1927. Citizens filed submissions opposed to the granting of the permit until accurate and comprehensive flow data was assembled and a through environmental impact study on the Tay watershed was completed. Ignoring what appears to have been a reasonable request, the Ministry of Environment approved the permit.

Following consultations with Parks Canada, that controls the Rideau waterway, the Ministry of Environment determined that as long as the proposed water taking by OMAF did not cause the Tay flow rate to fall below 1 cubic metre per second, or 1.7 percent of the flow in the Tay river, the downstream uses and users of the water resources would be protected. If the rate should prove insufficient to maintain aquatic and downstream uses of the Tay, the permit conditions provided that the Ministry could amend the permit and reduce the taking. The responsibility to monitor and record Tay river flows and total daily water taking was given to the company, with data to be made available only to the government ministry and authorized agencies. The good people of Perth, together with many environmental and other public interest groups filed an appeal of the decision but are unlikely to be successful given the current track record of the Ontario Environmental Appeal Board.

A number of observations can be made. First, the rationale behind Parks Canada and the Ontario Ministry of Environment minimum instream flow rate at one cubic metre per second was never disclosed. It is just too much of a coincidence that the 1.7% use to resource ratio employed to approve the taking of the Tay flow is the same estimated consumption rate for Lake Ontario overall – said to be at 1.7 percent of Lake Ontario’s outflow . We have already describe how flawed the data is on current water availability, on the renewability factors and the failure of water policy and regulation to account for expected and dramatic climate change impacts to Great Lakes water resources, including the St. Lawrence system.

Secondly, the decision recognized that the data on Tay flow rates was dated. But instead of acting with caution and conducting an environmental impact assessment that might have revealed flow formula and other problems, the Ontario government approved the permit. Instead of requiring evidence that the taking will not cause harm, the taking is allowed until harm is established; effectively reversing the onus of proof from the company to the ill-equipped public.

Third, instead of equipping the public with the necessary tools to protect the watershed in which they live, the government denied them access to the information necessary in order to mount the case that the taking was causing harm. The already organized Tay River Watershed Plan was specifically excluded from reviewing the data the company is charged with providing. Given the recent history of the Ontario government’s failure to correct even flagrant situations where companies are out of compliance with permitting and licensing conditions⁹⁶, there is every reason to believe that OMYA will take as much water as it wants and the government will not stop it.

Fourth, while the decision did acknowledge the public’s concern regarding the removal and export of water from the Tay river, the decision indicated that the Water Transfers regulation under OWRA does not address the removal of water that is incorporated in a product such as a slurry, even if the water is exported to the US.

Fifth, the decision relied upon the ministry’s ability to amend the permit should it prove necessary without any consideration of possible NAFTA investor-state disputes that may arise should the government actually embark upon such a course of action. There was no appreciation of national treatment obligations that ensure once water is used or removed from its natural state, the same rights of access must be accorded to all other NAFTA investors and service providers in like circumstances. This failure is compounded by the fact rarely does the government consider the cumulative impacts of water takings in Ontario.

The Tay river situation speaks to a multitude of policy failures by the Ontario and federal governments, especially relating to poor water resource management, that provides short-term commercial benefits and export opportunities. Instead of NAFTA facilitating sustainable use of water resources, its rule-making, especially relating to national treatment, proportional sharing of resources, together with rigorous investment and service obligations, contributes to the environmental stress on Great Lakes resources. We recommend the adoption of a new common standard to

protect the Great Lakes, as improved by the suggestions of Great Lakes United, that features public access to information so that the community of the Tay watershed have the tools necessary to participate in their watershed management and monitor OMYA's takings of the Tay river. This recommendation would benefit countless watershed communities from across the province and the Great Lakes region.

The links between water stress and globalization was predicted. The Stockholm Environmental Institute in its Comprehensive Water Resource Assessment identified that one of the major drivers in throughput levels is economic globalization.⁹⁷ Water intensity (water/GDP) is said to be a function of structural changes in the economy and technological improvements in the efficiency in end-use water uses. Structural changes affect average water intensity as the composition of the economy changes among sectors which have very different water intensities (e.g. from manufacturing to services).

Finally, we ask the question whether the trade rules and patterns of NAFTA have shaped the water intensity of economic activity in the Great Lakes –St Lawrence river basin.⁹⁸ In the Province of Ontario, we see a rise of water intensive activity that both exports water out of the basin (withdrawals for bottling,⁹⁹ incorporation into products for slurries) and pollutes the water within (intensive livestock operations and hazardous waste treatment¹⁰⁰). Water intensive industries with related pollution are likely to increase as NAFTA is expanded into a Free Trade Agreement for the Americas.¹⁰¹ And as competition rises for limited resources with expanding water use, water quality deteriorates and ecosystem maintenance is compromised. Not only has water intensity increased, the quality of water is also compromised, aggravated in part by the trend towards privatization that NAFTA facilitates.

B.4.b. NAFTA, Privatization and the Human Right to Water

In *Blue Gold: The Global Water Crisis and the Commodification of the World's Water Supply*, the International Forum on Globalization reported that during a drought crisis in northern Mexico in 1995, the government cut off supplies to local farmers while ensuring water supplies to the mostly US controlled industries in the region.¹⁰² Instead of water being directed to the highest bidder, the belief of civil society is that "water is part of the earth's common heritage that must be preserved in the public domain for all time". The struggle is to ensure that access to clean water for basic needs is a fundamental human right, protected by local communities, nations and international law.

Indeed the experience so far with the privatization of water development, delivery and testing has been negative. Whether the story is from Auckland City where 500 families were disconnected from water service, or from Hamilton, Ontario where private waste management results in significant sewage spills and the lay off of maintenance operators, or from Bolivia where angry peasants rejected a World Bank brokered sell off of water services to British Bechtel, the news about privatising water is all bad for public health and the environment. It is with great sadness that we offer the recent Walkerton, Ontario Water Crisis as a case study of the NAFTA effects associated with declining water quality, and the withdrawal of governments from ensuring good governance, fundamental human rights, sustainable development and the ecological integrity of the Great Lakes system. The good news, however, is this example may represent the high water mark of efforts to privatize water in Canada. The rhetoric of ever more tax cuts has subsided since this failed experiment with human lives and the environment. On the other hand, private operators are actively promising to solve Walkerton's drinking water problems so it is fair to say that as the threat of water privatization persists and as it grows, so does the movement to oppose it, now deeply felt within conservative rural Ontario.

Moreover, the promise that private capital will fill in the gaps with improved water infrastructure and quality assurance remains unfulfilled. Yet the private-public partnerships that evolve in cash poor jurisdictions open up the sector to strictly commercial considerations and foreign investors that do not adequately address water conservation and

public access to clean water supplies and services. NAFTA rule changes, particularly around current and future private and state monopolies in Chapter 15 NAFTA, have increased citizen concerns about the commodification and privatization of water and water services. The NAFTA model of public works, should they persist, is based on state enterprises operating on commercial considerations alone rather than public health and environmental protection. The NAFTA ethic that state enterprises act solely in accordance with commercial considerations (Article 1502.b), do not discriminate against NAFTA investors (1502.c and Article 1116.b), and service providers (1503.3), remains counter intuitive to the environmental ethic of conservation and the emerging human right to clean water supplies and to a healthy environment. The effects of these NAFTA imposed rule change are compounded by efforts at the global level to negotiate the free trade in services at the WTO.

Major public interest campaigns have been developing nationally in Canada, where the common concerns among environmental, labour and human rights communities have converged into a coherent whole. New so-called “Water-Watch Chapter Committees” have sprung up particularly in central and eastern Canada on the issues of privatization of water supplies and treatment. It is only a matter of time before this campaign further links up with local citizens groups engaged in Water Quantity and Quality monitoring and protection, described further below, a movement also related to the general withdrawal of government from water services, including testing.

It should also be noted that the related trend to privatize energy generation and delivery is increasing the general public awareness of hydroelectricity power impacts on water ecosystems, biodiversity and aboriginal claims.¹⁰³ But unlike the electricity sector where there are environmental gains to be made with the introduction of technologies to produce green power (eg wind and solar), the deregulation of water development and services to the private sector features few environmental benefits.

It is increasingly realised that costs of water quality decline are enormous.¹⁰⁴ Yet the renewed government rigour necessary to ensure water resource protection, pollution prevention and public health mandates is constrained by external constitutions, NAFTA among them, that are unaccountable and undemocratic. The move to expose the barriers imposed by the NAFTA, the World Bank, the Organization of American States and the WTO is gaining ground, as is the opposition to water privatization.¹⁰⁵

B.4.b.i. The Emerging Human Right to Water

To emphasise the human right of access to drinking water does more than emphasise its importance. It grounds the priority on recognized international human rights, it emphasises the obligations to ensure access, and it identifies the obligations of states parties to provide support internationally as well as nationally to give this right practical effect¹⁰⁶. This focus also helps to relieve disputes over the use of shared water by identifying minimum water requirements and priority allocations for all basin parties. Meeting a basic water requirement for all humans, as well as ecological function should take precedence in government allocation priorities over other water management, trade and investment decisions.¹⁰⁷

In the debate over whether access to safe drinking water is a human right or a “need” subject to market forces of supply and demand flared up at the Hague Ministerial on Water Security in the 21st Century. A recent report of the UN Sub-Commission on the Promotion and Protection of Human Rights agreed that an absence or insufficiency of drinking water threatened the maintenance of international peace and security. Many conflicts were in progress due to the lack of drinking water, and more conflicts would erupt. Interestingly, the report also described the WTO as a “nightmare” for poor countries, fewer people stood to gain from current trends of globalization.¹⁰⁸

B.4.b.ii. Public Trust Doctrines

In addition to a human rights dialogue, there is also an important legal tradition that has aided civil societies for over a thousand years in promoting practical divisions between public and private. Modern Courts have found the public

trust doctrine to be pivotal in several water development cases. From the time of the codification of law in the Roman Empire (Justinian Institutes, Mid Sixth Century), certain resources have been treated as so important to civic society that the exercise of private property rights cannot be allowed to interfere with public access and uses. These resources belong to the public but are held in trust by the sovereign for specific purposes. Over time, it has been learned that there must be very strict limits on the sovereign or these resources might be sold for private gain. While privatization may capture efficiencies in resource use, it remains to be defined for water markets just what is owned by private actors and what rights are reserved for the public.

Importantly private rights cannot vest to the detriment of the public trust without clear legislative consideration.¹⁰⁹ But once legislation has clearly altered the public water regime with a private component, the evidence of a remaining public trust suffers, as in the case of New Zealand¹¹⁰

B.4.b.iii.. How Does Privatization Take Hold?

Private-sector involvement in providing public drinking water takes various forms ranging from outsourcing of limited services to facilities that are entirely privately owned and operated. The term “privatization” refers to any private-sector involvement in the development, ownership, and operation of entities and facilities that have historically been public enterprises.¹¹¹ Four models of operation are often advanced by the water industry:

- Public ownership with public employee operations
- Public ownership with contracted operations
- Sale - leaseback with public employee operations
- Sale with private operations

The way forward according to the World Business Council on Sustainable Development is for “governments to remain neutral participants and be prepared to remove institutional barriers which thwart private initiative”.¹¹² Indeed because freshwater is being recognized as an exhaustible resource, there is an emergence in the notion that water is an economic good, to which market forces and price should be attached.

When consumers are required to pay for water, either to a public utility (state or privately owned) or indirectly by way of a tax, does that activity become a service to which free trade in services obligations attach? When a public utility engages in partnerships with the water industry does the nature of that utility change, also attaching trade in services obligations? Activities of government entities that might be viewed as approximating “commercial” activities, including the exploitation, distribution, treatment and procurement of water, may well attract the application of various NAFTA, WTO/GATT and the General Agreement on Trade in Services, GATS rules.

NAFTA contains several provisions that specifically apply to state enterprises and monopolies, both public and private. It is far from clear whether or not a state entity providing water as a service to consumers, such as a municipal water utility, can any longer be considered a state enterprise when private-public partnerships develop. Importantly when a NAFTA party designates a monopoly, as of January 1994, it must “act solely in accordance with commercial considerations in its purchase or sale of the monopoly good or service in the relevant market”¹¹³ In other words, if a state enterprise changes its mandate by perhaps engaging in private partnerships, there may be a change in designation, opening up national treatment and non-discriminatory access to NAFTA service providers and investors. Also NAFTA says state enterprises and monopolies may be maintained and new ones designated, provided they act in a manner consistent with NAFTA’s investment and services rules.¹¹⁴

Indeed the NAFTA facilitates privatization by requiring that new state enterprises be based on commercial considerations alone. Such an approach is consistent with the view that government remain neutral as to the outcome of these development. Yet the experience of Walkerton demonstrates that acting on commercial considerations and competitive efficiency alone was too narrow a mandate to ensure public health or environmental protection. There is

no doubt that a reshaping of public monopoly mandates from ensuring the public interest to acting on commercial terms alone has been the trend.

One need only recall the current General Agreement on Trade in Services negotiations where a Working Party on Domestic Regulation is now seeking to develop global disciplines on domestic regulations regarding services. The outcome of this project, if successful, would determine when government regulation is considered necessary, legitimate and transparent. When determining whether domestic regulations contain legitimate objectives, the test of the free traders is narrowly construed to cover “financial soundness, technical capability, the notion of universal service and competitive efficiency”. Despite the European Unions attempts to include ensuring that public health and environmental protection are considered legitimate objectives, the Canadian government, at least prior to Walkerton, was opposed, preferring to limit the scope of domestic regulations to notions of competitive efficiency.¹¹⁵

This analysis of the worrying trends is not only of academic interest. In 1996 the Province of Ontario referred the Ontario Clean Water Agency, a crown corporation operating 357 facilities, the largest holder of water plants in North America, to the Office of Privatization, with a view to privatizing the Agency. Whether there will be the political will and time to regain control of public water resources and services remains unknown, despite the Walkerton tragedy.

B.4.b.iv. Markets, Conservation and Sustainability

There are solid reasons why some resources such as water are considered inalienable and held in trust and why some public duties are considered non-delegable. Importantly, the trend towards privatization is in many way antithetical to conservation. In a market, private ownership and extraction of the natural resources is done by the few, to be sold to the masses (consumers) for profit by keeping the price up, provided that resources are scarce. . If “price is up,” the market is “good”; if there’s too much, “price goes down”. Sustainability goes against the purveyors of water who want to keep it scarce and expensive to supply, instead of supplying from conservation or recycling. Sustainability tends to distribute resources equitably, based on the long term, and in a consumer based economy this will increase abundance and reduce scarcity. A sustainable water plan will be a challenge in a consumer based economy because it will tend to proportionately drive profits down. This conflict may explain why new, sustainable technology is usually kept out of the mainstream. Energy companies would prefer to give you aero plan points, than efficient light bulbs!

Excessive Water Extraction

Private water merchant groups tend to engage in excessive extractions. Following the 1989 privatization of water in England and Wales 20 water courses dried up in a few years because of over-extraction.¹¹⁶

Expansion rather than Conservation

Many local initiatives such as the retention of rainfall, would increase water supply and watercourse stability to an extent that greatly increased groundwater supplies, the dilution of polluted runoff and sewage effluent.¹¹⁷ But water merchants prefer to focus on the expansion of water transfer systems - centralized distribution networks - drainage facilities - budgets. Ordinary folk see the potential to avoid existing lagoon/irrigation programs that could quickly be implemented by local initiatives quickly and at relatively minor expense.

Instead the water barons, which spans decades, collaborate with local officials in extending sprawling water lines to rural areas. These steps are aimed at locking a majority of the public into dependence on centralized supplies. This private sector trend has progressed so quietly it has not attracted the attention of critics able to recognize the absurdity

of piping recycled sewage effluent from rivers to homes whose roofs shed more “pure” water than the household uses. The centralisation of water supply parallels the efforts of the electric industry to lock the public into debt for huge new generating facilities before it became obvious that home generation units can provide cheaper, cleaner and more reliable electricity. The key players hidden within major corporations are closely allied if not identical.

Profits before Biological Diversity

Some of the competing uses of water may not be high in the priorities of managers in government, and even less in private hands: improving biodiversity, reserves and national parks, sciences and research, environmental and coastal issues, keeping rivers running and healthy.

B.4.b.v. Privatization and Water Pricing

There are many advocates of water pricing. But there is substantial debate around how this economic instrument might pertain to water development and services.¹¹⁸ Many people could accept putting a “value” on water for its own sake and for all “costs”, including externalities and ecological services, related to water use as a control on waste and to encourage water conservation. Indeed there is evidence to suggest that when the water price is based on the volume of use (the more one uses, the more one pays) water consumption diminishes by 30 to 60%.¹¹⁹ Environment Canada studies indicate that consumption drops dramatically when charged for the actual amount of water used when metered rather than when being charged a flat rate. Low prices encourage high consumption. The continuation of low prices is taken into account in projecting water demand and the need for new projects and water system expansions. Low prices lead to more development rather than increasing supplies by conservation. It is recognized that the price would not act as an effective deterrent to overuse to some individuals and industries if it were set too low.

But if market forces, offer/demand, is the source of the price, and industry can pay a higher price, then the price may soar up, and be outside of the low income groups. People capable of paying high prices will have wide uses of water for swimming pools, golf clubs and gardens. Water would tend to be retired from agriculture for the benefit of industry and higher earnings, thus having an impact in food production and prices. Local food producers may not be competitive to pay, causing food shortages for the most vulnerable. Government agencies might capture revenues from water taking and uses; they might have an incentive in place to hand out more permits.

There are many concerns around water pricing and water rights. But an important question is why we’re imposing a water fee – is it to encourage water-conserving behaviour, or to generate money for certain projects that might restore water quality or increase water quantity. If we’re imposing the fee for the latter reason only, we wouldn’t need to worry about making sure the fee was high enough on certain users to ensure/encourage water-conserving behaviour.¹²⁰

Let’s recall that the price of water is usually “free” at the source.¹²¹ The only “cost” involved is the cost of getting it from the source to the point of use. It is at this point that water achieves its value in a commercial sense. Typically these costs relating to infrastructure are low and can be afforded by many public utilities, so the present tradition of shared cost by levy would keep water affordable to all users.¹²²

Another cost of water comes when it is processed and treated after use. Costs are produced when water demand draws down an aquifer such that there is regional subsidence in the land surface causing structural damage to physical infrastructure. However, these costs are not currently being paid by the majority of users, although there is a trend towards environmental tax shifting away from income and to polluting activities.

Despite the uncertainty around “true” water costs” and pricing, it is possible to believe that an individual, a family, a watershed community can achieve sustainability by effectively keeping these costs balanced within their particular ecosystem, provided that factors such as economic globalization, including services and investment do not distort demands on the resource, in this case water, beyond sustainable limits. This is the ethic of living within the means of one’s watershed. An Ontario report noted, however, that in 1990, user fees accounted for only 65% of expenditures on water infrastructure, and that these expenditures were only half of what it would be required to maintain the system in the long run..¹²³

B.4.b.vi. Infrastructure and Capital Investment

Most major cities in North America are operating with outdated water delivery systems and sewage collection systems. They will have to be replaced at a very large cost. The Canadian Water and Wastewater Association estimated in 1997 that it would take between \$79 Billion and \$90 billion invested over 15 years to maintain, rebuild and add the water and wastewater infrastructure Canada needs. Private water service providers are in the business of making profits to shareholders from water revenues at the expense of maintaining the water infrastructure - the pipes, sewage treatment plants, conservation technologies .¹²⁴

Why not take advantage of the opportunity to make those who use/remove water pay the “real” costs, including contributions to infrastructure and local community water quantity and quality groups to assist with the monitoring of compliance with permitted use, and require waste water from all users be treated to ensure water quality?

In summary, there are many views on the subject and all of the evidence is not in around privatization, water pricing policy and methodologies. What is clear is that the value of freshwater is increasingly high; it comes second only to air in the hierarchy of human needs. Generally speaking, preference for public control of the development, allocation and testing of water resources derives from a perception that managers shielded by a corporate structure are more likely to encourage cutting corners, gambling with slim margins of safety, and unnecessary expansion than public servants whose careers are at stake and who are more accessible to concerned citizens.

While public employees who seek to please agency managers who might serve at the whim of water profiteers tempers this view, these isolated instances do not suggest a need to restructure water control of essential needs and services to the private sector. Indeed we call for a rigorous not a neutral government when it comes to ensuring human rights to clean water and a healthy environment. This mandate will not be advanced where trade agreements narrow the scope of legitimate government authority to mere commercial considerations and efficiency. The building and maintenance of a local community role in developing and monitoring sustainable water plans and project development and services is a central duty of governments that hold freshwater in public trust for this and future generations.

C. Water Quality and NAFTA

The International Joint Commission in its report on protecting the Great Lakes acknowledged that water quantity and water quality are inextricably linked. For most uses, quantity alone does not satisfy the demand. Since the signing of the Great Lakes Water Quality Agreement, significant strides have been made toward restoring and preserving the quality of water in the Great Lakes Basin. However, in many areas, the restoration has not been complete and problems remain. In these situations, this poor water quality impairs the potential uses of the waters of the Great Lakes and constitutes a virtual “removal” of usable waters from the system.¹²⁵

Indeed the 1999 State of the Great Lakes report, finds after initial success with toxic chemical control programs in the 1980's, "a downward trend in contaminants in fish and other biota appears to be levelling out."¹²⁶ In addition to continuing atmospheric deposition as an explanation of this trend, the report noted in both countries "the amount of taxpayer dollars being devoted to Great Lakes environment issues is decreasing". We have also identified water intensive industries as a cause of both water quantity and water quality stress.

Evidence of water quality stress was revealed in 1996 concerning the plight of the Beluga whales, contaminated by toxins, including mirex found primarily in Lake Ontario and flowing out of the Great Lakes-St. Lawrence basin.¹²⁷ Most recently a McGill University study has shown the runoff of chemicals from industrial farms lead to a ten-fold increase in abnormalities of amphibians over runoff from organic farms; photos of multi-limbed frogs in newspapers have graphically portrayed this story.¹²⁸

Our approach to illustrating the water quality impacts related to NAFTA rules changes and the withdraw of governments from environmental protection including water services, is to feature a Case Study on Walkerton. The issues of water quality in Canada was brought to the forefront of the public's attention in May, where intensive livestock operations contaminated the southern Ontario town's water supply with a virulent form of E coli, resulting in the death of at least seven persons and caused illness in thousand of people, often the most vulnerable in society, the young and the old. The good news is that this case is a warning call to other communities concerned to ensure safe drinking water. Sierra Club, together with other groups and universities, have embarked upon a campaign of community based water quality monitoring to help equip citizens to reclaim the water commons.

C.1. NAFTA, Water Quality and Walkerton: A Case Study

Appendix 3 to this paper contains the results of a study undertaken by the research team that applied the CEC Framework for testing NAFTA effects to the situation in Walkerton. It should be noted that the CEC Framework would not have predicted this tragedy because, inter alia, of the focus on NAFTA effects after the fact of NAFTA implementation.¹²⁹ The results of the case study indicate that NAFTA is directly connected to Walkerton's drinking water contamination by facilitating intensive animal farming, the downloading of environmental responsibilities to ill-equipped municipalities and private sector water testing facilities. Moreover, in the case of intensive animal farming there has not been an upward convergence of environmental regulation led by either government or the private sector.

C.2. Why the need for Citizen Monitoring?

Environmental groups in the province are receiving frantic phone calls from the public inquiring about water quality concerns in their communities. This need at the community level extends in large part due to the increasingly recognized lack of government monitoring. Following budgetary cuts experienced by the Ontario Ministry Of Environment, environmental monitoring has been scaled back considerably over the last decade. In 1991, the 226,918 lakes in Ontario were monitored at 700 stations by professional scientists and technicians under the MOE. By 1996, only 200 water monitoring stations remained. In the Great Lakes area, 80 percent of monitoring stations were eliminated and observations ceased for lakes located north of Barrie.

C.2.a. Water Quality and Ontario Practice

The regulation of Ontario's water quality is a patchwork of laws, guidelines and policy.¹³⁰ Despite Walkerton and the flurry of promises from the government in response, Ontarians still do not enjoy the legislative protection of their drinking water. The main regime in place to govern direct discharges to Ontario's waterways (i.e. not into sewers or

groundwater) is the Environmental Protection Act and the Ontario Water Resources Act, both of which contain general language prohibiting the impairment of water quality. Exceptions to the general law are contained in conditions of approvals that permit discharges, provided that certain terms and conditions apply, including the Ontario Drinking Water Objectives that sets out concentration limits for a list of pollutants.¹³¹ Not only are the standards of questionable robustness, especially in light of cumulative or synergistic effects of many contaminants, but they do not ensure safe drinking water at the point of consumption. Unlike laws or regulations a regime of guidelines are not enforceable per se. The reality in Ontario is that there is a “myth of standards”.¹³²

Another major exception to Ontario’s general water quality laws are agricultural operations.¹³³ In fact in 1998 the Ontario government enacted the Farming and Food Production Protection Act which exempted “normal farm practices” from municipal by-laws and nuisance lawsuits from aggrieved neighbours. The ministry responsible for setting rules for factory farms is the Agriculture Ministry, whose mandate is to promote agriculture, not to protect the environment.

Ontario residents have not benefited from the upward convergence of drinking water standards. For example the US enacted safe drinking water legislation over 25 years ago.¹³⁴ New programs have developed (*). Moreover, as the Case Study describes, the US Clean Water Act requires discharge permits for beef livestock operations.

In addition to low standards, that do not take into account expected climate change impacts to water quality, since 1995 the Ontario government’s involvement in water quality has decreased substantially, as described in the Walkerton Case Study. The environment budget has been slashed and civil servants laid off. The province’s four government water testing labs were closed and the responsibility for water and sewage was downloaded to ill-equipped municipalities. Water testing was to be done by private labs, with no requirement to report findings of potential water quality concerns directly to the province or to the local Medical Officer of Health.

The trend to cut provincial environment budgets began with cuts at the federal level, with a ripple effect on provincial budgets. Ontario went further than any other province by cutting the environment budget by 40-50 percent of what it was in 1995, one year after NAFTA.¹³⁵ Ontario was open for business. Even the OECD had to acknowledge that severe federal and provincial spending cuts have undermined the ability of governments to monitor the environment and enforce existing laws.¹³⁶

The Ontario government’s feeble response to Walkerton was to enact a Drinking Water Protection regulation allowing certain water quality parameters to be tested in private labs, provided the tests are performed in accredited facilities and notification is given to MOE, medical officers of health and municipal water facility operators of unsafe drinking water quality.¹³⁷ The requirement for lab accreditation and notification procedures should have been in place in any event. The regulation still does not create a clear statutory right to clean and safe drinking water, a provincial registry of testing results or a citizen’s cause of action to enforce the regulation.¹³⁸

A number of observations can be made concerning the Walkerton water crisis. First, water quality monitoring has been one of the areas to suffer heavily from budget cuts at both the provincial and federal levels. The drastic reduction in water quality monitoring since 1996 has had negative impacts on civil society in Ontario, both to health and to the fabric of social organization in municipalities. The events surrounding the recent e-coli related illnesses and deaths in Walkerton, Ontario exemplify both the health impacts and the other strains on civil society, especially the breakdown in communication and cooperation between civil society and government agencies.¹³⁹

Second, the review of Ontario water policy practice indicates a clear withdrawal of government from not only water testing and monitoring but a determined withdraw of oversight concerning intensive livestock operations. The trends indicate that feedlot development is a form of industrial migration to areas of low environmental standards.

Third, despite claims otherwise, free trade has not led to upward harmonization of environmental law or practice. If the Canadian government traditionally has operated with more investment in its human population than the United States (state health care, state universities, etc.), the strain of sudden direct competition with an economy so geared for unsustainable growth as that of the U.S. calls into question the viability of any upward convergence of environmental practice and regulation, especially in light of the environmental oversight record of the Ontario government of the past few years. If trade liberalization is truly to progress without significant damage to the environment, it is not enough to create a CEC Framework for testing NAFTA effects that can identify and perhaps even mitigate damaging processes that are already underway. The environmental impact assessment process should incorporate models of testing a process prior to its initiation, and it should have standards by which to judge actions that will have an effect on the environment. Given that no detailed indicators are in place six years after the acceptance of NAFTA indicate that the general statements of desire for sustainable development in NAFTA are an accession to a minority of concern. The rapid degeneration of the state of water quality and assessment in Ontario should be a cautionary demonstration of the reality of the “race-to-the-bottom” tendency. In an effort to speed placement of indicators of water quality and water quantity to access and avoid conflicts with trade liberalization, and to further the objectives of other international environmental and human rights agreements and custom, we have recommended the quick adoption of a new and improved Common Standard for Great Lakes water protection. With respect to water quality in particular, we note that the new Common Standard features the right of the public to the information necessary to effectively participate water quality assessment and monitoring.

C.2.b. Community Based Monitoring

Several civil society groups have been formed with the explicit objective to fill the vacuum left by the lack of water quality testing by the Ontario government, but the lack of widespread infrastructure and coordination of civil society water monitoring efforts has meant that their results are limited to local significance, in terms of science, policy and practical usefulness. The Sierra Club, with several partners, has initiated a project to collect and distribute information about water quality monitoring in Ontario, but even a simple initiative with a scope limited to contact and descriptive information about the kind of data being collected has highlighted the fractured state of awareness of actual water quality. Homeowners, cottagers, naturalist and student groups are becoming a major source of information as vital as whether water is safe to drink.

These civil society groups, formed to face a perceived threat, demonstrate something important about the state of environmental research and informational transparency in the Great Lakes region that has been confirmed by the incident at Walkerton. The chains of responsibility and information have been badly damaged — not only do citizens not have access to necessary information (Ministry of the Environment water results are only available for sale), but the government also has lost access to proper lines of command and oversight where water is concerned, leading to confusion, delay and inaction.

The environmental groups are developing a province-wide Monitoring Network and Mapping Initiative with the York University Centre for Applied Sustainability. Training materials and an interactive, map-based internet database for citizen generated water quality data are being produced to monitor the health of local waters such that poor environmental quality can be detected, plotted on the map and appropriate restorative action taken. Currently, participants receive training and a binder of background information and instructions for kit use and monitor 4 times per year. The long-term goal of the proposed Monitoring Network is to improve water quality in lakes and rivers across Ontario. At all times, however, critical links to watershed health, ecosystem management, together with the effects of trade agreements and privatization are made.

The Network aims to share local monitoring results (i.e. data and experiences) with government; identify potential gaps in terms of where monitoring isn't happening; facilitate provision of data ‘checks’ by government using advanced

equipment in cases where poor water quality health has been identified by communities using less advanced equipment; and examine the opportunity for community action to remediate areas demonstrated as problematic by government monitoring. The Ecological Monitoring and Assessment Network (EMAN) of Environment Canada is developing 35 core variables for citizens to monitor, many of which include water quality indicators that the project will feature in its education materials and in the development of kits.

These efforts should complement those at the US EPA's Adopt a Watershed program¹⁴⁰ and be taken into account as the new Common Standard for Great Lakes water protection is further refined.

Conclusion

Great Lakes Water is a critical resource that is essential for all forms of life and for a broad range of economic and social activities, facilitated in part by NAFTA. The Great Lakes, sometimes referred to as North America's inland sea, are one of the largest freshwater ecosystems in the world. Moreover, the lakes are a central feature of the natural and cultural heritage. Measures aimed at protecting and conserving the waters of the Great Lakes and the St. Lawrence river basin must cover the surface water of the lakes, connecting channels, tributaries, and groundwater if they are to be effective. A new Common Standard to protect the Great Lakes waters must not be turned into a license to export bulk water as the OECD has recently recommended.

Current decision making around Great Lakes water levels, renewability factors, and use, together with current monitoring arrangements are inadequate to assess the cumulative effects of water use or to support new consumptive use and removal decisions. There is a legal fiction employed that maintains water when bottled and incorporated into products, even when taken out of the Basin, is somehow not removed. The federal governments, the Great Lakes states, and the provinces are underfunding data collection and management and, as a result, rely upon inadequate information in their decision-making process on water policy and water projects. This calls into question the soundness of governments' decisions, especially when the local community is so often excluded from project planning and the monitoring of impacts, as the recent Tay River taking example proved.

Our experience of the last ten years indicates that governments and water interests do not have the capacity or interest to adequately ensure good governance, transparency and the emerging human rights to clean water and a healthy environment. Thus we recommend the active participation of community based oversight in water quantity and quality matters of local concern that can be feed into provincial, national and regional campaigns. Indeed there is much work to be done if efforts at a new Common Standard for Great Lakes water protection are to be successful, especially given the external pressures of economic globalization, and a thirsty planet.

Fundamentally and in any event, the governments of the Great Lakes states and Ontario and Quebec, in collaboration with local authorities, industry and community groups, should feature a co-ordinated basin-wide water conservation initiative. With quantified consumption reduction targets, specific target dates, and monitoring of the achievement of targets, it is possible to live within the means of one's watershed. Protecting the integrity of the Great Lakes Basin ecosystem also ensures opportunities to take advantage of the other economic and environmental benefits that normally flow from such measures.

The Commission for Environmental Cooperation has a clear and on-going role to assess the growing pressures of trade on the environment. As governments, municipalities, industries and individuals in the basin struggle to reconcile their permitted uses of basin waters with the changing trade environment of NAFTA, it will be crucial for the CEC to assist the in the development of water quantity and quality indicators of environmental health and stress to avoid

the negative effects of trade in goods, services and investment, while optimizing the potential for environmental sustainability and quality in the Great Lakes basin. Moreover, given that the International Joint Commission does not have a trade related mandate nor does it provide for public submissions on enforcement matters, as part of the design of the new Common Standard to protect Great Lakes waters access to the CEC public submission process could be specified in implementing domestic legislation to complement local enforcement provisions. We trust this paper has contributed to this exciting development in regional environmental law.

Notes

¹ International Joint Commission, Protection of the Waters of the Great Lakes, Final Report, March, 2000, www.ijc.org (IJC Final Report)

² The Charter states that “[it] is the intent of the signatory states and provinces that diversions of Basin water resources will not be allowed if individually or cumulatively they would have any significant adverse impacts on lake levels, in-basin uses and the Great Lakes Ecosystem.”

³ Fate of the Great Lakes, Great Lakes United and Canadian Environmental Laws Assoc., Sustainable Water Resources Task Force, 1997, p.8, see www.glu.org.

⁴ IJC Final Report, Section 8, p33. The IJC defined “ ecosystem integrity as the capacity of the ecosystem to maintain operations under normal conditions, to cope with external influences, and to continue the dynamic process of self-organization indefinitely.

⁵ Great Lakes Information Network, Hydrology & Levels Section: Hydrology | Levels | Flows, Sept 2000,

⁶ CEC, Factual Record for Submission SEM-97-001 (BC Aboriginal Fisheries Commission, et al regarding enforcement matters of the Canadian Fisheries Act), May 2000, 17-19.

⁷ Great Lakes Commission, Press Release: GLC Announces Project Management Team, August 22, 2000, www.glc.org

⁸ In over 90 years, the IJC has never denied a request for approval of a control works or diversion, Fate of Lakes, supra fn 3.

⁹ Paul Raskin, Water Futures: Assessment of Long-range Patterns and Problems, and see Herman Daly , For the Common Good, Beacon Press, Boston, 1989.

¹⁰ Fate of the Great Lakes, p. 6.

¹¹ The US Environmental Protection Agency (EPA) recently established an electronic watershed database that provides flow and water quality information for basins across the country: Index of Watershed Indicators: www.epa.gov/surf/iwi.

¹² Environment Canada, Water Facts, <http://www.cmc.ec.gc.ca/climate/hydrology>. The Canadian Hydrographic Service (DFO) also posts information on recent water levels on the Great Lakes at: <http://chswwww.bur.dfo.ca/danp/recent.html>

¹³ Environment Canada, Water Levels: The Great Lakes, identifies that a number of human factors influence water levels: dredging, diversions, consumptive use, climate change, which appears to contradict the observation the claim that “the total supply of water in the biosphere is not affected by human activities”.

¹⁴ IJC Final Report, p.8

¹⁵ IJC, Final Report, Section 2, p.6 for reference to Levels Reference Study Board (1993) Levels Reference Study, Great Lakes- St. Lawrence River basin, Submitted to IJC, March 31, 1993, see www.ijc.org. Reference is also made to a Feb 2000 publication but this data merely restates 1993 numbers.

¹⁶ Environment Canada, calculations prepared for NAFTA Effect on Water Workshop.

¹⁷ As discussed below, GATT Article XX (g) speaks to environmental measures “relating to the conservation of exhaustible natural resources” and NAFTA Article 2101:1 (b) expands this and says: “ relating to the conservation of living and non-living exhaustible natural resources.” General Exceptions only This question is also relevant to environmental aspects of North American Electricity Restructuring, see anticipated Article 13 CEC Report which considers, inter alia, trade disputes about whether Canadian hydropower should qualify for certain US renewable energy programs and requirement. Because hydropower production is proportional to the amount of water available to be pumped through the system, how can hydropower be considered a renewable energy source when the fuel resource it is based upon is in fact exhaustible? While less severe than the levels shown in the climate change scenarios, the extreme low levels and flows of the 1960s resulted in electricity production losses of 19 to 26 percent on the Niagara and St. Lawrence Rivers, see Environment Canada, Adapting to Climate Change, Ontario, (ref) A renewable resource should be one that is replenishable and in fact replenished. Can this be said any longer of water from the Great Lakes?

¹⁸ While less severe than the levels shown in the climate change scenarios, the extreme low levels and flows of the 1960s resulted in electricity production losses of 19 to 26 percent on the Niagara and St. Lawrence Rivers, see Environment Canada, Adapting to Climate Change, Ontario, 1998 renewable resource should be one that is replenishable and in fact replenished. Can this be said any longer of water from the Great Lakes?

¹⁹ See World Commission on Dams, www.dams.org. and Philip Raphals, Helios Centre, Hydropower in Competitive Markets (forthcoming) www.helioscentre.org

²⁰ Increased UV-Radiation on the earth surface is the result of depletion of ozone layers which is ultimately the cause of increased emission of Carbon dioxide and other gases in the atmosphere. It is hypothesised that increased light penetration on freshwater lakes could result in lake stratification, increased visibility and chemical and biological changes of the water, and increased amount of UV-radiation as well. Considerable research has been carried out on chemical and biological changes of the lake water but, the particularly the impacts of UV-radiation on freshwater fish and zooplankton are not studied extensively.

²¹ IJC Final Report, Section 5, p 24

²² Ralph Moulton and Douglas Cuthert, Cumulative Impacts of Water Removal or Loss from the Great Lakes-St. Lawrence River System, Canadian Water Resources Journal, 2000, p 24.

²³ L. Mortsch 2000, Climate Change Impacts on Hydrology, Water Resource Management and the People of the Great Lakes – St. Lawrence system, Canadian Water Resources Journal, 25 (2)

²⁴ IJC, Final Report, Section 5, p 25: Even though they would not be nearly as severe as those projected in climate change scenarios, record low levels and flows in the 1960s caused hydropower losses of between 19 percent and 26 percent on the Niagara and St. Lawrence Rivers⁴¹. A small proportion of these losses would be offset by lower heating costs, but this in turn would be offset by increases in air conditioning costs. and footnote 41 H. Hartman (1990) Climate Change Impacts on Great Lakes Levels and Flows: Energy and Transportation in G. Wall and M. Sandersons (ed) Occ Paper n. 11, University of Waterloo, Dept of Geography.

²⁵ Environment Canada, Canada Country Study, Climate Change Impacts, Vol V11, p. 4: Extreme hydrological events, such as floods and intense rainfall may cause overflows of storm and sewage sewers leading to the contamination of drinking water (eg cryptosporidium). Excessive precipitation creates breeding sites for insects and rodents that carry diseases.

²⁶ Environment Canada, Canada Country Study, Climate Change Impacts, Vol V11, p. 72 and 76.

²⁷ Mortsch, 2000., supra.

²⁸ Moulton, 2000, p. 8, supra.

²⁹ Fate of the Lakes, p. 25 and the reference therein .

³⁰ For Lakes Michigan-Huron, St. Clair and Erie the mean levels for the 2030 scenario would be lower than the recorded minimum levels, Moulton, 2000, p8.

- ³¹ Environment Canada, Canada Country Study, V11, p16: Increases in precipitation do not necessarily mean that regions become “wetter”. Higher evaporation losses due to the warmer temperatures could make many areas drier.
- ³² Brent M. Lofgren, Frank H. Quinn, Anne H. Clites, and Raymond A. Assel, NOAA/Great Lakes Environmental Research Laboratory, Buffalo District, U.S. Army Corps of Engineers, and U.S. Geological Survey, July, 2000
- ³³ Moulton, 2000, supra.
- ³⁴ IJC, Final Report, footnote 11 showing 1995 USGS data indicating that irrigation consumption in US portion of Great Lakes is 94%, in increase from 1993.
- ³⁵ Report to the Council of the Great Lakes Governors, Governing the Withdrawal of Water from the Great Lakes, legal opinion, p. 12 (on file with author) quoting 1992 uses study that cooling projects for coal and nuclear operations consumed/loss to evaporation up to 14% of water used.
- ³⁶ Ralph Moulton , Environment Canada, Canadian Water Resources Journal, 1999, p 183,, v.25 n.2,
- ³⁷ Environment Canada, Country Study, Climate Impacts, Vol. 11, 1998, p. 57.
- ³⁸ Canadian Environmental Laws Association, Submission to IJC re Water Uses Reference, Dec. 1999.
- ³⁹ USEPA, Liquid Assets 2000: Americas Water Resources at a Turning Point, May, 2000, p.8
- ⁴⁰ Canadian Environmental Law Assoc., Elements of a Sustainable Water Strategy for Canada, Sept. 1999, p.1, recommending a program to reduce water consumption compared to 1999 usage by 25%, by the year 2010 placing priority on sectors with the highest consumption such as industry and agriculture and imposing a fee structure for water taken by profit-making enterprises, while keeping the privatization of water and wastewater services and ensuring that all citizens have equitable access to adequate and clean water.
- ⁴¹ Cameron Duncan and Mel Watkins, Canada Under Free Trade, Toronto, James Lorimer and Company, Ltd. 1993
- ⁴² IJC Final Report, Section 6, p. 27.and note: In any case, owing to the interconnection of surface water and groundwater, whether water consumption is from the lakes, the tributaries, or groundwater sources, the eventual physical impact on average lake levels is virtually identical, p. 29.
- ⁴³ Cubic feet per second (cfs) expresses the rate of discharge. One cfs equals one cubic foot of water flowing past a particular point in one second. The flow over Niagara Falls in daylight hours in the tourist season is 100,000 cfs. One cubic meter per second equals 35.315 cfs.
- ⁴⁴, Canadian Environmental Law Association, Some Great Lakes Water Facts, May 1998, www.cela.ca.
- ⁴⁵ IJC Final Report, p 15. The Commission learned that one exporter in Alaska was shipping a small volume of water, 378,500 liters per week (100,000 gallons/week) but that orders for Alaskan water had fallen significantly since the beginning of 1999. The water is placed in containers that are barged to Washington state, where the water is bottled. It is then shipped to Alaska, Taiwan, and Korea.
- ⁴⁶ The Quebec government enacted a moratorium on bulk water exports, the Water Resources Preservation Act, and the Quebec Public Hearings Bureau (BAPE) released its final report on water management in Quebec, see www.bape.gouv.qc.ca/eau/index, where it recommended that all water projects, including commercial bottlers, involving the daily removal of more than 75 cm of groundwater, and water sold in containers more than 25 litres, be subject to impact assessment and review by the Environment Minister, see background studies for BAPE by Karel Mayrand for additional information on international water issues.
- ⁴⁷ IJC Final Report, p 16 and footnotes 19 and 20., two unpublished papers, dated in 1999. .

⁴⁸ For example, 272 million liters (72 million gallons) of bottled water were exported in 1998 from all of Canada to the United States. That represented 33 percent of all beverage exports from Canada to the United States that year, compared with 44 percent for beer and 19 percent for soft

⁴⁹ OECD Report (1999) The Price of Water: Trends in OECD Countries. Paris. United States and Canada use (withdraw) nearly twice as much water per capita as the OECD average. Even taking into account differences in economic structure and lifestyle between the United States and Canada and other OECD countries, it would appear that improvements in water use could be made by using appropriate, existing water-conservation and demand-management techniques.

⁵⁰ IJC, Final Report, p. 20.

⁵¹ IJC, Final Report, p. 22 and footnote 32 Cumulative Impacts in the Great Lakes – St. Lawrence River Basin (add ref)

⁵² McAllister, Don, Biodiversity in Canadian fresh and marine waters, in Stephen Bocking (ed) Biodiversity in Canada, Broadview Press, Peterborough, Canada and Mosquin T, et al, Canada's Biodiversity, Canadian Museum of Nature, Ottawa, 1994, p 293 pp.

⁵³ IJC, Final Report, Section 10 where the IJC also recommended: a) no major new or increased consumptive use of water from the Great Lakes Basin to proceed unless a full consideration has been given to the potential cumulative impacts of the proposed new or increased major consumptive use, taking into account the possibility of similar proposals in the foreseeable future, b) effective conservation practices will be implemented in the requesting area, c) sound planning practices will be applied with respect to the proposed consumptive use., d) states and provinces shall ensure that the quality of all water returned meets the objectives of the Great Lakes Water Quality Agreement, coupled with additional opportunities for public involvement and e) there is no net loss to the area from which the water is taken and, in any event, there is no greater than a 5 percent loss (the average loss of all consumptive uses within the Great Lakes Basin) (emphasis added).

⁵⁴ Total exports to the US from Canada represent 41 percent of Canadian GDP, an increase from 25 percent GDP in 1995, a very high ratio, see Scott Vaughan, Understanding the Environmental Effects of NAFTA, Learning the Lessons from NAFTA, Yale Centre of Environmental Law, 2000

⁵⁵ IJC, Final Report, Section 10.

⁵⁶ Great Lakes United, Sustainable Waters Watch, August 25, 2000. Great Lakes United is a coalition of 170 organizations from the United States, Canada, and First Nations, working to protect and restore the Great Lakes – St. Lawrence River ecosystem. GLU was founded in 1982, has offices in Buffalo and Montréal, and has been actively working on Great Lakes water quantity issues since the beginning of negotiations for the Great Lakes Charter in 1984.

⁵⁷ Appendix 3 contains a tentative list of environmental “must haves” in any regional water uses and withdrawals agreement.

⁵⁸ Great Lakes United Press Release Michigan Water Proposal a Start, Needs Improvement, Contact Reg Gilbert, (716) 886-0142.

⁵⁹ Please note that Sierra Club Eastern Chapter proposes a community based monitoring model with oversight on water quantity and quality factors.

⁶⁰ CEC Determination of Planet Earth, et al concerning USA, January 1999.

⁶¹ The GATT Harmonized Commodity Description contains a tariff item for water: 22.01 “water, including natural or artificial water; ice and snow”.

⁶² NAFTA Article 201 defines “goods” as domestic products as understood in the GATT or such goods as the Parties may agree.

⁶³ Elizabeth May, Executive Director, Sierra Club of Canada, NAFTA effects on Water Workshop, Sept. 11, 2000.

⁶⁴ See Annex 9 to IJC Final Report for Canadian government submission on this point. Please note that given reference in GATT tariff schedule to water even in its natural state is listed as a good, and will be treated as a good both under the GATT/WTO and NAFTA, according to Barry Appleton, *Navigating NAFTA*, Carswell, 1994, p. 201. The Canadian response is the tariff schedule only tells us when water is classified as a good, when it is traded, it falls under a particular tariff heading.

⁶⁵ *Governing the Withdrawal of Water from the Great Lakes*, May 18, 1999 (copy on file with author).

⁶⁶ Christine Elwell, *New Trade and Environment Enforcement Provisions to Enhance Conventional Arms Agreements*, in *Treaty Compliance*, p.84-85, *Some Concerns and Remedies*, Canadian Council on International Law (eds), 1998, Kluwer Law International, London.

⁶⁷ See Vienna Convention on the Law of Treaties, Art. 31 (2) providing that instruments such as official statements are authoritative sources in the interpretation of international agreement. But Steven Shrybman of the West Coast Environmental Law Association, in a legal opinion for the Council of Canadians reports that in a press release by the US Trade Representative, Dec. 2, 1993, referring to the 1993 Statement, said: "None of these statements change the NAFTA in any way",

⁶⁸ There is debate whether this prohibition on quantitative restrictions (product bans and quotas) applies only to import and not exports bans. Since NAFTA Article 301 NAFTA Article 301 incorporates the same national treatment obligations for goods as in the GATT Article XI, that only speaks to imported goods. There are no national treatment obligations regarding obligations to export goods, including a duty to export water, according to Appleton, *supra*. But Shrybman recalls that there are two cases both concerning Canadian restrictions of salmon and herring caught off Canada's west coast as constituting an unacceptable export control contrary to GATT Article XI., *Canada, Measures Affecting Exports of Unprocessed Herring and Salmon*, L/6268, 1988, and *In the Matter of Canada's Landing Requirements for Pacific Coast Salmon and Herring*, , October, 1989. National treatment obligations around a new Great Lakes standard are quite probable.

⁶⁹ But the Canadian government Department of Foreign Affairs and International Trade is appealing the decision, see Press Release September 18, 2000 (11:15 a.m. EDT) No. 239 CANADA TO APPEAL WTO DECISION REGARDING FRANCE'S BAN ON CHRYSOTILE ASBESTOS

⁷⁰ See www.wto.org Sept 21, 2000

⁷¹ NAFTA Article 301 on export controls, Article 315 on the proportional sharing obligation, and the removal of GATT Article XX general exceptions from NAFTA investment and services obligations in Chapters 11 and 12, respectively, see Shrybman, *supra*.

⁷² This dormant aspect of the Commerce Clause prohibits states from advancing their own commercial interests by curtailing the movement of articles of commerce either into or out of the state. In other words, a state may not discriminate against interstate commerce to advance the economic interests of the state or its citizens but only to advance legitimate local purposes with incidental effects on interstate commerce. Question how closely this model reflects current WTO/NAFTA practice around legitimacy of general environmental exceptions.

⁷³ Chapter 12 of NAFTA sets out a complete regime to govern trade and investment in the services sector. An exception to the provision of water related services is not contained in the relevant Annexes to Chapter 12. Shrybman explains: The Chapter applies to US and Mexican based water service providers operating in Canada for the purposes of also providing cross-border water services to another jurisdiction., also see Scott Sinclair, *GATS, CCPA (ADD)*.

⁷⁴ Sun Belt was allegedly involved in a joint venture with a Canadian company, Snowcap, which had received a permit authorising bulk exports of BC water. When the government enacted a moratorium on bulk water exports, it revoked the permit, along with all others, and reached a settlement with Snowcap but not Sun Belt.

⁷⁵ El Clark, *Control of Canada's Water yielded to the US by NAFTA*, The Canadian Centre for Policy Alternatives, *The Monitor*, August 2000. Indeed the first award of compensation under NAFTA Chapter 11 ordering Mexico to pay Metalclad Corp - US hazardous Waste company - \$ 16.7 million did not become public until after the recent Mexican federal elections, see *New York Times*, August 31, 2000.

⁷⁶ NAFTA Article 1102: Each Party shall accord to investors of another party treatment no less favourable than it accords, in like circumstances, to its own investors with respect to the establishment, acquisition, expansion, management, operation and sale of investments".

⁷⁷ Note this trade benefit of no or reduced fees for those producers in compliance with the export control regime of Softwood Agreement was found to be an acceptable trade preference to induce compliance with a negotiated agreement to manage trade in a sensitive sector.

⁷⁸ The Tribunal said: “The Investment’s access to the US market is a property interest subject to protection under Article 1110 and the scope of that article does cover nondiscriminatory regulation that might be said to fall within an exercise of a state’s police powers”. The Tribunal specifically referred to creeping expropriation as a recognized claim in Article 1110. It rejected Canada’s argument that regulations exercising police powers, if nondiscriminatory, are beyond the reach of Article 1110. The Tribunal observed: A blanket exception for regulatory measures would create a gaping loophole. Moreover, compensation does not turn on whether a state treats an expropriated property of nationals similarly to foreign investors”, copy of decision on file with author..

⁷⁹ Stephen Shrybman, personal communication, July 10, 2000.

⁸⁰ This concern for the scale of resource development is best expressed by Howard Mann, NAFTA’s Chapter 11 and the Environment, IISD (ref), section 3.4. Also the US Statement of Administrative Action on implementing NAFTA argues that “treatment no less favourable” does not mean that a foreign investor must be given the same treatment, or even equal treatment as all other investors, but allows them to be treated differently where the circumstances warrant.

⁸¹ IJC, Final Report, p. the governments should make it clear that authorisations do not give rise to any continuing entitlement or expectation on the part of the holder of the authorisation, there is no guarantee that that person would be given treatment any more favourable than any other person who might apply, and that it is within the government’s jurisdiction to decide whether or not even to permit an authorisation to be issued again.

⁸² GATT Article XX(g), the conservation exception to national treatment obligations in the WTO regime only apply “to the conservation of exhaustible natural resources if such measures are made in conjunction with restrictions on domestic production or consumption:.

⁸³ For example, see Jamie Dunn, Council of Canadians, NAFTA Effects on Water Workshop: “NAFTA cannot be said to support environmental protection as long as the environment is a second priority to trade. To be effective, environmental agreements must be on an equal footing with trade obligations under NAFTA.”

⁸⁴ Article 104(1) provides: In the event of any inconsistency between this Agreement and the specific trade obligations set out in: (a) Convention on the International Trade in Endangered Species of Wild Fauna and Flora, (b) the Montreal Protocol on Substances that Deplete the Ozone Layer, as amended June 29, 1990; (c) Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal, upon its entry into force for Canada, Mexico and the United States; or (d) the agreements set out in Annex 104.1, such obligations shall prevail to the extent of the inconsistency, provided that where a Party has a choice among equally effective and reasonably available means of complying with such obligations, the Party chooses the alternative that is the least inconsistent. The Annex currently lists only two agreements: (1) The Agreement between the Government of Canada and the Government of the United States of America Concerning the Transboundary Movement of Hazardous Waste and (2) The Agreement between the United States of America and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Area.

⁸⁵ Bradley J. Condon: NAFTA and the Environment: A Trade-Friendly Approach, 1994 Northwestern Journal of International Law & Business, Spring, 1994.

⁸⁶ Robert Housman, NAFTA Lessons for Reconciling Trade and the Environment, Stanford Journal of International Law, Summer 1994, 379.

⁸⁷ The United States has obtained commitments from Canada and Mexico to list: The Convention on the Protection of Migratory Birds, Aug. 16, 1916, U.S.-Great Britain (on behalf of Canada) 39 Stat. 1702, T.I.A.S. No. 628; and The Convention Between the United States of America and the United Mexican States for the Protection of Migratory Birds and Game Mammals, Feb. 7, 1936, 50 Stat. 1311, T.I.A.S. No. 912

⁸⁸ CELA, Submission to the IJC Water Uses Reference, supra. West Coast Environmental Law Association, together with the Council of Canadians are less than convinced that an Accord with the Provinces that is not legally binding will do any more than set the stage for a patchwork of inconsistent policies across the country, preferring federal legislation to clearly prohibit the bulk removal of water from Canada.

Because the Federal-Provincial Accord does not directly address trade deals, it fails to be the basis of a comprehensive and effective approach to protecting Canada's water. No independent and creditable enforcement mechanisms are envisioned that could prohibit an ill-advised reversal of government policy under a different administration.

⁸⁹ In the Quebec prohibition on bulk water exports, it is the Environment Minister that issues licenses and approves projects over 75 cm per day.

⁹⁰ The Constitution Act provides, with limited exceptions, for provincial ownership of all public lands (including water). The legislative powers of the provinces largely buttress their proprietary powers and include authority with respect to management and sale of public lands, local works and undertakings, property and civil rights in the province, and generally all matters of a local or private nature.

⁹¹ Ontario Natural Resources Minister Snobelen, Press Release, March 17, 2000: "Ontario supports the approach of the IJC that provinces and Great Lake states not permit any removal of water from the Great Lakes basin that would endanger the integrity of the basin ecosystem".

⁹² Water Transfers Ontario Regulation 285/99 made under Ontario Water Resources Act, R.S.O., 1990

⁹³ Canadian Environmental Law Association, Submission on Water Taking and Transfers Regulation, 1999, www.cela.ca, where evaluation of water permits using an individual watershed approach based on a hierarchy of needs, with protection of ecosystem function a the primary need.

⁹⁴ Nancy Hoffman, The Permit to Take Water Program and Commercial Water Bottling in Ontario, Canadian Water Resources Journal, Vol. 20, No. 2, 1995 reviews the permit granted to Savarin Springs with the brand name Clearly Canadian to take groundwater from the Town of Formosa for processing in the US, despite public and official concerns about local water supplies, aquifer depletion in the region and the adequacy of the groundwater studies done before the permit was granted.

⁹⁵ Environmental Bill of Rights Registry Number IA00EO427, Ref number ER-9062, see www.ene.gov.on.ca

⁹⁶ Ontario Compliance Report on Water Polluters, Sierra Legal Defence Fund, 1999, showing that Ontario waste water pollution violations tripled from 1996 to 1998, up 200% in just two years., and only 4 prosecutions of the 134 violations in 1996, the last year that records on prosecutions were kept.

⁹⁷ SEI Comprehensive Assessment of Freshwater Resources: Assessing Long Term Patterns, 1997 www.tellus.org/seib/index.html.

⁹⁸ In the OECD (1995) region, the raising share of the less-water-intensive manufacturing sectors is anticipated because of lower aggregate manufacturing activity. Indeed there is evidence that the Great Lakes basin has seen a decline in water intensive manufacturing , with southern migration of industry, see EPA, A Changing Great Lakes Economy: Economic and Environmental linkages, 1995, www.epa.gov/glnpo. But this conclusion does not apply to water dependent industries, nor account for US EPA report indicates that while manufacturing intensity has declined, the raise in agricultural uses of water has increased as farms in the region specialized domestic production for export increasingly tied to larger-size farms and associated chemical use, that contaminate foods and water supplies, Liquid Assets, supra, www.epa.gov/ow/liquidassets.

⁹⁹ CELA, Fact Sheet Bottling Ontario' Groundwater: 18 Billion Litres and Counting, 1999, see www.cela.ca

¹⁰⁰ Ontario Open for Toxics, Canadian Institute for Environmental Law and Policy, 2000, showing a 42% increase in hazardous waste shipments to the province between 1994 and 1998, a rate of growth 3 times that of real gross domestic products over the same time period., see www.cielp.org

¹⁰¹ The US EPA is concerned that streamlined tracking of hazardous and infectious wastes by customs officials will end up allowing increasing shipments, see Inside US EPA, October 28, 1999.

¹⁰² Maude Barlow, Blue Gold: The Global Water Crisis, and note Water for People and Nature: A Forum on Conservation and Human Rights, July 5-8th, 2001, Blue Planet Project at the University of British Columbia, see www.canadians.org.

¹⁰³ Even deregulation in electricity is facing a backlash, see New York Times: California's Move to Limit Power Rates Hits Resistance, Aug 2000 11, " Mounting political concern over what many are describing as deregulation run amok in the electricity market in San Diego prompted a major but inconclusive battle in the State Assembly today over a bill that would place a broad cap on power costs in the city...the first city in California to be deregulated, but many people said they believed it was too little to help people hit with bills that have doubled or tripled in just a few months". Deregulation was undertaken because the Legislature believed it would offer an antidote to what were already exceptionally high power rates in the state, roughly 50 percent above the national average... but no one believes the market is functionally competitive"

¹⁰⁴ US EPA Liquid Assets, www.epa.gov/ow/liquidassets

¹⁰⁵ ADES: Assoc for Democracy, Ecology and Solidarity, Grenoble, France, Press Release, March 20, 2000, www.france-assoc.com/ades, where after 11 years of privatized water service in Grenoble by Lyonnaise des Eaux, city council brought back water service under public control. A 1997 report by the Cour des Comptes, France's national audit body found; "The lack of supervision and control of delegated public services, aggravated by the lack of transparency in this form of management, has led to abuses", see Public Services International, World Water Forum Briefing, www.world-psi.org

¹⁰⁶ Peter Gleick, The Human Right to Water, Pacific Institute for Studies in Development, Environment and Security, 1 (5) Water Policy, 487-503, 1999, see www.pacinst.org, and the references cited therein, including S. McCaffrey (1992), *Gerogetown Intl Env L Rev*, Vol V, 1, 1-24. Although the right to water is considered a derivative right from current international human rights, it has growing recognition for example by direct reference in the UN Convention of the Rights of the Child of 1989, and in the South African Constitution.

¹⁰⁷ See Conference, Iguacu Falls, Brazil, on 24-29 November 2000 on elements of UNICEF/WHO Global Assessment 2000 on Water Supply and Sanitation, with focus on household-centred environmental sanitation, ecological sanitation, waste as a resource, school sanitation, social marketing, risk assessment, serving the urban poor, targets, indicators and monitoring, contact Nabil El-Khodari khodari@yahoo.com, and maharoodf@who.ch .

¹⁰⁸ Financial Times ,Friday, August 25, 2000, WTO PROTESTS TO UN OVER 'NIGHTMARE' REPORT

¹⁰⁹ . When water rights are transferred, there are clear questions about what exactly is being bought and what is being sold. Buyers can't be buying more than the original seller had claim to in the first place. How to divide economic benefits between temporary private holders of water rights and the public which holds title to a superior interest is difficult. As water has become much more valuable, in theory at least, a great deal of the added value really belongs to the public and is legally recognized as not capable of alienation to private parties without very specific authorisation. Consider where the legislature voted overwhelmingly that the trust should not apply to the Snake River, *Ecology Law Quarterly*, 1997, vol. 24: 461. and see Michael Warburton at cwrp@ecologycenter.org.

¹¹⁰ see The Water Pressure Group a <http://www.water-pressure-group.org.nz> for details of New Zealand's program of privatization and the Supreme Court case determining if public trust survives clear legislation otherwise.

¹¹¹ American Water Works Association, 1998, *Privatization and Alternative Approaches to Water Facilities*, AWWA Mainstream.

¹¹² WBCSD, *Partnerships In Practice, Industry, Fresh Water and Sustainable Development*, 1998, see www.wbcd.org, p. 9 Lessons Learned from Partnerships.

¹¹³ Article 1502.3 and note: Commercial considerations are defined as "consistent with normal business practices of privately-held enterprises", Article 1505.

¹¹⁴ Article 1503.

¹¹⁵ Department of Foreign Affairs and International Trade Canada, Communication from Canada, 10 April, 2000, Working Party on Domestic Regulation Job 2198, on file with author.

¹¹⁶ In 1998 Suez-Lyonnaise des Eux subsidiary Essex&Suffolk Water was convicted for illegal over-abstraction of water at five sites over a three year period, see PSI, *supra* and Water News, 14/08/98.

¹¹⁷ In addition rebating on water bills is possible according to how well consumers build the simple, inexpensive structures that could guide this treasure into the groundwaters beneath them. Rather than penalizing people for water usage, wouldn't it be better to see most homes proudly display a "Rainwater Conserving Home" plaque that means they replenish groundwater supplies, reduce flooding and eliminate polluted runoff from their homesite? See Marple at jesl@carolina.net, a waterforum@egroups.com enthusiast.

¹¹⁸ For examples see Richard Connor "North American Vision on Water, Life and the Environment", World Water Council, www.worldwatercouncil.org

¹¹⁹ Peter H. Gleick, "The Changing Water Paradigm: A Look at Twenty-first Century Water Resources Development", The International Water Resources Association, US.

¹²⁰ Ansley Samson, Earthjustice Legal Defense Fund, Florida, asamson@earthjustice.org, another waterforum@egroups.com gem.

¹²¹ So far no one is suggesting pricing for air although there are costs to keeping it clean and the costs are either imposed on the "polluter" with mitigate measures, on the consumer with externalized health effects, degrading the environment.

¹²² Ed Buckle, grower@nethop.net: Individual consumer use presents a very low treatment cost on a per capita basis. In 'organized' areas such as cities the waste stream from households should be separated from other waste streams. This would minimise the waste treatment costs to return the water to its original state. It would also place the real cost of water for agricultural - commercial - industrial applications on those users. This would provide the incentive for these high volume users to change their management practices.

¹²³ Fate of the Great Lakes, p. 63-64 quoting Environment Canada, Urban Water: Environmental Indicator Bulletin, Sept. 1994.

¹²⁴ Reference is often made to the controversial British experience with privatization where Yorkshire Water PLC, for example, choose not to invest in infrastructure maintenance, was losing 30 percent of its water to leaks, while in 1995 making a profit of \$213.4 million in profits that year. Even the British Medical Association became alarmed with privatization's health effects on children., see Fate of Great Lakes, p.66.

¹²⁵ IJC, Final Report, Section 10.

¹²⁶ State of the Lakes Ecosystem Conferences (SOLEC, of scientific experts from Environment Canada and US EPA). 1999, p.19, , see www.cciw.ca/solec.

¹²⁷ Pierre Beland, *Beluga: A Farewell to Whales*, Lyons & Burford, New York.

¹²⁸ William Souder, 2000, *A plague of frogs: the horrifying true story*, Hyperion, New York.

¹²⁹ See Appendix 1 Gibson and Walker, *Assessing the Framework*, supra.

¹³⁰ CELA, *A Sustainable Water Strategy for Ontario* (1999) supra.

¹³¹ Ontario does not list a standard for cryptosporidium , a know protozoan parasite, and continues to permit the use and discharge of lindane an organochlorine insecticide despite the trend d to ban its use for agricultural purposes as the European Union recently announced, see ENS, *France Finds High Pesticide Levels in Drinking Water*, August 29, 2000.

¹³² Bruce Davidson, Concerned Walkerton Citizens, NAFTA Effects on Water workshop, Sept. 11, 2000.

¹³³ see Ontario Environmental Protection Act, R.S.O. 1990, c.E.19, s14(2) excludes "adverse effects" to water from animal wastes disposed of in accordance with normal farming practices"

¹³⁴ Safe Drinking Water Act, 1974.

¹³⁵ Sierra Club of Canada, Rio+8 Report Card, www.sierraclub.ca

¹³⁶ OECD Condemns Canada's Environmental Policies, Toronto Star, Sept 6, 2000 and says Canada has mismanaged in particular its water resources. It should be noted that the OECD remedy that Canada design a licensing system for bulk water exports that would allow it to benefit from abundant water resources is condemned by environmentalists.

¹³⁷ Environment Bill of Rights Registry Number RA000e0015 under the Ontario Water Resources Act, O.Reg. 459/00.

¹³⁸ CELA, Media Release, Environmentalists Pan Drinking Water Regulation, August 8, 2000, www.cela.ca

¹³⁹ Kirsten Valentine Cadieux, Clean Water Campaigner, Sierra Club Eastern Canada Chapter, NAFTA Effects on Water Workshop.

¹⁴⁰ US EPA, *supra* fn 10.

Appendix 1

Assessing Trade: An Application of the Basic Principles of Effective Environmental Assessment to Review of the CEC Analytic Framework for Assessing the Environmental Effects of the North American Free Trade Agreement

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12 September 2000

Introduction

Environmental assessment is one of the more cheerful innovations of the past few decades. It arose as a response to growing evidence of costly and unnecessary damage to ecosystems and communities, apparently due to environmentally insensitive decision-making by governments, corporations and other proponents of significant undertakings. Over the years, environmental assessment has evolved to address decision-making on many different kinds of undertakings and has taken many different kinds of institutional forms. Today most jurisdictions have some form of formal environmental assessment legislation, usually applied to capital projects. But there are in addition environmental assessment requirements imposed in policy and programme reviews, in land use planning deliberations, in corporate project development, in certain applications for financing, and even now in some international agreements, including those establishing liberalized trade regimes.

In all cases, the central idea is the same. Conventional decision-making focused on financial, technical and (in some cases) political factors cannot be relied upon to give adequate attention to how undertakings may affect ecosystems and communities. Special efforts are therefore required to ensure that these effects are recognized and addressed. Understandably, these special efforts must take somewhat different forms in different circumstances. Nevertheless, it is not difficult to draw a set of basic environmental assessment principles from the last 30 years or so of environmental assessment experience and associated learning. In this paper we set out seven principles, drawn from the now extensive literature on environmental assessment and its larger context.

The potential environmental effects of The North American Free Trade Agreement (NAFTA) were a concern when the agreement was being negotiated. In response, the signatories adopted a side agreement establishing a Commission for Environmental Cooperation (CEC) and including in its mandate an obligation to assess the environmental effects of NAFTA. As we shall see, this *ex post facto* form of

environmental assessment is atypical. Nevertheless, the CEC's work can and should be guided by the seven basic environmental assessment principles.

In the discussion below, we apply the seven principles in an examination of the CEC's framework for assessing NAFTA's environmental effects.

Background

NAFTA, which took formal effect on 1 January 1994, comprises the North American Free Trade Agreement, the North American Agreement on Environmental Cooperation (NAAEC) and the North American Agreement on Labor Cooperation. Article 10(6)(d) of the NAAEC instructs the CEC to assess the environmental effects of NAFTA on an ongoing basis. To fulfill this mandate, the CEC established the Environmental Effects Project with the purpose of developing an Analytic Framework to assess the environmental impacts of NAFTA.

The Project has undergone three phases, culminating in the production of a "final" framework for the assessment work. Phase I focused on investigating areas where economic relationships might have changed as a result of the new trade and investment regime established by NAFTA. From this, a preliminary analytic approach was developed. Phase II involved extensive review of the preliminary approach and consultation through a workshop held in April 1996, consultations on trade and environment in the spring and summer of 1996, and review of the work already done by the OECD and other organizations. Phase III has resulted in publication of the *Final Analytic Framework for Assessing the Environmental Effects of the North American Free Trade Agreement* (1999) and will continue with critical analyses of the framework and its application. 1 Most recently, the CEC has commissioned 14 papers from organizations across North America. These papers are meant to provide a critical evaluation of the framework. The findings will be incorporated into the larger review.

One of the 14 papers to be submitted to the CEC examines how well the CEC's *Final Analytic Framework* guides assessment of NAFTA effects involving freshwater. The freshwater effects paper – prepared by the Sierra Club of Canada, the Sierra Club–Eastern Canada Chapter, and Great Lakes United – will be reviewed in a workshop on 11 September 2000.

This paper on the basic principles of effective environmental assessment and their application to the CEC's environmental assessment framework has been prepared as a contribution to the 11 September workshop and is meant to provide a basis for review of the draft paper on assessment of NAFTA's freshwater effects. However, the paper is also meant to be more generally useful in the deliberations on the strengths and weaknesses of the current CEC framework.

Environmental Assessment

As we noted at the beginning, environmental assessment is essentially a means of fostering more enlightened decision-making by ensuring attention to environmental factors along with the usual financial, technical and political considerations. In most jurisdictions, environmental assessment arose to address the inadequacies of pollution control laws that were typically focused on particular receptors (air, water) or sectors (waste), designed to respond to problems after they had emerged, and implemented

through closed scientific, technical and economic bargaining. Accordingly, environmental assessment processes have tended to reflect the opposite approach. They are designed to be comprehensive and integrated, anticipatory and open to public scrutiny and participation.

From the outset, some assessment processes have been narrowly applied as means of identifying and mitigating significantly adverse biophysical effects. However, the strongest assessment processes have been broader and more ambitious. They have been dedicated to improving overall public well-being, have addressed the interrelations of social, economic and cultural as well as biophysical matters, and have sought to identify the most desirable options, rather than merely seeking ways to mitigate the damage from already selected undertakings. 2 Most recently, environmental assessment has gained from the broad acceptance of sustainability as an objective that integrates social, economic and ecological considerations, recognizes the systemic character of human and biophysical relations, and accepts the precautionary implications of uncertainty. 3 And as we noted above, the applications of environmental assessment have expanded greatly to address a broad diversity of undertakings including policies and programmes, regional and sectoral plans and international agreements, as well as major and modest capital projects.

In general, then, environmental assessment thinking and practice have moved towards being

- ◆ earlier in planning (beginning with purposes and broad alternatives)
- ◆ more participative (not just proponents, government officials and technical experts)
- ◆ more comprehensive (not just biophysical environment, not just local effects, not just capital projects, not just single undertakings)
- ◆ more integrative (considering systemic effects rather than just individual impacts)
- ◆ more ambitious (overall sustainability rather than just individually “acceptable” undertakings), and
- ◆ more humble (recognizing and addressing uncertainties, applying precaution)

None of this movement is accidental. Each of the characteristics of environmental assessment listed above is a response to realities that have become more evident or more pressing in recent decades, and that decision-makers ignore at their peril.

In some ways, NAFTA’s environmental effects – i.e. the results of a very broad undertaking that is already being implemented, is an atypical topic for environmental assessment. NAFTA is a very large-scale initiative with a multitude of possible effects, many of them highly indirect and deeply intertwined with those of other influences. Nevertheless, there is no reason in principle that assessment of NAFTA’s effects cannot adopt the characteristics of advanced environmental assessment. The only serious problem is the necessarily reactive nature of the assessment. Environmental assessment is usually carried out on undertakings at the pre-approval stage where careful consideration of alternative approaches and designs can influence the central decision. But environmental assessment of on-going activities is a useful and not uncommon practice. In Canada, it has been used, for example, in reviews of timber management practices and aquaculture operations, both of which are subject to planning and regulatory regimes that merit regular reconsideration. A reactive assessment of NAFTA’s effects can also be seen and designed as an anticipatory means of identifying needs for and possible approaches to revising the current trade regime. And since NAFTA is broadly considered a stepping stone to other similar or more comprehensive trade agreements, an assessment of NAFTA effects can also be considered anticipatory of these future regimes.

Certainly, an environmental assessment of NAFTA is ambitious. But there can be little doubt about the significance of NAFTA as an undertaking with potentially profound influence on environmental matters, especially if environmental matters are defined in the broad and integrated manner demanded by a commitment to sustainability. One of the frequent criticisms of environmental assessment processes is that they have often focused too narrowly on relatively minor single undertakings when the serious effects that merit most attention are at the larger scale where many individual abuses and opportunities interact. That is not a problem in the environmental assessment of NAFTA.

Basic Principles of Effective Environmental Assessment

There are many different approaches to environmental assessment. Even within Canada, environmental assessment is carried out differently within each province and territory. Many of the specifics about the design of the approach must be tailored to the relevant political and economic circumstances, institutional capacities, and assessment topics. However, environmental assessment literature and experience point to a common set of basic principles.

In the discussion below we present the seven main principles for effective environmental assessment and evaluate whether the CEC's framework has incorporated them. While these are principles for environmental assessment processes generally, we have given special attention to how they have been adopted in various frameworks for assessing the environmental effects of trade agreements.

Respect Uncertainty

Uncertainty is unavoidable in assessments of environmental effects at any scale. Biophysical systems are themselves highly complex and virtually all are further influenced by socio-economic, political and cultural factors. The whole is beyond confident description, much less predictive certainty in most practical circumstances. At the continental scale at which NAFTA is applied, the complexities surrounding effects and their causes mean that most judgments will be made in the face of uncertainty, however much care and rigour are applied in the relevant scientific and social science evaluations.

The NAFTA assessment framework should therefore be designed and applied in a way that anticipates and respects uncertainties. It should anticipate that, in many cases, environmental assessment will not identify a clear cause-effect relationship between NAFTA and environmental impacts. 4 It should set a standard of "proof" that is suitable for conditions of inevitable uncertainties, and should be realistic and fair in determining where the burden of providing such proof should lie. It should also clearly incorporate the precautionary principle in guidance for evaluating effects, and assigning greater concern to those NAFTA effects that are difficult or impossible to reverse, that reduce the diversity of future options, and that otherwise weaken abilities to adapt in the face of unexpected changes.

Although acknowledging uncertainty is in itself a critical quality of good environmental assessment, it also plays a role in, and must be considered in application of the other six principles.

Application in the CEC Analytic Framework

The CEC framework does acknowledge uncertainty as a key factor in conducting environmental assessments of NAFTA's effects. It recognizes that there is limited baseline data or information on

indicators and an overall lack of knowledge about relationships among influences and variables. This suggests awareness of the need for caution and humility in judgments about NAFTA's environmental effects. However, the document also includes the claim that "the framework distinguishes clearly between environmental processes that are associated with NAFTA and those that are not". 5 Confidence in the possibility of making such a clear delineation would appear to rely on unrealistic assumptions given the current state of systemic knowledge in face of the complex interdependence of relevant environmental factors.

The framework is also unclear about how it will deal with the uncertainty. The precautionary principle is recognized in the NAAEC, and may therefore be implicit in the CEC's assessment framework. But the framework document includes no explicit guidance for how precaution should influence analysis where a potential environmental risk is identified. There is, for example, no discussion of how to consider severity, reversibility, or maintenance of adaptive capacities.

Adopt Sustainability as the Central Objective

The purpose of the environmental assessment process should be to facilitate achieving sustainability on all three scales of NAFTA—locally, nationally and internationally – and considering all three interconnected components of sustainability – ecological, social and economic. 6 The assessment should not merely aim to identify adverse environmental effects so that they may be mitigated. Instead it should evaluate overall effects that threaten or enhance progress towards sustainability and identify means of improving the extent and distribution of net gains. 7

Sustainability has been defined in many different ways, perhaps most popularly by the Brundtland Commission: "Sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs". 8 This definition rests on the Commission's recognition of the interdependence of ecological, social and economic factors and its conclusion that positive change is required because prevailing practices are moving us further from sustainability.

Commitment to progress towards sustainability implies that good environmental assessment processes must accept the essential inseparability of ecological, social and economic factors in any serious effort to understand our circumstances or improve well-being. Accordingly, assessment processes must define the "environment" and "environmental effects" broadly and address biophysical, socio-economic and cultural factors in an integrative and interdisciplinary manner. Such a broad definition of environment and environmental effects underpins environmental assessment legislation in many jurisdictions including the United States (under the 1969 *National Environmental Policy Act*, which established the world's first legislated environmental assessment process), and Ontario (under the 1975 *Environmental Assessment Act*, which was the first environmental assessment law in Canada). As well, the process must recognize not just direct and immediate individual effects but also long term, additive, synergistic and cumulative effects, both positive and negative. 9

Examining the full range of factors that contribute to sustainability is important in assessments of effects in particular sectors and locations, as well as in more comprehensive examinations of NAFTA's effects. Imagine, for example, NAFTA trade effects lead to more jobs and higher incomes in a certain area and this contributes to an increase in the purchase and use of offroad vehicles. The results might well include

additional ecological damage, land use conflicts with other interests, enhanced environmental awareness at least in some quarters, campaigns for new legislation, deeper community divisions, and a host of other effects, all of which influence each other and none of which can be adequately described, much less understood in a process that focuses only on biophysical factors (or, for that matter, only on socio-economic ones).

Like recognizing uncertainty, accepting sustainability as the purpose of environmental assessment underlies all of the principles.

Application in the CEC Analytic Framework

The purpose of the CEC in creating the analytic framework is to consider positive and negative environmental effects resulting from the implementation of NAFTA. The goal is not to reduce or mitigate environmental impacts, but instead “to develop an improved understanding of the linkages between trade liberalization and the environment”.¹⁰ This understanding will be used to serve the ultimate goal of an enhanced environment in North America. However, “environment” for the CEC includes only the biophysical aspects (air, water, land and biota). Also, the framework is silent on how the greater understanding will be used to enhance the environment. It can be assumed that the information gathered from the environmental assessment process will be available for future planning processes and could help decision-makers avoid adverse environmental effects and enhance gains for the natural environment. No more specific indication of the purpose or anticipated use of the assessment work is provided.

The concept of sustainable development is officially promoted by NAFTA, however, commitment to sustainability is only indirectly stated in the framework document. NAFTA’s support of sustainability is mentioned when justifying using a broad definition of NAFTA in order to identify the connection between it and environmental impacts. Sustainability is mentioned a second time when discussing how economic forces have led to environmental impacts.¹¹ However, when discussing the latter issue, *facilitating* movement towards sustainability is not identified as being the goal of the environmental assessment process. Rather, the CEC is interested in *observing* how the economic forces associated with NAFTA have moved the air, water, land and biota closer towards or further from sustainability. This can hardly be described as a declaration of support for sustainability objectives in the environmental assessment framework.

The framework also fails to support the three interconnected components of sustainability. The framework has defined “environment” and “environmental effects” very narrowly around biophysical factors. Social, political, cultural and economic factors are considered only insofar as they link the economic changes occurring through NAFTA to biophysical changes. The indicators mentioned in the framework as measuring sticks for the impact of NAFTA involve qualities of air, land, water and biota. There are also various indicators that involve measuring the cumulative impact of environmental pressures and supports on the four biophysical media. It is assumed that measuring such things as climate change, ozone depletion, acidification and eutrophication will provide a better understanding of overall environmental impacts. No social, economic, cultural, and political indicators are suggested even though such factors can influence and be influenced by biophysical changes. The nature of the selected indicators suggests a limited appreciation of systemic complexities.

The inattention to social, political, cultural and economic aspects of sustainability also undermines the CEC's tenuous commitment to sustainability.

Set Clear Rules for Application and Implementation

In any good environmental assessment process, the principles that are established for the application of environmental assessment requirements must be well delineated and carefully focused on the most significant cases. This applies to the NAFTA framework as well as to the usual anticipatory, project level environmental assessment processes. In the usual cases, the prospect of facing environmental assessment requirements acts as an incentive for proponents to consider environmental factors (or, better, sustainability factors) seriously in project planning. Application rules in these circumstances must be designed to ensure the incentive applies forcefully and unavoidably where it is most needed – that is, to cases where the potential effects are most significant and to proponents who lack other incentives to take environmental considerations seriously.

The CEC case is somewhat different. Here environmental assessment is being applied retroactively to evaluate effects of NAFTA implementation. But there is still reason to ensure not just that environmental assessment work is focused on the most significant concerns and opportunities for improvement, but also that it works to encourage those responsible for implementing, adjusting and expanding the agreement to take sustainability considerations seriously. Thus, it is important that the process and criteria for selecting cases for environmental assessment, the decisions made in the case studies, and the arrangements for interpreting and publicizing the findings all work towards achieving sustainability and influencing the larger NAFTA process.

The process and criteria for determining what is assessed should ensure attention to a range of issues as well as sectors and regions in the signatory countries, with special regard for the most significant sector-specific and NAFTA-wide issues. The analytic framework will be of little use if it merely serves to address issues that are already undergoing capable assessment or are at least being monitored by individual countries, states or provinces. While assessments of already monitored changes may help to provide further direction for responses to the identified concerns, assessment work should be concentrated on service to the larger goal of achieving sustainability at the hemispheric level. For example, NAFTA effects in vulnerable environmental areas such as water and energy should undergo assessment, so also should NAFTA effects on the distribution of gains and the expansion/reduction of the gap between rich and poor, and NAFTA effects on incentives for governments, businesses and consumers to adopt or neglect sustainable practices. Only then can use of the analytic framework contribute to the second principle of facilitating progress towards sustainability.

It will be especially important to ensure that the larger issues are systematically and regularly tackled so as to encourage NAFTA decision-makers and associated trade authorities to consider these issues in their current work, in anticipation of future environmental assessments of their choices. The process must help strengthen incentives for those involved in the individual sectors, in the NAFTA process and in the negotiation of expanded trade agreements to consider environmental effects in the planning process for individual projects and in the continuance of NAFTA.

The framework for specific assessment work must be clearly articulated to facilitate consistent application in various sectors and locations, and thereby permit future comparisons. This requires a

combination of standard components and procedures and flexible application to accommodate practical differences. Furthermore, compliance with the process must be strongly encouraged and expected from all governments and sectors. Responsibility should be clearly assigned and reporting processes should be monitored.

The OECD (1994) suggests that the process of conducting an environmental assessment on a trade agreement should begin with an economic assessment of the agreement, which carries its own limitations and difficulties. ¹² Economic assessments provide an indication of potential implications for trade flows and patterns of production, consumption and investment. Baseline environmental information should be collected (in this case, pertaining to pre-NAFTA days). Quantitative models as well as qualitative methods can be used to predict environmental impacts from the agreement. ¹³ Impacts can be evaluated by sector, by region or on a NAFTA-wide basis. If the evaluation is done by sector, it must be acknowledged that the method is limited in that it will not account for effects between sectors adequately. Thus, the criteria for selecting the sectors and identifying environmental effects must be clearly laid out. ¹⁴ However, case studies will not always apply only to one sector. When selecting case studies, the criteria should stipulate that the cases with the most potential for environmental implications should be addressed first. The review process would then determine whether the impacts are positive, negative or a combination of both. This may result in cases being selected that are NAFTA-wide or extend beyond a single sector or region.

A core component of most environmental assessment processes is public and agency review of completed assessments. Such reviews are crucial when assessments are done by project proponents who may be far from impartial about the desired findings. But reviews are generally valuable as checks on assessment work and as means of facilitating a broader understanding of environmental effects and associated issues. The CEC framework should incorporate explicit provision for public and expert review of completed assessments.

Rules for steps to be taken once assessments are completed are no less important. Monitoring and follow-up are also an integral part of an environmental assessment, ¹⁵; see the discussion below. Also important are procedures for reporting the findings, for reviewing their individual and collective significance, and for ensuring that the resulting improvements to understanding are shared with the broad public as well as with relevant decision-makers. Further integration of environmental implications and the environmental assessment methodology into NAFTA and other sectoral issues will not be achieved if the reporting process is not clearly marked as part of the environmental assessment.

Application in the CEC Analytic Framework

The framework begins with six hypotheses that are used to focus the analysis. The hypotheses suggest ways that the environment might be affected by NAFTA and they can be accepted, rejected or modified as the evidence from the assessments recommend. The hypotheses are not intended to determine the direction for the assessments, but rather to help the assessor in understanding relationships between variables and to encourage the consideration of important environmental effects. The assessment can then be carried out on individual locations, on specific sectors, on specific trade-environment issues, or on the whole region. However, the framework focuses on sector-specific analysis and provides relatively little direction on how regional or issue-based analysis would be carried out. There are five criteria for

selecting the sector to be assessed and five additional criteria for selecting the issue within the chosen sector. These criteria allow for upstream (inputs) and downstream (product, emissions) sectors to be included in the evaluation, but provide little guidance on how to assess cross-sectoral issues, such as water contamination or transboundary air pollution.

Once the sector and issue have been selected, it must be determined how NAFTA is connected to the sector or issue by examining NAFTA rule changes, NAFTA's institutions, trade flows, transborder investment flows and other economic conditioning forces. Economic changes resulting from NAFTA are then linked to environmental pressures, supports and changes that may have environmental effects. Environmental effects are identified through the examination of a variety of indicators relating to the air, water, land, biota and cumulative impacts.

The steps for applying the framework are clearly laid out; however, the methodology focuses on quantitative modeling techniques that are unlikely to be adequate. Qualitative methods are considered appropriate only for "examining legal, institutional, technological and social factors, as well as components relating to management, production and policy", while quantitative methods can be used to monitor biophysical effects. 16 There is little discussion of the particular qualitative methods that are available and appropriate for this type of assessment. Considering the paucity of data and the limitations of quantitative methods in the face of systemic complexity, it would seem reasonable also to use qualitative methods, including those imbedded in traditional local knowledge systems, to gain valuable information about environmental change.

Balance and breadth were discussed by the CEC and the Environmental Effects Project Team in Phase II and were specifically mentioned in the sixth paper in the Environment and Trade Series, entitled *Assessing Environmental Effects of the North American Free Trade Agreement (NAFTA): An Analytic Framework (Phase II) and Issue Studies*. While balance and breadth are not explicitly addressed in the final analytic framework, the framework's goal is to cover sectors and issues throughout each of the three member countries in a balanced manner. This was evident in the three issue studies conducted by the CEC that examined maize in Mexico, feedlot production of cattle in the United States and Canada and electricity in all three countries. A wide scope was also encouraged within individual assessments. The six hypotheses have been developed in an attempt to be comprehensive and encourage breadth. 17

As the framework is further tested and developed, the CEC should be able to provide more direction on the methodologies to be used and allow for wider-ranging assessments. Region-wide issues, cross-sectoral issues and NAFTA-based issues should all be regularly and formally evaluated.

Responsibility for applying the analytic framework has not been clearly assumed by the CEC or assigned to any other set of government bodies and civil society groups. Rather the CEC "encourages individuals and organizations to apply the framework to priority sectors and issues in North America." 18 The CEC has developed the framework and has commissioned papers in selected areas for testing the framework. So far it has made no further commitment to establishing a continuing programme for assessment of NAFTA effects. While the CEC itself may not be able to do assessments of important matters that one or more of the parties find sensitive, the Commission can guide and fund a process that ensures assessment of significant matters by independent bodies. Moreover, it appears to have a responsibility to do so under its legal mandate. The CEC clearly needs to develop and publicize plans for applying the

framework. This will involve making some firm commitments, setting appropriate procedures and assigning relevant responsibilities.

Normal assessment processes include, and depend heavily upon, provisions for careful and independent review of completed assessment documents. Typically both public and government agency reviews are involved. Use of such a public or agency review mechanism is notably absent from the CEC framework. The CEC encourages individuals and organizations to use the framework, but does not provide any guidance for the stages after the completion of the assessment. In practice the CEC has often taken the initiative to seeking public comment on matters within its mandate. It would be consistent, then, for the CEC to ensure that its process for environmental assessments of NAFTA effects includes an explicit commitment to public review of all completed assessments.

Likewise, no reporting mechanism has been built into the framework. Reporting encourages environmental assessments to be completed rigorously and gives relevant decision-makers an incentive to consider the environmental implications of their choices. Reporting also allows for comparison between and within sectors and issues.

Assess Needs and Alternatives

To achieve sustainability, the environmental assessment process must ensure careful evaluation of the purposes or “needs” to be served by proposed undertakings, and strive to choose, or at least reveal, the “best option” for meeting legitimate purposes and needs. This entails the consideration of alternatives.¹⁹ Typically, serious consideration of needs and alternatives is possible only when the environmental assessment is carried out at the beginning of the planning process when there is a great degree of flexibility.²⁰ Again, because the CEC process is taking place after NAFTA was established, there is relatively little room to compare and evaluate potential alternatives. However, there should be an evaluation of whether environmental impacts would have been different without NAFTA, or would be different with modified trade arrangements. There is no need to assume that NAFTA as currently designed and applied is permanent. The CEC’s environmental assessment results can be fed back into NAFTA through immediate adjustments to current implementation policies and practices and through eventual reconsideration of the regime itself. Moreover, NAFTA assessment findings that consider alternatives might well provide useful guidance for other and related trade liberalization initiatives.

Application in the CEC Analytic Framework

The analytic framework is not set up to consider alternatives. The baseline is established when NAFTA was introduced and the data for the environmental indicators are collected from sources that already collect them. The framework does not suggest any analyses that presume alternative trade arrangements and attempts to plot alternative effect trajectories from the baselines. However, nothing in the CEC mandate to monitor NAFTA’s environmental effects appears to preclude comparative assessment of alternative trade arrangements.

Ensure Transparency and Openness and Facilitate Public Participation

In more typical assessment processes, careful attention to environmental considerations is driven by approval requirements (e.g. satisfactory assessment as a pre-condition for licensing, etc.) and by

requirements to defend assessment work and resulting proposals in rigorous and open reviews (e.g. public hearings). Approval requirements are not an option in the NAFTA case, except insofar as anticipatory assessment may be involved prior to new NAFTA rulings and other initiatives. The CEC can, however, do much to ensure transparency and opportunity for effective public involvement in its assessment work, including the selection of cases for review as well as the actual assessment and review of the cases selected, the interpretation of specific and overall findings, and in the design and implementation of monitoring and other follow-up activities.

Transparency, openness and active efforts to encourage effective participation from the public and multiple stakeholders, including environmentalists, industry representatives, trade unions, consumer groups, farmers and academics are valuable at every stage of the environmental assessment. 21 Effective public participation is widely recognized as the best way of ensuring rigour and impartiality in environmental assessment work. Broad participation ensures that values and varying viewpoints are clearly articulated and incorporated into the process. It also empowers the participants and stimulates a sense of ownership and stewardship over the process and resulting decisions. 22 As well, participation from a variety of actors encourages the sharing of experiences, which may educate other stakeholders.

In order to have real participation that is considered partnership and not merely consultation, the assessment process must be open and transparent. Stakeholders must clearly understand the process, when it is applied, what it is applied to, and how the findings will be used. The process should also “ensure public access to information; identify the factors that are to be taken into account in decision-making; and acknowledge limitations and difficulties”. 23 True partnership also often requires resources to allow citizen groups and NGOs to be involved at the same level as advocates of private and corporate interest.

Application in the CEC Analytic Framework

The CEC has encouraged public participation in the development of the framework by issuing a call for papers to individuals and organizations throughout the three NAFTA countries. However, although the framework is to be used by individuals, institutions and governments, it does not encourage or require public or stakeholder participation during the application of the framework. The framework has been laid out in a transparent manner and is available for all residents of North America, but the CEC does not suggest open and participative use of the framework. This is unfortunate. Environmentally related decision-making as a whole has been moving towards increasingly ecosystemic and participative processes on the grounds that these are more realistic, more rigorous and more credible. Furthermore, many of the qualitative methodologies that could be used to carry out the assessments require participation from “non-experts”. Without provisions ensuring effective public involvement, the assessment work that the CEC is hoping to encourage through use of the framework may enjoy and deserve little public acceptance and be unreflective of the local community or sector that is being assessed.

Monitor the Results and Apply the Lessons

Environmental assessment findings should be followed by long-term and sector-wide monitoring to ensure that results are being used in an appropriate manner and that concerns are being addressed. 24 The results of the environmental assessment must be clearly marked for further application. 25 This may

result in applied mitigation and enhancement measures, publication, monitoring, or future consideration during policy, planning or program development.

Because the CEC framework is being used after the trade agreement has been implemented, the assessments should at the minimum aim to become the foundation for future *ex ante* assessments, resulting in a continuous iterative process. 26 Ideally, environmental assessment processes are designed and applied as parts of a larger integrated process that begins with specified public objectives (sustainability, etc.), which are pursued through planning, assessment, regulatory and other efforts, which in turn have effects that are monitored, with the monitoring results being used to inform revision of the objectives, and so on. The consolidation of assessment findings about NAFTA effects, and findings from subsequent monitoring, could contribute very usefully not just to deliberations about the NAFTA regime but also more generally about objectives and trends in North America.

However the assessment findings are used, a clearly defined process to establish their use should be set out at the beginning of the assessment. A strong use of the results, such as changes to current policy, will provide incentives for many of the relevant authorities and interests to take the NAFTA assessments seriously and to consider environmental factors more carefully in their deliberations.

Application in the CEC Analytic Framework

The framework does not clearly address the issue of follow-up and provides no suggestions on monitoring, reporting or the end-use of the results. However, the framework document does imply that the results will be used to inform future planning decisions. The CEC hopes that the observations will provide more information on the linkage between environmental and trade policies. This information may be used to protect and enhance the environment and fulfill the ultimate goal of creating a better North American environment. But how this might happen remains undefined.

The framework needs to provide more guidance on reporting and monitoring in order to provide incentives for communities and sectors to carry out the assessments. Reporting should be presented as the last step of the framework. A flexible Table of Contents should be provided to guide this step and a timeline and designation for the report should be clearly assigned. Likewise, monitoring should be continued after the steps of the environmental assessment are completed to ensure that negative environmental effects do not worsen and positive effects do not disappear. Reduction and mitigation of environmental impacts are not the primary goals of the assessments, but should be encouraged and addressed throughout the paper.

Be Efficient

Every environmental assessment process needs to be efficient. There are inevitably more undertakings that merit assessment than can be addressed. Moreover, in any assessment there are more potential concerns and possible connections that merit careful examination than can be covered. Time, personnel and finances should therefore be used in the most efficient manner possible, so that the maximum possible enlightenment is gained from the available resources. 27

This has implications for decisions about what undertakings to assess and what concerns and connections to address within particular assessments. In both cases, one key is to focus assessment work

on the areas of greatest significance - that is where the existing or potential effects (positive or negative), the depth or extent of public worry, the need for better understanding, and/or the possibility of substantial influence are greatest.

Concerning what undertakings to assess, the general idea of assessing NAFTA effects is sound. Much of the rising interest in strategic level assessments (of policies, programmes, etc.) is rooted in conviction that the most important regional and global scale environmental issues are associated with the cumulative effects of many activities and that such effects are often more usefully and efficiently addressed through broader scale assessments than through assessments of individual capital projects. But like other environmental assessment processes, that developed for assessment of NAFTA effects must also include means of focusing assessment work on the most significant effect, concerns and opportunities for improvement. To some extent these means of focusing rely on open public deliberation. Judgments about significance are ultimately exercises in applied values; they cannot be reduced to merely technical calculations. At the same time, we have gradually learned some things about the evaluation of significance, at least where environmental effects are involved. These include the importance of considering location and magnitude, frequency and duration, timing, risk, irreversibility and cumulative nature. 28

In addition, commitment to efficiency entails that duplication be minimized and that environmental assessment processes be clearly delineated so that all participants can anticipate and prepare for the steps that must be taken to complete the process. The CEC and other bodies with broad assessment mandates can benefit from cooperation with other independent agencies with similar mandates, interests and expertise. Such cooperative relations may help avoid duplication and maximize beneficial work. However, this cooperation does nothing to relieve the CEC of its responsibility to ensure that it has a well defined and properly rigorous process for assessment of NAFTA effects, in accord with its legal mandate.

Application in the CEC Analytic Framework

The CEC framework delegates efficiency concerns to those undertaking the environmental assessment. There is no discussion of resources or duplication in the framework. However, the framework suggests that only those sectors and issues that involve significant NAFTA-related environmental effects should be considered. The criteria for both the sector and issue selection begin by specifying that they must “relate directly to major environmental media and natural resources.” 29 Major changes in the upstream and downstream sectors or issues are also considered, but only if they are a “major input into and/or consumer of the sector or issue under consideration.” 30 Significance is not defined anywhere in the text of the framework.

As noted above the framework does not indicate what core assessment work the CEC itself will undertake or will ensure is undertaken by others. It is therefore difficult to determine whether assessment work under the framework is likely to be done at all, much less done efficiently.

Conclusion

If applied as designed, the CEC’s final analytic framework should guide assessments that provide relevant and useful information about some of NAFTA’s environmental effects. The framework provides

a strong discussion on the linkages between NAFTA and economic change that may lead to environmental change. It is flexible and reasonably clear. And it reflects good understanding of the many uncertainties that plague environmental assessment. However, in order to achieve a higher level of environmental assessment that is credible, efficient and appropriately focused on sustainability issues, the framework needs to be strengthened. Three major areas need attention.

First, the purpose of the framework should be expanded to allow a realistically integrated approach centred on achieving sustainability. This entails adoption of a broader definition of “environment” that includes social, economic and ecological factors. It also requires an extension of scope so the NAFTA assessments consider not only adverse effects and how to mitigate and avoid them, but also positive steps towards greater sustainability (ecological rehabilitation, community building, fairer distribution of perils and gains, etc.) and how to enhance them. Application of the framework should also be extended to address NAFTA-wide issues of equity and wellbeing, social and ecological.

Secondly, the framework should ensure consideration of alternatives. This should include not just alternative immediate responses to identified problems and opportunities, but also alternative trade arrangements that might have been more beneficial and less damaging in the case assessed, and that might be worthy of adoption in revisions to NAFTA or in the design of new trade arrangements for North America or elsewhere. Such attention to alternatives should also be incorporated in more anticipatory assessments of proposed new plans, policies and programmes that relate to NAFTA and its implementation.

Thirdly, the process should be more open and participative. Local knowledge and other contributions from a variety of stakeholders should be valued and included throughout the process. Public consultation should be sought out at key decision-making steps and the relevant communities should play an integral role in deciding the end uses of the findings.

Properly strengthened and applied, the CEC framework should provide not only illuminating insight into the effects of NAFTA but also lessons that will benefit negotiators and assessors of other trade agreements. To serve well, the framework needs to be developed further to include more of the principles for good environmental assessment. There is work yet to be done.

Notes

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9 Gibson, *Basic Principles of Environmental Assessment Process Design*, p.8.

10 CEC, *Final Analytic Framework*, p.2.

11 CEC, *Final Analytic Framework*, p.7, p.77.

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13 OECD, *Methodologies for Environmental and Trade Reviews*, 1994.

14 OECD, *Methodologies for Environmental Assessment of Trade Liberalisation Agreements*, 1999.

15 OECD, *Methodologies for Environmental and Trade Reviews*, 1994.

16 CEC, *Final Analytic Framework*, p.6.

17 CEC, *Assessing Environmental Effects of the North American Free Trade Agreement (NAFTA)*, 1999.

18 CEC, *Final Analytic Framework*, p.24.

19 CEAA, *The 1999 Cabinet Directive*, 1999.

20 See for example, OECD, *Methodologies for Environmental and Trade Reviews*, 1994; OECD, *Methodologies for Environmental Assessment of Trade Liberalisation Agreements*, 1999; and WB, *Environmental Screening*, 1993.

21 OECD, *Methodologies for Environmental and Trade Reviews*, 1994; and OECD, *Methodologies for Environmental Assessment of Trade Liberalisation Agreements*, 1999.

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23 IAIA, *Principles of Environmental Impact Assessment Best Practice*, p.4.

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25 IAIA, *Principles of Environmental Impact Assessment Best Practice*, n.d.

26 OECD, *Methodologies for Environmental Assessment of Trade Liberalisation Agreements*, 1999.

27 IAIA, *Principles of Environmental Impact Assessment Best Practice*, n.d.

28 CEAA, *The 1999 Cabinet Directive*, 1999.

29 CEC, *Final Analytic Framework*, p.5.

30 CEC, *Final Analytic Framework*, p.6.

Appendix 2

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Appendix 3

A Draft Water Agenda for the Great Lakes Ecosystem Under Discussion by Environmental Nongovernment Organizations

In the February 2000 report of the International Joint Commission to the Canadian and United States governments, *Protecting the Water of the Great Lakes*, the IJC declared that governments in the Great Lakes and St. Lawrence River basin should develop, “with full public involvement and in an open process, the standards and the procedures” for considering water removals from the basin and major new or increased consumptive uses within the basin. The IJC also says that the governments “should not authorize or permit any new removals and should exercise caution with respect to major new or increased consumptive use until such standards have been promulgated.”

A group of environmental organizations from the Great Lakes region in Canada and the United States¹ are attempting to propose the general environmental principles that should guide any such process. In a draft document entitled *An Ecosystem Agenda for Great Lakes and St. Lawrence River Water Use Management*, these groups have put together draft “must haves” for any new standard(s) for the protection of the Great Lakes. The core element of the draft proposal is evaluation of all uses, in basin or out, according to a single criterion: affect on the ecosystem.

This principle could be applied to any proposed water management program anywhere in the world because it is independent of the specific standards, or strategy for implementing such standards, used to judge the acceptability of a given effect on the ecosystem.

The draft nongovernmental proposal contains a very high general objective of the process, standards, and strategy for the basin: “to protect and affirmatively restore the Great Lakes water system, not just fend off additional harm.” But in ecosystem protection as in free trade, the devil is in the details. The draft proposal lays out several guidelines to assure that the overall goal of ecosystem protection cannot be subverted for the protection merely of use sectors or in-basin vs. out-of-basin users. These draft guidelines, still being circulated for comment among basin citizens and the leaders of environmental nongovernment organizations, can be summarized as the following:

General principles

- ◆ The objective must be to protect and affirmatively restore the Great Lakes water system, not just fend off additional harm
- ◆ The strategy for reaching this objective must result in dramatic reductions in basin human water use
- ◆ All changes to the Great Lakes water system must be addressed. Managing solely for how much water is used while neglecting how and where it moves, for example, will not protect water for the benefit of all users, including wildlife

¹ Great Lakes United, Canadian Environmental Law Association, National Wildlife Federation Great Lakes Natural Resource Office, Lake Michigan Federation, and Stratégies St-Laurent.

- ◆ The federal governments must assure the availability of a constitutionally valid mechanism that enables vigorous international, provincial and state cooperation
- ◆ Should state, provincial, and First Nations governments fail to create a strategy, the federal governments should step in to assure that a strategy is created
- ◆ Every individual's right to water for basic human needs must be guaranteed

The strategy

A comprehensive strategy for the protection and restoration of the Great Lakes water system, and a standard for implementing it, must:

- ◆ Provide specific, binational protection and restoration goals for the Great Lakes water system
- ◆ Include a basin-wide standard to be applied to all decisions on proposed new water uses or alterations of the water system-be conservation-based: protecting and restoring the Great Lakes water system as opposed to accommodating and mediating the needs of use sectors
- ◆ Set conservation targets by use sectors with timelines
- ◆ Take a watershed approach to system protection and restoration aimed at encouraging living within the means of individual watersheds
- ◆ Embody the precautionary principle: conservative approaches in the absence of perfect information about the needs of the water system

The process

- ◆ The process for developing the strategy and standard, and for making decisions based on them, must be open and accessible to the public and subject to challenge by citizens
- ◆ The process for developing and implementing the strategy and standard must be guided by the region's state, provincial and tribal governments
- ◆ The process must also respect and accommodate the legitimate role of federal governments in overseeing national and international interests in protecting and restoring the Great Lakes water system

Information

- ◆ Information on the connection between the water system and the life it supports should be continuously and aggressively gathered and assimilated into a publicly accessible, binational water information base that is understandable and useful to lay citizens
- ◆ Regional climate change should be aggressively researched and climate change data evaluated with water data to routinely review the estimated impacts of climate change on water supplies
- ◆ The effects of all approved water uses must be monitored for periodic evaluation of uses against the standard and strategy, and to inform future water use decisions
- ◆ This monitoring information should be included in the binational water information base

Project proposal and review

- ◆ The onus must rest with those proposing new or increased water uses or alterations to the water system to show that they are consistent with the strategy and standard

- ◆ Water use approvals must be rescindable if evidence later arises that they are no longer, or never were, consistent with the strategy and standard

Interim step

- ◆ The federal, state and provincial governments should place a moratorium on new or increased diversions into or out of the basin, and on new or increased water uses and other changes to the basin water system, until a strategy has been implemented, including the listing of a new bilateral environmental and conservation agreement under NAFTA Annex 104.

Appendix 4

Walkerton Case Study

August 2000

The Issue: Water quality

The issue of water quality in Canada was brought to the forefront of the public's attention in May when an outbreak of E-Coil in the municipal water supply of a small agricultural community in southwestern Ontario caused illness in thousands of people and an estimated seven deaths in the community.

On May 15, the Public Utilities Commission sampled the town's water supply. On May 18th they received a fax notifying the commission that the water was contaminated with E-Coil bacteria, however, it was not until May 23 that they acknowledged there was a problem. A boil water advisory had been issued by the region's medical officer of health on May 21 after hearing of two cases of E-Coil infection from an Owen Sound doctor. He had asked about the town's water but had been told three times that it was safe. It was later revealed that tests as early as January had revealed coliform bacteria in the water, which is an indication that potentially contaminated surface waters may have been seeping into the town's wells.

As for what caused the contamination of the town's wells, several factors have been identified. It is clear that the wells were somehow contaminated by surface waters seeping into the groundwater supply. A preliminary hydrogeologic investigation showed that all three wells have potential pathways for contamination to enter.¹ Although, investigators ruled out rainfall as the principal reason for the contamination, it is possible that the heavy rainfall that fell on May 12 could have been a contributing factor. The contamination of Walkerton's drinking water by E-coli is suspected by some experts to be related to livestock manure.² Therefore, increased intense animal farming in the area is a potential cause of the contamination. Other factors that have been identified are the downloading of responsibility to municipalities, human error, and a disruption to the chain of command in reporting the contamination to the appropriate authorities. A judicial inquiry has been struck to investigate what happened at Walkerton and why.

The Environment Commissioner, in its special report entitled "The Protection of Ontario's Groundwater and Intensive Farming" summarized the legal and policy framework protecting groundwater as "fragmented and uncoordinated".³ The Commissioner further noted that within the past two years numerous counties and townships across rural Ontario have attempted to deal with the issue of contamination of drinking water by manure through by-laws but have also urged the provincial government to take action.⁴ The Ontario Ministry of Agriculture, Food and Rural Affairs (OMFRA) has avoided using regulatory measures to address manure, promoting instead a voluntary approach.⁵ Since Walkerton, numerous reports of drinking water e-coli contamination have surfaced in rural Ontario. We have chosen as the focus for our review of the effects of NAFTA on water quality, the issue of contaminated drinking water in rural Ontario.

A. NAFTA Connection

Our thesis is that NAFTA is connected with two of the contributing causes of contaminated drinking water in rural Ontario: downloading of responsibilities for water protection to municipalities and intensive cattle agriculture.

NAFTA is broadly defined in the Final Analytical Framework, “in the spirit of environmental enhancement and the precautionary principle”.⁶ Thus, NAFTA includes the following areas: NAFTA rule changes, NAFTA’s institutions, trade flows, transborder investment flows and other economic conditioning forces (including deregulation and privatization).

1) NAFTA Rule Changes

Chapter 15

Chapter 15 of NAFTA entitled “Competition Policy, Monopolies and State Enterprises” requires that each Party ensure that government monopolies (defined to include government agencies) act in accordance with commercial considerations in their purchase or sale of the monopoly good or service.⁷ Thus Chapter 15 encourages privatization of services traditionally offered by government such as water testing.

Tariff Schedules

With NAFTA, the Parties accelerated tariff concessions under the Free Trade Agreement for Canadian beef imported by Mexico. Currently Canadian and US beef imported by Mexico receives a rate of duty “free”, compared with a 25 percent *ad valorem* duty on non-NAFTA frozen beef and a 20 percent *ad valorem* duty on non-NAFTA fresh beef.⁸ Thus the NAFTA tariff schedules encourage north south trade in North American beef.

2) NAFTA’s Institutions

The issue of drinking water contamination and intensive farming has been considered a number of times by NAFTA institutions.

The North American Agreement on Environmental Co-operation (NAAEC) provides that citizens can make submissions that a Party is failing to effectively enforce its environmental law.⁹ In 1997, the Commission for Environmental Cooperation (CEC) received a submission from number of nongovernmental organizations asserting that many livestock operations in the Province of Quebec are operating in violation of various environmental laws, causing significant harm to the environment and to human health. The submission was supported in part by government reports, including a 1995-96 report to the National Assembly of Quebec by the Quebec Auditor General. After considering the submission and a response from the Government of Canada, the CEC Secretariat concluded that developing a factual record was warranted.¹⁰

The Secretariat can only prepare a factual record if the council, comprised of representatives from each of the three parties to NAFTA, votes in favour of preparing a record. The CEC Council voted by a two-thirds vote to instruct the Secretariat not to prepare a factual record with respect to the hog farm submission.

The issue of e-coli and intensive animal farming was again brought to the attention of the CEC in [1997] when the NAFTA Effects Advisory Group commissioned a study of the environmental implications of NAFTA on feedlot production of cattle in the US and Canada. This study noted a number of complaints related to water pollution problems from cattle feeding operations.¹¹ While the study identified nitrates, herbicides, nutrients, suspended solids, and a decrease in biological oxygen demand as environmental impacts, it did not identify e-coli as an environmental impact. The study also noted the stress on existing infrastructure in Alberta, but concluded that “in most respects, the level of development of these infrastructures in the United States and Canada is such that they will continue to serve as primary locations for both feed-grain production and beef-feeding.”¹²

(3) Trade Flows

Mexico represents an ever-increasing market for beef from the United States and Canada due to higher incomes and an increasing population in the country. In fact, it is soon expected to rival Japan as North America’s primary beef market. While the devaluation of the peso is often pointed to as an explanation in the drastic rise in trade between the North American countries it is clear that NAFTA has also played a significant role. Experts have concluded that NAFTA was significant in expanding the US beef exports by 187 million pounds in its own right even after accounting for the peso devaluation.¹³

The trade flows in the market are as follows: Mexico provides feeder cattle to Canada and the US, who then feed and slaughter the animals for the Mexican market. Canadian cattle are exported to the US for processing, however ever increasing numbers of cattle are being processed in Canada at large meat packing plants in Alberta. Canadian exports to the US increased from 133.6 million metric tons in 1992 to 253 metric tons in 1996. Canada’s imports to the US also rose.

In 1999, exports of Canadian pork exceeded that of the United States, rising from 1998 levels of 425,000 metric tons to 560,000 metric tons while U.S. exports fell from 557,000 metric tons to 530,000. Weights cited are carcass weights.¹⁴

(4) Transborder investment flows

Investments in Alberta by major American meat packers including Cargill and Iowa Beef Packers since the FTA was signed have significantly changed the dynamics of trade in the province. Before the two plants were expanded, trade was mainly east-west. Trade liberalization has caused a shift to north-south and producers on both sides of the border must increase their efficiency, which means larger farms and more animals.

(5) Other economic conditioning forces

Downloading and privatization of drinking water responsibilities

Since signing the FTA and NAFTA, Ontario and the rest of the Canadian provinces have been pushed to focus trade north-south rather than east-west, which has been the case historically. To do so it has to be competitive with the other provinces and the US. One expert has suggested that the rationale for the ongoing municipal and institutional revolution is to increase productivity in order to increase trade.¹⁵ Courchene further states that in order for Ontario to be competitive in the North American market, public sector productivity must increase.

As a result there has been less government involvement and more private sector responsibility for drinking water in Ontario. Ontario and Quebec have no requirements for the private labs to report findings to the provincial authority. Instead, they rely on the municipalities to inform them of potential water quality concerns. This means that as the Environment Commissioner has acknowledged, no one knows the condition of Ontario's groundwater supply. There is also no system of certification for private labs in the province and no legal requirements for water testing, especially in smaller rural communities.

Since 1995, when the Harris government came to power in Ontario, the province's involvement in water quality has decreased substantially as they sought to streamline the public sector, cut red tape and increase efficiency. The environment budget has been cut by approximately 40% and 900 of the Ministry's 2400 employees have been laid off.¹⁶¹⁷ The province's four government water testing labs were closed and responsibility for water and sewage was handed down to municipalities. There is no requirement that private labs report findings of potential water quality concerns directly to the province and instead Ontario must rely on municipalities to inform them of potential problems.¹⁸

As a response to the Walkerton crises, the Ontario government has promised new regulations on water quality. On Aug. 8, 2000 Premier Harris along with Environment Minister Dan Newman, and Municipal Affairs minister Tony Clement announced Operation Clean Water, a new action plan to improve water quality and delivery in the province. Some of the highlights include the regular and frequent sampling and testing of water by accredited labs exclusively, stringent treatment requirements for all drinking water, and clear requirements for the immediate person-to-person communication of reports of potentially unsafe water situations to the Ministry of the Environment, the local Medical Officer of Health and the waterworks owner. Through Operation Clean Water, the government is also developing testing and reporting requirements and a proposed regulation for small waterworks, those that provide water to the public but use fewer than 50 000 litres per day.¹⁹

Increase of unregulated high intensity cattle/hog farming

It is a reality in the agriculture sector today that farming is becoming more and more intensified with more animals being raised by fewer farms. In 1976, 18 622 Ontario farmers raised an average of 103 pigs each. By 1996, 6 777 managed an average of 418 hogs per farm. Two percent of Ontario's hog factories account for nearly one quarter of the 5.6 million hogs produced.²⁰ With increased trade in the beef and hog industry these numbers are likely to increase as larger, more efficient farms grab a larger share of the market. These large operations are creating environmental challenges unlike anything that has been previously experienced by the industry and yet they remain for the most part unregulated. For example, an 80 000 hog operation like the one that is being proposed for an area outside of Lethbridge is expected to create untreated waste equivalent to that of a city of 240, 000 people.²¹

One concern is the reluctance of government to recognize these high intensity animal farms for what they are and regulate them appropriately. The ministry responsible for setting rules for factory farms is the Agriculture Ministry, whose mandate is to promote agriculture not to protect the environment. Manure management practices are voluntary in Ontario (and most of Canada) not mandatory and government has shown a reluctance to change this reality. The industry is opposed to government regulation as demonstrated by an Alberta Cattle Commission report endorsing the concept of voluntary action by producers both at the individual and industry level to avoid the alternative which is outside regulation.²² In May, federal Environment Minister, David Anderson refused to back a NAFTA inquiry

into large scale pork operations in Quebec and the waste they produce, which effectively quashed the initiative. In Alberta, Agriculture Minister Ty Lund also backed away from tougher regulations in May ignoring an advisory committee report that recommended tougher rules for the province's cattle, hog, and poultry operations. In Ontario, Ernie Hardeman defended his decision in early June to oppose attempts by municipalities to prevent factory farms from spreading manure in fields. There are new initiatives in the works for the regulation of agriculture in the province, however, it is unclear at present how far they will go towards regulating factory farms and the waste they produce.

B. Linkages to the Environment

(1) Outputs from Agriculture

Scientifically speaking, it is still unclear what the effect of these factory farms is on the groundwater system. Miller, the Environmental Commissioner for Ontario has stated that there are no mechanisms in place to assess how manure affects drinking water. A few studies have been done on the topic but more needs to be done to examine the link specifically, especially between intensive livestock operations, drinking water, and E-Coli.

The one paper to address the topic specifically is a Health Canada study led by Pascal Michel. The report suggests that the importance of contact with cattle and the consumption of contaminated well water or locally produced food products may have been previously underestimated as risk factors for E-Coli contamination. Spatial models indicated that in Southern Ontario, near the region where the Walkerton tragedy occurred, there is a positive and significant association between cattle density and incidences of reported E-Coli infection. That means that the occurrence of E-Coli is higher in areas with higher cattle or livestock densities. Rural areas demonstrated a relatively high incidence of the condition when compared to urban areas. Finally, the study stresses that while the association observed between the two factors may not be causal, the results warrant further investigation into the topic if only because of the implications to the public health and agricultural sectors. It recommends specific evaluations of the comparative risk of disease contraction between rural and urban populations. It also emphasized the benefits of using existing population based surveillance data in order to best allocate resources and efforts in regions of higher risk as well as to guide policy making in these areas.

Another study, which focused on the natural protection of groundwater against bacteria of fecal origin concluded that manure spreading, particularly when done on a daily basis can increase the risk of well water contamination in the area.²³ In addition to this study, another which focused on nitrate leaching under cattle feedlot manure applications warned against the long term application of manure even at the maximum recommended levels (from the Albertan best management practices or BMPs) because of the implications for soil and water contamination.

These studies when taken together are evidence of the link between intense livestock operations, water contamination and E-Coli infection and certainly suggest that more conclusive studies should be undertaken to examine the link.

(2) Physical Infrastructure

As noted in the Feedlot Study commissioned by the CEC, a rapid expansion of intensive agriculture can strain physical infrastructure. In the case of rural Ontario, it appears that municipal water infrastructure is strained

(3) Social Organization

The reality or fear of contaminated drinking water has a considerable socio-economic impact. Citizens are strained by the care of the sick and the fear of an uncertain quality of water in their taps. Citizens groups have recently formed in the London area, in Bruce County and near Peterborough all focussed on problems related to intensive farming and manure management. Additional groups are focussed on monitoring drinking water

(4) Government Policy

Intensive animal farms are more akin to industry than the family farm. However, the regulation does not distinguish between traditional farms and intensive animal operations. Farms are treated as non-point sources which do not require permits or approvals related to the emission of effluent. Provincial governments have allowed the industry to self regulate. The Federal government has provided agricultural research and financial support to allow operations to take advantage of Canada's position relative to NAFTA trade flows of beef

Regulatory oversight in the United States is stronger. Beef livestock operations with more than 1,000 head with no waterway present or 300 head in the presence of a waterway are considered point sources which must receive discharge permits under section 402 of the *US Clean Water Act*.²⁴ As yet Canada has not experienced an "upward harmonization" of environmental regulatory standards for intense animal farms as a result NAFTA, despite concerns expressed by nongovernmental groups.

Conclusion

Contributing causes of drinking water contamination in Ontario include increased intense animal farming, downloading of responsibility to municipalities, privatization and a disruption to the chain of command in reporting the contamination to the appropriate authorities. Our brief survey indicates that NAFTA is connected to these contributing causes of drinking water contamination in rural Ontario.

In terms of the hypotheses provided to focus the Final Analytical Framework, we conclude the following:

In the case of intensive animal farming there has not been an upward convergence of environmental regulation led by either government or the private sector.

Public pressures for regulation of intensive animal farming have not resulted in regulation. The CEC citizen complaint mechanism was not able to move the government of Canada not provincial governments towards improved regulation and/or enforcement of environmental regulation of intensive animal agriculture.

In order to eliminate the environmental and social impacts related to an increase in intensive animal farming encouraged by NAFTA, a re-orientation in government policy is required which:

- ◆ regulates intense animal farms in the same manner as any other industry; and
- ◆ regulates drinking water quality through clear standards, protocols for testing, protocols for notification of the Ministry of Environment and public health officials, and protocols for follow up by environment and health officials.
- ◆ ensures adequate resources and staffing for public monitoring and enforcement.

Notes

1 “Searching for Answers” Macleans, July 12, p.25.

2 Environmental Commissioner of Ontario, “The Protection of Ontario’s Groundwater and Intensive Farming: Special Report to the legislative Assembly of Ontario” (July 27, 2000)

3 *ibid.* at 6

4 *ibid.* at 9

5 *ibid.* at 10

6 “Final Analytical Framework” at 7

7 NAFTA, Article 1502 (3)

8 Issue Study 2: Feedlot Production of Cattle in the United states and Mexico: Some Environmental Implications of the North American Free Trade Agreement (Commission for Environmental Cooperation, date)

9 Article 14

10 Secretariat of the Commission for Environmental Cooperation, “Article 1591) Notification to Council that Development of a Factual Record is Warranted” A14/SEM/97-003/15/ADV

11 Issue Study 2: Feedlot Production of Cattle in the United states and Mexico: Some Environmental Implications of the North American Free Trade Agreement (Commission for Environmental Cooperation, date) at 231

12 *ibid.*

13 *ibid* at 220

14 National Pork Products Council. “Pork Facts 1999/2000” p.26, and”Pork Facts 2000/2001”, www.nppc.org/PorkFacts/pfindex.html, cited on 18 September 2000.

15 Thomas J Courchene with Colin R. Telmer, “From Heartland to North American Region State” (University of Toronto, 1998) at 284-285

16 “A Matter of Trust”, Macleans, July 12, p. 22

17 “Watchdog slams Ontario Torie’s water protection”, The Globe and Mail, July 28, p.A6.

18 *Ibid*

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