

Canadian Environmental Law Association
L'Association canadienne du droit de l'environnement

517 College Street, Suite 401, Toronto, Ontario M6G 4A2
Telephone (416) 960-2284
Fax (416) 960-9392

NAFTA and WATER EXPORTS

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Prepared by the
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TABLE OF CONTENTS

	Pages
Executive Summary	i
Chapter 1 Water and Free Trade by Wendy Holm	1
Chapter 2 Water Export by Jamie Linton	28
Chapter 3 Provincial Powers to Prevent Water Export by Wendy Holm	46
Chapter 4 Agriculture by Wendy Holm	76
Chapter 5 Putting Our Own House in Order by Jamie Linton	89
Chapter 6 False Profits vs. An Alternate Economic Vision by Wendy Holm	96
Chapter 7 Toward An Alternative Ecological Vision by Jamie Linton	113
References	126

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Executive Summary

In Chapter 1 of the report, the author argues that "all natural water other than sea water" is included under the terms of both the Canada-US Free Trade Agreement and NAFTA, and that this inclusion gives the US (and possibly Mexico) unprecedented and irrevocable access rights to Canada's water resources in perpetuity. This finding flows from the definition of "good" in the Agreements, and the rights of National Treatment accorded to Parties. Contrary to the position of the federal government, the ambit of the agreements is not limited to bottled water. Canada has relinquished its powers to use export taxes, quantitative restrictions, and minimum export prices in regulating water exports. Nor can Canada reduce water exports to the US, once they have commenced, below the proportion of Canadian supply of water exported in a given previous period. The various arguments made by federal ministers to the effect that Canadian control of water resources is not compromised by the trade agreements are examined, and found to be not supported by the texts of the agreements. An examination of the history of negotiations of the Canada-US FTA indicates that Canada was unsuccessful in obtaining an explicit exemption of water from the terms of the FTA. The inclusion in the federal implementing legislation of a section purporting to exempt "natural surface and ground water" from the agreement is ineffective as it does not take precedence over the terms of the FTA in a trade dispute panel. Arguments made by federal officials that water is not included in NAFTA are similarly not supported by the terms of NAFTA.

In Chapter 2, the author reviews the current extent of water exports that affect Ontario, and examines the future likely demand from the US for additional diversions. Concerns in Canada have arisen because of proposals for such major diversions as the GRAND Canal scheme and NAWAPA (the North American Water and Power Alliance). Large scale water diversions may have significant, negative ecological effects including moderate earthquakes, climate change in the vicinity, erosion and turbidity causing a decrease in primary biological activity, loss of wildlife habitat, mercury accumulation, and transfer of species between ecosystems, with serious effects. Specific concerns for Ontarians, in addition to the GRAND Canal proposal include the Chicago diversion, proposals to expand the Mississippi waterway for shipping, and numerous proposals for small municipal diversions from the Great Lakes. A review of the likelihood of US demands for major diversions concludes that given current US hydrology, demand supply, and the high cost of Canadian imports, major diversions in the foreseeable future are unlikely. However, uncertainties caused by expected climate change, including possible impacts on the Great Lakes, may lead to increased demand for major diversions in the future.

Provincial powers to prevent water export are affected by the history of water management in Canada, in which provinces have granted licences for water export. In addition, current water users purchase water from the Crown through water supply rates. The trade agreements place restrictions on provincial governments' powers to interfere with market

forces in water trade including: rights of non-Canadians to access to water; abilities of provinces to prohibit water projects; government interference in pricing; and provincial powers to cancel a contract. Federal powers to regulate water are also subject to the terms of the FTA; possible redress by the International Joint Commission (IJC) is not available since neither the Boundary Waters Treaty, between the US and Canada, nor the IJC jurisdiction cover interbasin diversions such as the GRAND Canal or NAWAPA schemes, or coastal tanker traffic in water.

In British Columbia, water export is a significant public issue, sparked by supertanker exports (the "Santa Barbara" contract), the lucrative market for bottled water, the North Thompson Diversion, a resurfacing of the NAWAPA scheme, and the complex impacts of the Columbia Treaty. Low levels in the reservoirs of BC in 1993, causing BC Hydro to require imports of power, coupled with disclosure of "non-treaty" sales of Columbia River system water to US, have fuelled the controversy. The FTA limits the options that would otherwise be available to the government of BC to resolve some of the now evident environmental and economic impacts of the Columbia Treaty.

Water is the lifeblood of agriculture and of our food. The author surveys the patterns of water control and usage in the US, in which a few huge farms in the west dominate agricultural usage. Significant environmental and social problems exist in farming communities, and critics attribute these problems to the influence of large-scale farming lobbies on federal water development policies. The various scenarios of climate change also suggest that Canadian water supplies for agriculture will be of increasing concern. Canadian agricultural professionals have urged a moratorium on water exports, and steps to ensure that the FTA does not compromise Canadian control over water. Other agriculturalists, communities organizations, and environmentalists have supported this goal. At issue for Canadians is not only the irrigation of existing farm land, but the ability to alter cropping patterns, bring new land into production and increase the volume, diversity and location of domestically-produced foodstuffs to reflect changing domestic needs and international market and climatic trends. This is a critical public policy priority not only in terms of Canada's agricultural sector, but also in terms of regional economic development, rural infrastructure, sustainable development and our environment. It requires that Canada retain sovereignty over our water resources.

Compared with most other countries, Canadians have placed very little value on water resources. We consume more water on a per capita basis than people in any other country except the US. Canadians have diverted more water from one basin to another than anyone else in the world. Of the 18 major inter-basin water diversions in Canada, five are in Ontario. How we manage our own resources is significant in the context of international trade agreements because it could work against our efforts to protect water within the framework established by these agreements. Canada's propensity to dam and divert rivers would make any effort on our part to restrict water exports on conservation or environmental grounds appear rather hypocritical. There have been no major diversions in Ontario since 1963, and the environmental, economic and social costs of building them for

hydroelectric generation make further diversions unlikely. However, the Georgian Bay Pipeline Proposal is being proposed, to transfer 227 million litres of water per day from Lake Huron to municipalities in Southern Ontario. Attention is currently being focused on strategies to increase water efficiency in Canada, but to date, no appreciable reductions in water use have resulted. The Ontario Water Efficiency Strategy, announced in 1991, aims to hold municipal water use constant for the next twenty years through more efficient use. The permit requirements of the Ontario Water Resources Act and Water Rights Act regulate water withdrawals. The proposed Ontario Clean Water Agency will operate water treatment and sewage plants on a cost-recovery basis. It will also promote water efficiency through administration of the Municipal Assistance Plan for financing water and sewage infrastructure.

A country that imports, or has the option of importing water, will be less inclined to promote water conservation at home than if it had to rely on its own resources. Thus, the inclusion of water in the FTA and NAFTA may have the effect of relieving pressure in the US to conserve water resources. In addition, water conservation programs, including subsidies to industry to promote water conservation, could be considered to have an impact on trade, and could be subject to challenge under the trade agreements. Where domestic tax or pricing policies are used to promote water conservation, they could result in giving exempt foreign competitors a perceived advantage. NAFTA and the FTA also discourage resource conservation by preventing governments from applying export restrictions. The inclusion of water in the agreements leaves Canadians with little, if any means of legally restricting water exports unless Canadian governments resolve to resist trade-based challenges to such restrictions.

Classical economic theory dictates that markets, not regulators, are most efficient at delivering optimum economic performance. However, such theories must be examined, in relation to water policy, with consideration of the extent to which the entitlements of market-marginalized stakeholders are protected by water markets, and the mobility of the resource. The widely held belief that continental water sharing proposals are not economically feasible is a myth. There is no reason to expect that the US practice of providing subsidies for water prices will cease, given the proven ability of drought-ravaged farmers to exert political pressure, and the industrial and infrastructure sectors which rely on continuous water supplies.

In addition, in the new reality of economic continentalism, water has acquired a market value sufficient that many large-scale water diversion projects, may, indeed, make economic sense in many regions of North America. In California, farmers and cities are coming to an agreement that some form of water marketing is inevitable. US businessman Albert Parker and his partners have raised \$42 million to buy water rights in Nevada, California and Colorado. Market demand for water in the US South West and Mexico in the year 2000 will remain strong due to development pressures. If past continental water diversion schemes were measured instead on today's water values, the economics would improve dramatically.

However, the premise that effective water markets are the only economic solution is also a myth. It is imperative that water to existing users be priced so as to ration more effectively the use of this resource and recapture the funds needed to maintain and upgrade existing systems. However, water pricing unrelated to quantity or source is antithetical to economic "prosperity" objectives. Although continental water pricing systems would allocate water efficiently in accordance with the economic needs of our present North American market economy, three potential flaws exist in the application of classical economics to justify water markets: marginalized stakeholders, allocative problems, and the capacity of oligopolistic market players to appropriate profits.

The goal of economic policy is to achieve prosperity, a combination of economic growth and social justice. It is important to defend the judicious use of market regulation to deliver prosperity benefits to Canadians.

A rational and sustainable water policy would include: increased reliance on pricing; possible support for exports of small-scale quantities of water after rigorous evaluation on a project-by-project basis; and public sector rather than private sector involvement in the market transaction.

Further, there should be no consideration for any form of interbasin diversion projects, either for domestic or export purposes, for both environmental and economic reasons.

For ecological reasons, it is necessary to consider alternatives to trade liberalization. It is reasonable to require that every region live within its ecological constraints in order to achieve global sustainability.

Trade liberalization has been criticized for undermining community in industrialized nations. Similarly, it can harm natural communities and ecosystems by increasing transfers of resources from one region to another, leading to a loss of ecosystem integrity. It permits some countries or regions to live beyond their ecological means while leading to ecological impoverishment of other regions. Significant global ecological degradation is now evident, and increased liberalization of trade will not include sufficient efficiency gains to outstrip growth in energy and material use.

Rather, increased self-reliance, the goal of preserving ecosystem integrity, and restrictions on export of some resources, including water, is a preferred future course. Regional self-reliance can be furthered by the practice of "bioregionalism", living within the natural capacity of the bioregion in which a community lives. Watersheds are natural regions, in which surface and groundwater conditions constitute a set of essential parameters that govern virtually all life in the region. There are useful precedents within Ontario from which we can learn about viable, regional governance and promotion of self-sufficiency. These include the Conservation Authorities, the "ecosystem approach" of the Royal Commission on the Future of the Toronto Waterfront, and the unique economic, regulatory and institutional culture of governance of the Great Lakes Basin.

Chapter 1

Water and Free Trade

1. Introduction

Canada's Federal Water Policy, introduced in November 1987, contained the clearest and most comprehensive statement on water ever to come from Ottawa.

In his introduction to the policy document, then-Federal Environment Minister Tom McMillan stated that "Canada emphatically opposes large-scale exports of our water." The policy itself notes that the federal government will "take all possible measures within the limits of its constitutional authority to prohibit the export of Canadian water by interbasin diversions; and strengthen federal legislation to fully implement this policy." (Canada, Environment Canada, 1987).

McMillan's water policy statement was initially received very positively by the Canadian public, particularly when it was followed by the promised federal legislation (Bill C-156, The Canadian Water Preservation Act) which would have banned large-scale water export. The proposed legislation was given first reading in the House of Commons on 25 August 1988. However, within weeks of its introduction and before its terms could be considered by a parliamentary committee, the Government of Canada called a federal election and the Bill died on the Order Paper. The release of the draft Canada-U.S. Free Trade Agreement (FTA) the following month - which clearly included water as a good of trade between the parties - fanned renewed criticism that Canadian water would ultimately follow energy in a continental resource-sharing package.

Despite widespread public concern that water would be considered a "good" under the FTA (thus conferring unprecedented rights of access to the U.S. and opening the door to large scale exports), no steps were taken by the Canadian government to resolve the issue. The continued inclusion of water as a good under the NAFTA exacerbates this concern.

2. Why Water is Included in the Free Trade Agreement and the North American Free Trade Agreement

In general, the architecture of the NAFTA is very similar to the FTA. Not surprisingly, the NAFTA includes water as a "good" under the terms of the agreement for essentially the same reasons as does the FTA.

Purpose of the Agreements

The purpose of the FTA, as set forth in Article 102, is to:

- eliminate barriers to trade in goods and services between the territories of the Parties;
- facilitate conditions of fair competition within the free-trade area;
- liberalize significantly conditions for investment within this free-trade area;
- establish effective procedures for the joint administration of this Agreement and the resolution of disputes; and to
- lay the foundation for further bilateral and multilateral cooperation to expand and enhance the benefits of this Agreement.

Similarly, Article 102 of the NAFTA sets forth the objectives of that Agreement, which include to:

- eliminate barriers to trade in, and facilitate the cross border movement of, goods and services between the territories of the Parties, to increase substantially investment opportunities in the territories of the Parties, and to establish a framework for further trilateral, regional and multilateral cooperation to expand and enhance the benefits of this Agreement.

Water as a "Good" under the FTA and NAFTA

Much of the controversy surrounding the water-trade issue centres on the question of whether water is a "good" under the terms of the FTA and the NAFTA, and whether or not this definition is limited in any manner by the way in which the water is packaged.

Article 201.1 (Definitions) of the FTA states that:

goods of a Party means domestic products as these are understood in the General Agreement on Tariffs and Trade.

Similarly, "Goods of a Party" are defined in Article 201 of the NAFTA as:

products as these are understood in the General Agreement on Tariffs and Trade.

This means that any good covered by a GATT tariff heading is subject to all the provisions of the Agreements themselves unless explicitly excluded in their respective texts. (An example of this is an explicit exclusion of the export of logs of all species is contained in Article 1203 of the FTA.)

Therefore, to understand the basis for inclusion of water in the trade agreements, one must

first look to the relevant section of the Harmonized Commodity Coding System (HCCS) of the GATT. The HCCS for classifying goods for customs tariff and other purposes adopted by the GATT includes the following heading:

22.01 Waters, including natural or artificial mineral waters and aerated waters, not containing added sugar or other sweetening matter nor flavoured; ice and snow.

- 22.01.10 Mineral waters and aerated waters
 - 10 Natural mineral water
 - 90 Other
- 22.01.90 Other

To provide further clarification of HCCS items, the GATT Harmonized Commodity Description and Coding System Explanatory Notes were adopted by the GATT signatories in Geneva in 1986. The explanatory note for heading 22.01 - which represents the only GATT-sanctioned (e.g. officially-recognized) elaboration on the HCCS text - is as follows:

This heading... covers ordinary natural water of all kinds (other than sea water). Such water remains in this heading whether or not it is clarified or purified.

It is clear from the wording of the HCCS and the Explanatory Notes that tariff heading 22.01 includes all natural water, including water in the form of ice and snow. The only water excluded from the heading is water that contains added sugar, other sweetening material, or is flavoured. The first item under heading 22.01 - Tariff 22.01.1 - includes mineral waters and aerated waters. The second item - Tariff Item 22.01.9 - includes all natural water other than sea water (e.g. other than that which can be classified as "mineral and aerated water").

The "Only Bottled Water" Debate

During the 1988 pre-election debate over water resources, the Government of Canada asserted that the FTA's jurisdiction was clearly limited to "only bottled water". In a letter to the editor of the Montreal Gazette published 8 July 1988, then-International Trade Minister John Crosbie stated that "all that the FTA provides for the record is the elimination of tariffs on the export of bottled water.". In a subsequent article published by the Gazette on 21 July 1988, Crosbie supported his contention of "only bottled water" on the basis that the HCCS "refers to water under the 'Beverages, Spirits and Vinegar' chapter", adding that "This simple reference to a beverage has been the basis for all the apprehension that has developed about water exports."

In attempting to impute a restriction on the interpretation of Tariff Item 22.01 by virtue of its HCCS Chapter title, Crosbie was wrong. As clearly stated in the preamble to Volume 1 of The GATT Harmonized Commodity Description and Coding System Explanatory Notes, under the heading General Rules for the Interpretation of the Harmonized System:

The titles of Sections, Chapters and Sub-Chapters are provided for ease of reference only; for legal purposes, classification shall be determined according to the terms of the headings and any relative Section or Chapter Notes.

It is important to note that for all goods, the GATT HCCS is completely silent with respect to quantity, packaging or mode of transport. Just as "beef is beef" whether it walks across the international border, is transported as hanging sides, or enters as boxed hamburgers, water is a "good" regardless of the volume or manner of export.

This position is not only understood and upheld by recognized and respected Canadian experts in international trade and resource law, it is further acknowledged by the very Ottawa law firm which the Canadian Government repeatedly referenced in support of their position on water exports during the 1988 water-trade debate. In a 31 August 1988 letter to Donald Gamble of the Ottawa-based Rawson Academy of Aquatic Sciences, Richard Dearden of the law firm Gowling and Henderson stated his opinion that:

...nothing in the wording of Tariff Item 22.01 suggests that the word waters is restricted to waters used as a beverage or waters that are not of large-scale quantities such as would be required for a diversion. The inclusion of the words 'ice and snow' support this interpretation... In conclusion, it is my opinion that any water, other than sea water, would be classified under Tariff Item 22.01 regardless of the quantity of water exported and regardless of its use.

National Treatment

The national treatment provisions of the FTA (Article 105) and the NAFTA (Article 301) differ with respect to scope; NAFTA adopts the GATT definition of National Treatment, while the FTA extends the GATT definition to apply to exports as well as imports.

What this means is that under the FTA, Americans have and will continue to enjoy full national treatment rights (rights to "turn on the tap") to Canada's water. Furthermore, because of the jurisdictional hierarchy between the agreements (elaborated on more fully in Section 4 of this chapter), American access rights to Canadian water conferred under the FTA are not altered by the more restrictive National Treatment provisions of the NAFTA. Significantly, Mexico does not enjoy similar national treatment access rights to American water (including that sourced from Canada) under the NAFTA.

The purpose of national treatment is to prevent a country from using internal measures, such as internal taxes and other internal charges, laws, regulations and requirements, to afford protection to its nationals. For this reason, national treatment reaches beyond border measures such as tariffs and quotas to apply to internal measures.

Under the GATT, National Treatment between two trading partners means that Country

"A" must accord to the citizens of Country "B" treatment identical to the treatment it provides to its own nationals. ("treatment no less favourable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use.") with respect to imports.

For example, if Country "A" wished to purchase computer terminals and put out a tender to supply them, a national treatment agreement between two countries would require that manufacturers of computer terminals in Country "B" be treated equally in all respects to Country "A"'s manufacturers in their right to bid on this contract. In essence, the government of Country "A" must be "blind" with respect to country of origin as between Country "A"'s and Country "B"'s suppliers in the notification, tendering, evaluation and selection process.

It is important to note that the GATT definition of National Treatment limits rights and obligations to internal taxes and regulations on imported products only (Article III). Consequently, because the GATT definition of national treatment does not apply to exports, the United States does not have any GATT national treatment rights to Canada's water.

Free Trade Agreement

Article 105 of the FTA states that:

Each Party shall, to the extent provided in the Agreement, accord national treatment with respect to investment and to trade in goods and services (emphasis added).

By the use of the word "trade", the FTA extends the GATT-based National Treatment rights, which apply only to imports, to apply to exports as well). Because water is a "good" under the agreement, this means that the principles of national treatment apply to water, including water exports.

For an example of how these rights might be invoked on a water diversion question, consider the example of an irrigation project hypothetically undertaken in southern Alberta to provide drought relief to Albertan farmers. The U.S. agricultural sector, under the National Treatment provisions of the FTA, is well within its rights to assert that if the United States pays for the capital works to bring the water from where we have it to where they need it, and to construct bigger dams to provide sufficiently large catchment basins, then under the National Treatment provisions of the deal, U.S. farmers have a right - equal to Canadian farmers - to access the benefits of this project. Under National Treatment, Americans can, indeed, "turn on the taps" to Canadian water.

NAFTA

Because Article 301 of the NAFTA adopts by direct reference the GATT definition of

National Treatment:

Each Party shall accord national treatment to the goods of another Party in accordance with Article III of the General Agreement on Tariffs and Trade (GATT).

The NAFTA, in contrast to the FTA, would not appear to extend the GATT definition of national treatment to include exports.

This point, however, bears further examination. Annex 301.3 of the NAFTA grants explicit exemptions from the National Treatment provisions to exports of raw logs and fish. The inclusion of Annex 301.3 would seem to strongly suggest that NAFTA's National Treatment provisions are not limited to imports, but, like the FTA, extend to exports as well.

If NAFTA's National Treatment provisions are limited to imports (as the reading of the GATT definition of National Treatment - Article III - would seem to suggest), they do not confer to Mexico the full security of rights to Canada's water which the Americans enjoy under the expanded National Treatment definition (extended to exports) under the FTA. Because national treatment rights would not become part of Mexico's arsenal of trade arguments in attempting to source water from the U.S., Mexico's continental water access rights would be subject to further negotiation. Further, such negotiation would likely be bilateral (between the U.S. and Mexico) when the Americans have more fully fleshed-out their wish list of further concessions from Mexico in the wake of the NAFTA.

Investment

The concern surrounding retention of Canadian sovereignty over our water resources under the trade agreements is exacerbated by the extension of the principles of National Treatment to services and investment (NAFTA articles 1102 and 1202 and companion articles in the FTA) which ensure that neither the provision of construction or engineering services nor the flow of capital can be disproportionately impeded. As noted in a December 1992 paper by the Centre for International Law, Washington, D.C. entitled Interbasin Water Transfers After NAFTA, "construction, engineering and investment are key components of any large-scale water export development project. Under the trade agreements, Canada retains no ability to control a large-scale water export plan by regulating foreign service providers or investors."

Export Taxes

Because of GATT limitations on the use of export restrictions, export taxes are one of the primary regulatory policy instruments which Canada has, in the past, used to control or limit the export of a specific good.

Under the GATT, Canada has the right to levy export taxes at any level for any purpose providing the tax is levied on a most-favoured-nation basis. An export tax is the only trade measure that Canada can legally use under the GATT to permanently embargo exports of water or any other good for any purpose.

FTA

Under the FTA, Canada has, for all practical purposes, relinquished its right to levy an export tax on water or any other good consumed in Canada.

FTA Article 408 states "Neither Party shall maintain or introduce any tax, duty or charge on the export of any good to the territory of the other Party, unless such tax, duty or charge is also maintained or introduced on such good when destined for domestic consumption." The inclusion of Article 408, prohibiting the introduction of such discriminatory measures, is clearly a significant constraint on the ability of Canada to regulate exports of water.

NAFTA

Article 314 of the NAFTA (Export Taxes) contains more specific wording with respect to export taxes: "Except as set out in Annex 314 [which applies to Mexico only] no Party may adopt or maintain any duty, tax or other charge on the export of any good to the territory of another Party, unless such duty, tax or charge is adopted or maintained on... any such good when destined for domestic consumption".

The adverse consequences that could flow from giving up our GATT right to embargo water exports by levying export taxes can be illustrated by reference to the provinces.

The Federal Water Inquiry (Canada, Inquiry on Federal Water Policy, 1985) observed that "under any interpretation of Canada's constitution, the provinces have wide jurisdiction over water." Assume a provincial government diverts water within its boundaries for sale in Canada and export to the U.S., or privatises water rights to achieve similar results. In such circumstances, the federal government would have to levy a domestic tax on Canadian users equal to the export tax if it wanted to embargo exports of water. Since the purpose of an export tax would be to create an economic disincentive to export sales, the rate of tax would have to be considerable to offset growing U.S. demand. Applied on an equal level domestically, this would have the effect of sharply increasing water rates to Canadian users. Since politically the government could not, through the use of such a tax, drive the domestic price of water above that which Canadians could afford to pay, it would likely also not serve to dampen U.S. demand.

Export Restrictions

Once export taxes are removed from Canada's arsenal of permissible trade policy

implements, the only measures left are some form of quantitative export restrictions or minimum export pricing.

FTA

Article 407(2) of the FTA prohibits minimum export prices "in any circumstances in which any other form of quantitative restriction is prohibited". In other words, in a given trade situation, if a quantitative restriction would not be allowed, then neither is a minimum export price. As the following discussion of quantitative restrictions clearly indicates, this would effectively rule out minimum export pricing for water resources.

Section 409 of the FTA (Other Export Measures) stipulates the conditions which must be met if prior to the imposition of quantitative restrictions on the export of a good under the Agreement.

Quantitative restrictions are only allowed if they are consistent with Article XI:2(a) or Articles XX (b), (g) or (j) of the GATT. These provisions are hedged with conditions that rule out their use to permanently embargo exports of water (or apply minimum export prices):

- i. Article XI:2(a) allows "export prohibitions or restrictions temporarily applied to prevent or relieve critical shortages of foodstuffs or other products essential to the exporting contracting party". This provision would not allow Canada to restrict water exports to meet future needs (e.g. agriculture, regional industrial expansion, economic development). Nor would it justify restrictions on the basis of environmental concerns.
- ii. Article XX(b) - measures "necessary to protect human, animal or plant life or health" - would not address the situation where a province wished to divert shipments to serve the needs of the domestic market; indeed, depending upon how narrowly it was read, it might not even deal with broader ecological concerns. A strong argument could also be constructed that Article XX(b) was primarily intended to permit the use of import restrictions required to enforce sanitary and health regulations. Its applicability to export restrictions, therefore, is questionable. (For a further discussion of this issue, in particular the extent to which the FTA and the NAFTA further restrict the provisions of GATT Article XX(b), refer to the section of this chapter entitled The Environment.)
- iii. It is questionable whether Article XX(g) - "measures relating to the conservation of exhaustible natural resources" - would apply to water, since surely the more likely interpretation of "exhaustible" is one analogous to that of a non-renewable as opposed to renewable resource - for example, oil and other minerals as opposed to, say, water and fish.

- iv. Article XX(j) - "measures essential to the acquisition or distribution of products in general or local short supply" is designed for emergency situations of a temporary nature and is subject to a requirement of "equitable" international sharing.

Even if Article XX (b), (g) or (j) were found to have limited applicability, the provisions of Article 409 of the FTA would require that three prerequisites be met before trade can be reduced: Canadian consumption of the good would have to be cut back by the same proportion as are U.S. exports (e.g. if we cut exports by 10% we must cut domestic use by 10%). The price paid by Canadians must be equal to that paid by Americans. And, perhaps most significantly, under no circumstances can Canada restrict the "normal channels of supply" of a good.

For water, FTA Section 409 has very serious implications for Canada. It could mean domestic cutbacks, price increases, and, most importantly, the inability for Canadians to ever "turn back the tap" since any supply of water to the U.S. will of necessity quickly come be a "normal channel of supply," particularly since for water there are no substitute goods nor alternative sources of supply.

NAFTA

Similar to Article 407 of the FTA, Article 309 of the NAFTA (Import and Export Restrictions) states that:

no Party may adopt or maintain any prohibition or restriction on the... exportation or sale for export of any good destined for the territory of another Party, except in accordance with Article XI of the GATT.

Similar to Article 409 of the FTA, Article 315 of the NAFTA (Other Export Measures) requires that any quantitative restriction of exports as a result of a shortage of domestic supplies must ensure that:

the restriction does not reduce the proportion of the total export shipments of the specific good made available to that other Party relative to the total supply of that good of the Party maintaining the restriction as compared to the proportion prevailing in the most recent 36-month period for which data are available prior to the imposition of the measure...,

the Party does not impose a higher price for exports of a good to that other Party than the price charged for such good when consumed domestically, and

the restriction does not require the disruption of normal channels of supply to that other Party or normal proportions among specific goods or categories of goods supplied to that other Party.

Agriculture

FTA

In Chapter 7 of the FTA (Agriculture), Article 711 (Definitions) explicitly includes water (Tariff Item # 22.01) in a list of goods defined as "agricultural goods".

NAFTA

Similar to the FTA, the NAFTA also has a section (Chapter 7) specifically dealing with Agriculture. Article 708 defines an "agricultural good" as "a good provided for in [the] Harmonized System (HS) Chapters 1 through 24." HS Code 22.01.9 (all natural water other than sea water) therefore falls under not only the general provisions of the NAFTA, but also is explicitly included as an agricultural good under Chapter 7, Article 711 of the Agreement.

Further, Annex 702.1 to Chapter 7 of the NAFTA incorporates the FTA inclusion:

Articles 701, 702, 704, 705, 706, 707, 710 and 711 of the Canada - United States Free Trade Agreement apply, as between Canada and the United States, which Articles are hereby incorporated into and made a part of this Agreement... The definitions of the terms specified in Article 711 of the Canada - United States Free Trade Agreement shall apply to the Articles incorporated by paragraph 1.

The Environment

FTA

During the pre-election debate of 1988, then-Trade Minister John Crosbie repeatedly cited Chapter 6 of the FTA (Technical Standards) - and specifically Article 609 of that chapter - as providing Canada with the ability to protect our water resources from exploitation under environmental grounds. The first paragraph of this Chapter (Article 601) defines the scope of the chapter:

The provisions of this Chapter shall apply to technical standards related to goods other than agricultural, food, beverage and certain related goods as defined in Chapter Seven (Agriculture).

Since water (Tariff Item 22.01) is specifically cited as an "agricultural good" in Article 711, Article 601 has the effect of specifically exempting water from all provisions of Chapter 6. Consequently, even in the event of an environmental objection, the rights to water conferred upon Americans under the FTA would not appear to be subject to cancellation.

NAFTA

Trade Minister Michael Wilson has stated on numerous occasions that under NAFTA, Canada has the "right to restrict or prohibit the export of water products as an environmental measure necessary to protect human, animal or plant life or health" (Concern Over Water and NAFTA Not Based on Fact, Op-Ed, Victoria Times-Colonist, May 2, 1993).

This statement has been frequently echoed by Wilson's colleagues, notably by federal M.P. Bill Domm, Parliamentary Secretary to the Minister for Science in his response to a question in the House of Commons Adjournment Debate on the NAFTA of June 3, 1993 by Lyle McWilliam, M.P., Okanagan-Shuswap:

What is in the NAFTA is the right to restrict or prohibit the export of water products when necessary to safeguard the environment or to protect human, animal, plant life or health.

However, careful reading of the NAFTA undermines such assurances by Wilson and Domm. Article 724 of the NAFTA clearly limits the use of such measures to

...a measure that a Party adopts, maintains or applies to protect animal or plant life or health in its territory from risks arising from the introduction, establishment or spread of a pest or disease... the presence of an additive, contaminant, toxin or disease-causing organism in a food, beverage or feedstuff, a disease-causing organism or pest carried by an animal or plant, or a product thereof... [or] from the introduction, establishment or spread of a pest.

NAFTA's environmental provisions to protect human, animal or plant life or health clearly do not allow Canada to embargo water exports.

Unlike the FTA, the NAFTA contains a special clause (Article 104 - Relation to Environmental and Conservation Agreements) which specifies that "In the event of any inconsistency between this Agreement and the specific trade obligations set out in [selected environmental and conservation agreements], such obligations shall prevail to the extent of the inconsistency". Included in this list a number of agreements, including:

The Convention on International Trade in Endangered Species of Wild Fauna and Flora,

The Montreal Protocol on Substances that Deplete the Ozone Layer,

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal,

The Agreement Between the Government of Canada and the Government of the

United States of America Concerning the Transboundary Movement of Hazardous Waste, and

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.

NAFTA Article 104 makes no mention of Canada's Federal Water Policy nor of Canada's NAFTA implementing legislation (The North American Free Trade Implementing Act), both of which Trade Minister Michael Wilson and his predecessors continue to insist will "prohibit" large scale water exports.

Special Exemptions

Similar to the FTA, the NAFTA also exempts certain products from its jurisdiction. Although raw logs and other commodities, such as unprocessed fish from the Maritimes and Quebec, are specifically exempt from the terms of the Agreement, water is not included in this list.

Special Safeguards

Both the NAFTA and the FTA define certain goods for which a Party may "adopt or maintain a special safeguard in the form of a tariff rate quota on an agricultural good listed". Water is not included in the special safeguard provisions of either Agreement.

3. Jurisdictional Hierarchy

When assessing the linkage between the FTA and the NAFTA, the concept of an "envelope within an envelope" is a useful metaphor. The FTA exists as an "envelope of rights" defining U.S.-Canada trade relations within the larger envelope of the NAFTA. The NAFTA can broaden, but does not constrain, FTA rights unless such FTA rights are explicitly modified by the NAFTA.

The FTA continues to govern trade between Canada and the U.S. except to the extent that specific provisions are subsumed or modified by NAFTA. Since American rights to Canada's water resources are neither subsumed or modified under the NAFTA, American rights of access to Canada's water resources are not extinguished or, in fact, in any way compromised by the NAFTA.

In FTA Article 104, both parties agreed that "In the event of any inconsistency between the provisions of this Agreement and such other agreements, the provisions of this Agreement

shall prevail to the extent of the inconsistency." Similarly, Article 103 of the NAFTA establishes the primacy of the trilateral agreement over all other agreements ("In the event of any inconsistency between this Agreement and such other agreements, this Agreement shall prevail to the extent of the inconsistency").

4. Response of the Canadian Government

The Canada-U.S. Free Trade Agreement: History of Negotiations

In response to public concern raised during the 1988 pre-election debate over water resources and the FTA, the Government of Canada first countered that the reference to water in the tariff schedule came not from Canada-U.S. negotiations but from the long-standing General Agreement on Tariffs and Trade (GATT), noting that it had always applied to only water in beverages or otherwise containerized for sale. Rather than resolving the issue, the Canadian government ruled out the practicality of seeking concurrence with the U.S. Government to amend the trade agreement language on the basis that both sides had finalized negotiations, and further clarification was not necessary.

Gordon Ritchie, Canada's deputy trade negotiator, told the House of Commons committee holding hearings on the Canadian legislation implementing the FTA that water had been discussed, but that in the end it was decided not to exempt it from the deal. "I do not think it would be appropriate for me to get into the negotiating record in any detail. Let me say two things on that, though. One is that at the technical level - clearly one of the options would have been to include some specific language. At the negotiating table itself, with chief negotiator Reisman on one side of the table and chief negotiator Murphy on the other side of the table, that issue was never discussed, it was never proposed, and it was never the subject of negotiation or agreement."

In a television interview during the fall of 1988, U.S. Ambassador to Canada Thomas Niles fervently assured Canadians that "We're not talking about water. Nobody has mentioned water. Water was never, never raised at any point during these negotiations. I've gone back and talked to people about that and nobody on the Canadian side nor on the U.S. side has ever heard the word water."

Michael Hart, a senior official from the Trade Negotiator's Office, in December 1987 made the following statement in response to a question concerning the inclusion of water in the FTA: "A good legal argument could be made that water would be considered a 'good' under Article 409 of the Free Trade Agreement." Describing this as an "ambiguity" in the wording of the agreement itself, Hart went on to state that as a result of an early decision by the Trade Negotiator's Office, water was deemed to have no commercial value. "We discussed this... and decided that Canada's rivers and lakes were alien to commerce... [and therefore] water was not a commerce issue." When it was suggested to him that tanker contracts being offered by California cities presented clear evidence that water was indeed

an item of commerce and that the simplest way to resolve the issue would have been to specifically exempt water in drafting the trade agreement, Hart replied that the Trade Negotiator's Office "did not wish to muddy the waters... by raising any issues which could stand to prejudice our negotiations with the Americans... If the issue ever comes up, a hundred years down the road, we can refer the matter to a bilateral panel for a final ruling." (prs com., Holm, December 1987).

However, in a 1 May 1988 interview with Craig Oliver, Washington Bureau Chief for CTV News, then-U.S. Ambassador Clayton Yeutter cast a clearer light on the trade deal's relationship to water resources:

Asked if the FTA could lead to a system by which the United States can also have easier access to Canadian supplies of water, Yeutter, who had written his Ph.D. dissertation on water law and water administration, replied "There's no reason why the FTA could not be used to achieve [that] objective." In an obvious attempt to sidestep the issue, Yeutter quickly added "I just doubt that it will be the vehicle."

Knowing the keen interest of those at the table in major "continental water sharing projects," it is inconceivable that water was not on the minds, if not the lips, of the negotiators. A number of key proponents of large-scale continental diversion schemes to move water from Canada to the United States during the 1960's now occupy senior positions within the U.S. government and were key players in the FTA trade talks.

Clayton Yeutter, U.S. Trade Representative and American counterpart to Simon Reisman (Canada's chief negotiator and a strong and outspoken advocate of large-scale water exports) was the primary architect of the FTA; a man with a doctoral degree in international water law, an extensive background in international agriculture and close ties (having been a former regional director of the Committee to Re-elect the President in 1972) to then-U.S. President Richard Nixon during the U.S. Army Corps of Engineers' mapping of Canada's northern water resources.

Jim Wright, as Democratic congressman from Texas and House Speaker during the FTA negotiations one of the most influential elected politicians in the United States, had a long and documented interest in large-scale continental water diversions. In his 1966 book The Coming Water Famine, Wright noted: "There is to the north of us a stupendous supply of water... enough to satisfy our predictable wants for years to come. We need the water. We need to develop a means of getting that water."

Was there a specific exemption for water in earlier drafts of the Trade agreement? The most logical answer is yes, but that this exemption was removed during the final days of negotiations. This contention is supported by a number of statements.

Evidence suggests that Environment Canada was lobbying hard, within caucus, to get an exemption for bulk water under the FTA. In a 20 May 1988 Associated Press interview with

Frank Quinn, Head of the Inland Waters Directorate, Environment Canada on the issue of retention of Canadian sovereignty over water resources under the FTA, Quinn appeared to confirm the existence of a last minute removal of the exemption for water: "In the 11th hour, we didn't get all the changes we wanted." This is consistent with other information obtained from other sources. When questioned in December 1987 concerning the legal status of bulk water under the FTA, Chris Thomas, then-Trade Minister Pat Carney's international trade adviser during the negotiations, responded, in a somewhat exasperated tone "It's exempt. It's right there in black and white. Water is exempt from the FTA." When asked to reference the exemption, Thomas could not do so. After searching the text, Thomas replied "I don't know what happened. We discussed it. It should be there."

The fact that there would seem to have been an explicit exemption for water in the FTA until a late stage in the negotiations is further confirmed by remarks made by Carney during a public meeting in her riding on 17 February 1988. When questioned on the subject, Carney responded "Water is exempt from the deal - it's right in the agreement." When asked to produce the reference to the exemption in the text of the agreement, Carney consulted with an aide, and then replied "It was there." Sources in Ottawa suggest that the explicit exemption for water under the FTA was withdrawn in the final stages of negotiations by Derek Burney of the Prime Minister's Office. After the federal election in 1988, Burney was appointed as Canadian Ambassador to the U.S.

In the months leading up to the November 1988 federal election, federal government politicians were forced to address mounting public concern over the water-trade issue. Some of these responses were humorous, some insulting, but all firmly denied the inclusion of water under the FTA.

In May, then-International Trade Minister John Crosbie wrote in a letter: "...The FTA, as a trade agreement, is silent on the subject of water diversion projects. These will continue to be governed by existing government policies, notably the Federal Water Policy. In such circumstances, it would not be appropriate to consider water as a "good" under the FTA.. The most important thing to remember however, is that there is nothing in the FTA which obliges Canada to sell water or other natural resource or product to the United States. The FTA is intended to facilitate trade between the US and Canada, not to predetermine the decisions one Party may make as to whether or not to sell its products to the other.." (correspondence to W. Holm, May 13, 1988).

Crosbie went so far as to ridicule a question raised in Parliament on the subject from Liberal Party Critic Robert Kaplan: "Mr. Speaker, this is so silly and so jejeune that one hardly knows how to attempt to answer. How can one answer such a silly question as that? Water is not even the subject of a provision of the U.S. - Canada Free Trade Agreement. The hon. gentleman can rest easy; no one is attempting to cut off his water, or anyone's water in Canada." (Hansard, May 18, 1988).

In response to a subsequent question, Crosbie reiterated this position: "There is nothing in

the free trade agreement which obliges Canada to sell water or any other natural resource or product to the United States. We are not obliged to sell one thimble-full of H₂O to the United States of America." (Ibid.)

In July, Lowell Murray, Government Leader in the Senate and Minister of State for Federal-Provincial relations concurred: "Honourable Senators; I am not at all aware that there is an explicit prohibition... The point is there is nothing in the agreement that requires Canada to engage in any form of international trade with regard to water resources. Canada has a policy in that regard... We do not sanction, nor do we contemplate, the export of our water resources." (Hansard, May 19, 1988.)

Ontario Government Position On Water and the FTA

In the months leading up to the election call, the Government of Ontario voiced its opposition to the Agreement. In May of 1988, the Attorney General for Ontario published a legal analysis of the water-trade issue containing the following statement.

The Agreement will apply also to policies about resources that Canada does not yet export. The main example is water. Canada may not impose quantitative restrictions on the export of water except as allowed by the GATT... While conservation is an acceptable reason under the GATT for limiting exports (if domestic consumption is also limited), protection of the environment is not... The pricing of water exports would also be subject to the Agreement. No minimum price may be imposed. Ontario, or any other province, could not introduce a "water-taking fee", say as a conservation measure or as a means of making up social or environmental costs of diverting water, unless the same fee were applied to domestic use... [The Agreement prevents] add-on charges and limits the ability to regulate private owners. The ability of Canada or any province to control the potential growth of foreign ownership in resource development industries is restricted... In summary, the omission of natural resources by name does not mean that they are not covered in the Agreement, but only that they are not singled out for attention. Provincial policies on the exploitation of natural resources will be seriously affected by the Agreement.

One month following the release of this analysis, Ontario introduced a bill into the provincial legislature, subsequently enacted as the Water Transfer Control Act, which asserted the Province of Ontario's sole jurisdiction over water exports. (The Act was passed but never proclaimed.)

Federal Implementing Legislation

On 28 July, 1988, John Crosbie introduced the following amendment to Bill C-130, Canada's domestic legislation to implement the trade Agreement:

(1) For greater certainty, nothing in this Act or the Agreement, except Article 401 of the Agreement, applies to water.

(2) In this section, "water" means natural surface and ground water in liquid, gaseous or solid state, but does not include water packages as a beverage or in tanks.

Once again, the fears of Canadians were initially assuaged. Particularly so because in introducing the change, Crosbie referred to it as an "amendment to Canada's free trade legislation" - not surprisingly interpreted by many Canadians to mean the Trade Agreement itself. This, of course, was not the case. In Article 103 of the FTA, both parties agreed "to ensure that all necessary measures are taken in order to give effect to its provisions, including their observance... by state, provincial and local governments." It is important to note that there was no process put in place to ensure that each party's respective domestic legislation was consistent with the rights and obligations embodied in the FTA. Bill C-130 was merely Canada's initiative in this regard.

As proponents of the retention of sovereign control over Canada's water resources were quick to respond, changes to Canada's domestic legislation did nothing to change the terms of the Agreement itself, leaving Canada's water at continued risk. If push came to shove, and Canada attempted to rely on domestic legislation which was inconsistent with the terms of the Agreement, this would likely be countered by a "nullification and impairment" charge under Section 2201 of the Agreement, invoking a bilateral panel process. A bilateral panel would be bound to rule solely on the provisions contained within the FTA itself, which are not affected in any way by changes to either party's domestic legislation.

Review by Rawson Academy of Aquatic Sciences

In early August, 1988, the Rawson Academy of Aquatic Sciences drew together a panel of legal experts to review the situation. Included on the panel were Maxwell Cohen, a Rawson Fellow, former Dean of Law at McGill University and past Chairman of the International Joint Commission; Dr. Andrew Thompson, a Rawson Fellow and a Vancouver resource law expert; Professor David Percey of Edmonton; Ottawa University's Dean of Law, Don McRae; and Armand de Mestral, an International Law expert at McGill. The panel concluded that:

Such changes in domestic legislation do not alter the prior commitments made in a bi-national agreement. To be sure, water needs to be explicitly excluded from the FTA itself.

These conclusions were made public in an August 8th media release entitled Government Amendment Will Not Protect Canadian Water issued by Don Gamble, Executive Director of the Rawson Academy. In this release, the Academy also called for a formal Canada - United States declaration to clarify the status of water under the Free Trade Agreement

(FTA). "Without such a declaration, the Agreement will continue to leave the door open to future water exports notwithstanding the proposed government amendment to the Agreement's implementing legislation" said Gamble. The media release also stated that "the experts brought together by the Rawson Academy agree that the Declaration should include the words Crosbie has already proposed for Bill C-130 plus one additional clause. This addition would ensure that in any future dispute arising from the interpretation of water clauses in the FTA, the laws of Canada would apply to all water originating in Canada or that are on the Canadian side of the Canada - U.S. border." The Academy's summary assessment of the water issue along with its recommendations for a Declaration of Meaning were also delivered to Trade Minister John Crosbie. The government did not respond.

Although the Government of Canada continued to publicly disagree with charges that Canadian waters were compromised by the terms of the FTA, it was also concerned about how much public anxiety these accusations were causing. Thus, it accelerated the drafting of legislation banning large-scale water export, as promised in the 1987 federal water policy statement.

Canadian Water Preservation Act

On 25 August, 1988, then-Environment Minister Tom McMillan tabled for first reading in the House of Commons Bill C-156, the Canadian Water Preservation Act. In tabling the Bill, the minister said "Fresh water is the birthright of every Canadian. Our water is not for sale "...I am tabling legislation to give clear legal force to that commitment." He added that the bill, if passed by the House, "will prohibit outright large-scale freshwater exports and strictly regulate small-scale water sales such as those by tanker."

Specifically, Bill C-156 prohibited any export, or diversion into boundary waters for the purpose of export, above the average daily rate of 1 cubic metre per second or annual quantity of 20,000 cubic decameters. These were very conservative allowances, since Canada's freshwater discharge to the sea totals 105,000 cubic metres per second or 3.3 billion decameters per year.

The Bill also permitted the minister to consider licensing smaller exports, as by transborder communities, truck or ship tanker, after carrying out environmental impact assessments and setting terms and conditions.

On the same day as the Bill was tabled, McMillan gave an emotion-laden speech to the biennial meeting of the Association of Conservation Authorities of Ontario in which he charged that "The hysterical attacks against free trade in the name of water protection can be seen for what they are -- rhetoric disguised as analysis, emotion presented as reason, bias masquerading as truth."

Within weeks of introducing its water export-control measure, and before its terms could be

considered by a parliamentary committee, the Government of Canada called a general election and Bill C-156 died on the order paper.

The Federal Election of 1988

Rhetoric abounded in the days leading up to the federal election. In advertisements inserted in 36 of Canada's major newspapers on 7 and 14 November, 1988, the Canadian Alliance for Trade and Job Opportunities (a group of Toronto businessmen headed by Tom D'Aquino) made the following observation:

How about our fresh water? Water exports are not part of the agreement. This matches up with Canada's Federal Water Policy in unmistakable terms. The agreement does not in any way affect our ability to protect and control our lakes and rivers. The people who say that water was put on the free trade table mistook "bottled" water for bulk water and they are wrong. Top officials on both sides of the border have made this crystal clear.

Despite continued charges linking water resources with the trade agreement, opposition to the FTA was split between the two main opposition parties, and the government won re-election in November 1988. The concerns surrounding the inclusion of water under the FTA remained unaddressed by the Canadian Government, and resurfaced with the fall of 1992 release of the draft text to the NAFTA.

North American Free Trade Agreement

In August 1992, the Canadian Government released The NAFTA Manual, intended to provide an overview of the proposed NAFTA. This document contained the following statement on the subject of water resources:

CANADA'S WATER RESOURCES - A SUMMARY

Like the Canada U.S. Free Trade Agreement (FTA), the NAFTA does not apply to large scale exports of water.

As in the FTA, only water packaged as a beverage or in tanks is covered in the NAFTA.

Water was not discussed during the NAFTA negotiations with the United States and Mexico.

Large-scale exports of water, either by inter-basin transfer or diversion, are contrary to the 1987 federal water policy.

THE NAFTA WILL NOT AFFECT WATER EXPORTS

Canada's legislation to implement the FTA already states clearly that the FTA does not apply to water, except in the case of water packaged as a beverage or in tanks. Similar provisions will be included in the NAFTA implementing legislation.

There neither has been, nor will be, any negotiation or provision for large-scale exports of water to another country.

Despite the above assertions, the subsequently-released draft and final versions of the NAFTA once again raised public concern over the clear inclusion of water as a good of trade between the parties.

Initially, the response of the Canadian government remained substantially unchanged from their 1988 position.

Federal Government Arguments

On 2 December 1992, Trade Minister Michael Wilson was quoted in the Toronto Star as saying "Article 7(1) of the trade agreement specifically removes water from the deal [NAFTA]". Again, misleadingly referring to the domestic implementing legislation as the "agreement" and ignoring the fact that changes to domestic legislation do nothing to change the text of the trilateral agreement itself.

Pressed further on the question, the Vancouver Sun of 31 March 1992 reported that "[Trade Minister Michael] Wilson did not respond directly, but he stated and restated Canada's current policy 'The export of water in containers and bottles is permitted, but water in large amounts, particularly diversions, is not allowed to be exported.'" By use of the term "allowed", Wilson infers legislation. Canada's Federal Water Policy is a statement of intent which has no force in law. The only legislation which sought to disallow large-scale water exports was the Canadian Water Preservation Act which, as Bill C-156, died on the Order Paper when the House rose in 1988 prior to the federal election. Even had this legislation been subsequently redrafted and passed into law (an initiative which did not occur despite the considerable efforts of senior officials in Environment Canada), domestic legislation would do nothing to change the terms and conditions of the FTA and the NAFTA.

On March 12, 1993, in response to a question in the House by the Hon. Lyle Dean MacWilliam (Okanagan-Shuswap) again calling on the government to exempt water from the NAFTA, the Hon. John McDermid, Minister of State for Finance and Privatization again repeated Wilson's statement: "I do not know if the member has read the agreement or a researcher gave him those numbers, but let me just read a very brief clause in the

agreement, if I might, Madame Speaker, which says 'for greater certainty, nothing in this act or the agreement, except article 401 of the agreement, applies to water... members went through this export of water under the free trade agreement. They were shot down then and they are going to be shot down again under the NAFTA.'" (Hansard, March 12, 1993.) By referring to this as a "clause in the agreement" rather than "in the domestic implementing legislation", McDermid again continued the to perpetuate the federal government's seemingly deliberate attempt to confuse the Canadian public.

In the GATT tariff schedules appended the last NAFTA draft, the word "potable" (drinkable) suddenly and inexplicably appeared in the text description of Tariff Item 22.01. (This schedule contains the specific tariff reduction commitments each party has agreed to under NAFTA.) The Government of Canada, in its early NAFTA "fact sheets", referenced this inclusion of the word "potable" arguing it clearly meant only water as a beverage. It is a moot point that potable does not mean "bottled", it only means "drinkable". Even had the insertion of the word "potable" survived to the final Agreement, it would not, of course, have changed the GATT tariff schedules to which the Agreement refers (such a modification would require a formal process and concurrence from all GATT signatories). Since NAFTA specifically references the Harmonized Commodity Coding System of the GATT for the definition of "goods of a party" - not the tariff phasing schedule appended to the Agreement - the insertion of the word "potable" in the tariff phasing schedule wouldn't have had any effect (e.g. narrowing of meaning) on the subsequent interpretation of GATT tariff item 22.01. But even this small modification to the appended tariff schedule did not survive to the final text of the NAFTA. It would be interesting to know the circumstances under which the word "potable" was initially inserted and subsequently deleted.

On April 3 and 4th, 1993, the Victoria Times Colonist devoted their lead weekend editorials to the loss of sovereignty over our water resources under the NAFTA. Citing in detail Holm's testimony before the Commons Sub-Committee on International Trade (November 1992) and the B.C. Select Standing Committee on Economic Development, Science, Labour, Training and Technology (January, 1993), the paper described Trade Minister Michael Wilson's insistence that water has been specifically removed from the NAFTA "untrue and misleading", and urged Canadians to "let their MP's know, emphatically, that Canada must retain control over this precious resource."

In an Op-Ed column appearing in the Times Colonist May 2, 1993 (Concern Over Water and NAFTA Not Based on Fact), Trade Minister Michael Wilson responded to the paper's editorials on water.

Because Wilson's response encapsulates the latest version of the government's main arguments respecting water resources and the NAFTA (arguments which are being reiterated verbatim in the House of Commons and to the Canadian media by Wilson and his colleagues), it is useful to review them on a point-by-point basis.

Wilson's Op-Ed piece begins:

Your April 3 editorial, "NAFTA and Water (1): Basic Resource at Risk", lends credence to fundamental misinterpretations of the NAFTA and the GATT that your newspaper should clear up for its readers as a much needed public service. The argumentation of Wendy Holm and others turns on a false premise: that natural water of all kinds is a "good" and hence subject to the national treatment obligations of the NAFTA. This is a fundamental misreading of the agreement.

Op-Ed, Trade Minister Michael Wilson, Victoria Times Colonist May 2, 1993

The fact that "natural water of all kinds" is a "good" under the agreement is not a "false premise" - the GATT Harmonized Commodity Description and Coding System Explanatory Notes explicitly defines water (Tariff Item 22.01) as covering: "ordinary natural water of all kinds (other than sea water)" and Article 201 of the NAFTA clearly includes: "products as these are understood in the General Agreement on Tariffs and Trade" as "goods" under the agreement.

Similarly, the B.C. Government's sale of licenses to private companies to export a portion of the coastal outflow of rivers makes water clearly a "good" intended for international commerce. (Further, the application of National Treatment provisions to foreign investment requires that the B.C. Government cannot discriminate between Canadian and U.S. applicants for such licenses. B.C.'s largest commercial export license is now owned by California entrepreneur Edward DeBartolo through his purchase of Western Canada Water Ltd. Export rights under this license are not affected by the government's moratorium on the issuance of new licenses. Nor could they be cancelled by the government without risking a trade challenge as this would "nullify and impair" U.S. rights under the FTA. Indeed, the province's current moratorium could be successfully challenged by the U.S. if it was demonstrated that its main purpose was to frustrate American demand.)

Wilson continues:

...No matter how many detailed provisions from the NAFTA and the GATT are quoted out of their treaty context, it doesn't change the facts. (To take one example: because something is indexed in the GATT Harmonized Commodity Coding System itself imposes no obligations whatsoever respecting purchase or sale, import or export.)...

Op-Ed, Trade Minister Michael Wilson, Victoria Times Colonist May 2, 1993

Wilson's basic "facts" are self-evident but, again, misleading. Water's inclusion in the HCCS, in and of itself, does not create an obligation of trade. Such obligations only arise when one considers water's inclusion in the HCCS in combination with the obligations of trade imposed by the FTA and the NAFTA on all "goods" defined by the HCCS.

Wilson continues:

...Water in its natural state is not covered by the NAFTA, the FTA, the GATT, or any other trade agreement. Lakes, rivers or aquifers are simply not goods or products, any more than are the fish swimming in them or the oil and gas trapped under them or the oil and gas trapped under them. Trade agreements only cover water as a 'good', that is, only when water has entered into commerce as a product...

Op-Ed, Trade Minister Michael Wilson, Victoria Times Colonist May 2, 1993

Again, technically correct but deceptively misleading. Two cases bear examination.

Naturally-flowing, wild rivers which cross international boundaries have obviously responded to nature, not markets, in their water allocations. However, were we to attempt an upstream dam or diversion of water for Canadian use which impinges upon the rights of the downstream American users, an issue of entitlement related to ownership of water rights would, no doubt, arise.

When government constructs a reservoir to store and release water in response to downstream community needs, they clearly alter the state of previously free-flowing river water to that of a domestic good appropriately valued (often metered and normally charged for through direct or indirect taxes) by its users.

In the case of diversion projects undertaken as part of an agreement to increase the supply of water to a water-deficient region, the various canals, pipelines, reservoirs, pumping stations and even the enlarged carrying-capacity of natural river systems becomes the "packaging" to get the water from the area of supply to the area of demand in the most economic manner.

Moreover, the B.C. Government's issuance of supertanker export licenses for water clearly makes water a "good" of international commerce.

Wilson continues:

...And there is absolutely nothing in the NAFTA or any other trade agreement that forces Canada to either exploit its water for commercial use, or to export its water...

Op-Ed, Trade Minister Michael Wilson, Victoria Times Colonist May 2, 1993

Both the FTA and the NAFTA are identical with respect to U.S. rights (and, in the case of NAFTA, Mexican rights) "once the tap is turned on". The ability of Americans to turn on the tap at their option is entrenched in the FTA, which exists as an "envelope" of trade rights governing Canada-U.S. trade within the larger envelope of the NAFTA. Unlike the NAFTA, the FTA extends the GATT definition of National Treatment to apply to exports as well as imports (trade in goods). Under FTA National Treatment provisions (which are not extinguished nor, in fact, in any way compromised by the NAFTA), the Canadian

government cannot discriminate between the needs of Canadians and Americans with respect to the sale of a "good". Consequently, the Canadian government could not construct a dam to serve the interests of Canadian farmers if, by construction of a larger dam, similar benefits could also be provided American farmers who wished to participate in the project.

Wilson continues:

...What is in the NAFTA is the right to restrict or prohibit the export of water products as an environmental measure necessary to protect human, animal or plant life or health. And no 'proportionality' requirement applies in this case...

Op-Ed, Trade Minister Michael Wilson, Victoria Times Colonist May 2, 1993

As noted previously, while Chapter 6 of the FTA (Technical Standards) provides for trade restrictions necessary to protect human, animal or plant life or health, Article 601 of that chapter exempts from the provisions of Chapter 6 any good which is defined as an agricultural good under Chapter 7. Article 711 (Chapter 7, Agriculture) defines agricultural goods by reference to their HCCS numbers. Included in this list is 22.01 (all natural water other than sea water). This exempts water from the environmental provisions of Chapter 6.

As also previously noted in Section 1.1 of this document, Article 724 of the NAFTA clearly limits the use of such measures to "a measure that a Party adopts, maintains or applies to protect animal or plant life or health in its territory from risks arising from the introduction, establishment or spread of a pest or disease... the presence of an additive, contaminant, toxin or disease-causing organism in a food, beverage or feedstuff, a disease-causing organism or pest carried by an animal or plant, or a product thereof... [or] from the introduction, establishment or spread of a pest."

These provisions clearly do not allow Canada to embargo water exports. The fact that proportionality does not apply is moot - neither do the alleged environmental safeguards.

Wilson continues:

...The proportionality rule applies when governments restrict exports to conserve a resource or to relieve a critical shortage of that resource. (For example, if the United States decided to conserve coal resources by restricting coal exports, the proportionality rule would oblige them to maintain the traditional proportion of total U.S. coal shipments going to Stelco, Dofasco and Algoma Steel, thus protecting thousands of Canadian jobs.)...

Op-Ed, Trade Minister Michael Wilson, Victoria Times Colonist May 2, 1993

Wilson's parenthetical reference to coal shipments, while purely partisan and not related to the argument at hand, is also wrong. Were the U.S. to attempt to restrict coal exports, proportionality would not maintain the traditional proportion of total U.S. coal shipments

to Canadian firms, it would allow the U.S. to cut back those shipments by the same proportion which it cut back American shipments, bearing in mind a forward-rolling average. Over time, this would cut back the total volume of shipments to Canada.

(Interestingly, Wilson suggests that the U.S. could apply a provision of the FTA and the NAFTA to conserve its coal resources, clearly implying that coal found in its natural state in the ground would be a "good" under the agreement. Yet, four paragraphs earlier, he argues that water in its natural state would no more be a "good" than the oil or gas trapped under it. The logical contradictions of this statement are similar to when, during the 1988 election campaign, then-International Trade Minister John Crosbie swore to Canadians that the inclusion of a prohibition against large-scale water exports in Canada's domestic implementing legislation would protect our water resources. And at the same time, he dismissed Canadian concern with a clause in American implementing legislation that in the event of a conflict between the FTA and U.S. law, U.S. law will apply with the response that U.S. domestic legislation does nothing to change the terms of the bi-lateral agreement.)

Wilson continues:

...Moreover, Canada's 1987 federal water policy prohibits large scale exports of water by interbasin transfer or diversion. Therefore, since we do not engage in large scale exports of water in any form, the proportionality requirements would have no real impact on Canada. A proportion of zero is zero...

Op-Ed, Trade Minister Michael Wilson, Victoria Times Colonist May 2, 1993

As has been amply discussed in preceding sections of this Chapter, a domestic policy statement does not prohibit anything; it has no force in law. Even if backed up by law (as envisaged by the Canadian Water Preservation Act, which died on the order paper) it would do nothing to change our obligations under the international trade agreements. Similarly, Article 7(1) of Canada's domestic FTA/NAFTA enabling legislation nothing to change the rights accorded under the bilateral and trilateral agreements, by which future trade dispute panels will be governed.

Wilson continues:

...As for investment and services, under the NAFTA, U.S. and Mexican investors and service providers will be subject to the same domestic laws and regulations as Canadians. The NAFTA creates absolutely no new obligations or right for anyone to exploit or export water as a good...

Op-Ed, Trade Minister Michael Wilson, Victoria Times Colonist May 2, 1993

As aptly stated by the Center for International Law, Washington, D.C. (Hunter), "Under the trade agreements, Canada retains no ability to control a large-scale water export plan by regulating foreign service providers or investors."

Wilson continues:

...Why did we not dispel any lingering doubt by simply exempting water from the agreement? The answer is plain. There is no exemption for water in the NAFTA because it is not necessary to insert an exemption from obligations that do not exist. To do so would throw into doubt whether obligations exist for other natural resources in their natural state, such as trees in the ground, where clearly no such obligations exist either...

Op-Ed, Trade Minister Michael Wilson, Victoria Times Colonist May 2, 1993

The appropriate question is "Why, in the fact of clear evidence of the risk to Canada's water resources under the FTA and the NAFTA, has the Canadian government not taken steps to resolve this issue?" There is n obvious solution which leaves both trade deals in tact - a separate Memorandum of Understanding between the parties to the FTA and the conclusion of a "side-deal" to the NAFTA which states that wording notwithstanding, nothing in the Agreements apply to water in other than bottled form.

Why would the United States and Mexico sign such a memorandum? Assuming skilled Canadian trade negotiators - hopefully not an oxymoron - the reason is simple: if they don't, they risk immediate repudiation of the trade deals by Canadians. Our ability to use the clout afforded by this argument diminishes exponentially over time as repudiation becomes more economically costly to Canada.

In support of the Canadian government's steadfast refusal to resolve this issue, Wilson argues that clarification of water's role under the trade agreements "would throw into doubt whether obligations exist for other natural resources". More to the point, failure to negotiate a prompt exemption for water under the FTA and the NAFTA throws into doubt the future of our children, our environment, our agricultural sector and our options for economic growth.

Wilson concludes:

...The bottom line is that Canadian governments, both now and under the NAFTA, have the freedom of action required to regulate the exploitation of our water resources. And until it is exploited and entered into commerce as a good, water is not covered by the NAFTA or any other trade agreement. Several vocal commentators are attracting attention to their particular misinterpretations and sowing confusion on this important issue. Thank you for the opportunity to set the record straight.

Op-Ed, Trade Minister Michael Wilson, Victoria Times Colonist May 2, 1993

5. Implications

What are the implications of the inclusion of water under the terms and conditions of the

FTA and the NAFTA?

For those who have had the opportunity to examine in detail the relevant documents, there is no question but that 'all natural water other than sea water' is included under the terms of both the FTA and the NAFTA, and that this inclusion gives the U.S. (and, possibly, Mexico) unprecedented and irrevocable access rights to Canada's water resources in perpetuity.

Chapter 2

Water Export

1. Introduction

Large-scale water export involves the artificial diversion of water from one river basin into another and its transfer across an international boundary. While a number of proposals for large-scale water export are currently being promoted in Canada, at present, there are no such facilities in place. Environmental concerns about the issue arise out of a growing awareness of the impacts of dams and diversions on aquatic ecosystems. (Day and Quinn, 1991).

The question of whether demand in the United States for Canadian water will result in pressures to transfer water from Canadian rivers south has long been a concern in Canada. In the 1960s, a number of diversion projects for continental water transfers were put forward by governments and engineering firms. Proposals such as the North American Water and Power Alliance (NAWAPA) and the Great Recycling and Northern Development (GRAND) Canal scheme are two of the best known of these: The former would involve diverting most of the major rivers in British Columbia and Yukon into the Rocky Mountain Trench - which would become the world's largest artificial reservoir - and transferring the water south via the Columbia River system to serve markets in the western United States, and west by man-made canals to serve the central plain. The GRAND proposal is of particular interest to Ontarians: it would involve placing a dyke across the mouth of James Bay, thus turning it into a freshwater reservoir, and transferring its water into the Great Lakes watershed by way of canals and pumping systems. From there, the additional water would be transferred south and west to serve mostly US needs.

Large-scale water export proposals were pursued with less enthusiasm in the 1970s due to a combination of Canadian nationalism, the rise of environmental awareness and the extremely high financial costs of the projects. The issue re-surfaced in the late 1980s with a revival of interest in the GRAND Canal project, drought in the US, and a perception of increasing demand for water in places such as California and the US mid-west. Arguments to the effect that water is included in the Canada-US Free Trade Agreement have also helped to raise concern over this issue. (Leith and de Mestral, 1989).

Presently, concerns about water exports are focused mainly in the Pacific drainage basin as a result of a number of factors which have occurred in the past two years including: the perception of growing demand for Canadian water in the American west; a revival of interest in NAWAPA; the promotion of a project to divert waters of the North Thompson River into the Columbia system; the promotion by the Governor of Alaska of construction of a sub-sea pipeline to transfer water from Alaskan (and Canadian) rivers to California; the

temporary awarding of a contract to a British Columbia firm to export water to Santa Barbara, California by tanker and the inclusion of water in the North American Free Trade Agreement.

The threats to Ontario which arise from water export proposals come mainly from continued interest in the GRAND Canal proposal as well as from the potential of smaller-scale diversions out of the Great Lakes.

The Environmental Impacts of Large-Scale Water Diversions

The environmental implications of water export proposals were given little consideration until the 1970s. Since then, a growing body of evidence has been amassed on the ecological effects of large scale diversions:

A diverse set of changes occurs when one river system is dammed and its flow diverted to another..... A variety of biophysical changes are predictable. Moderate earthquakes and climate change are to be expected in the vicinity of large impoundments. Erosion and turbidity decrease primary biological productivity in some existing lakes and rivers. Forests, agricultural lands, and wildlife habitat may be lost in perpetuity and existing fisheries habitats destroyed. Mercury is released into the water column and bioaccumulates in fish to levels which makes them unsuitable for human consumption; This condition persists for 20 to 30 years at a minimum and longer in areas where erosion or organic-rich soil continues. (Day and Quinn, 1992, p. 178).

A major impact of inter-basin diversions may also be the transfer of fish, plants, parasites, bacteria and viruses from one drainage basin to another. The introduction of exotic species can wreak havoc with ecosystems, a fact that has been made familiar to Ontarians by intruders such as zebra mussels and lamprey eels into the Great Lakes.

The biophysical consequences of reduced streamflow in affected estuarine and marine environments are also becoming better understood. Fresh water inflows have important effects on nutrient balance, the presence of organic carbon, surface water stability and circulation in estuaries and nearshore marine waters. By altering the natural flow of rivers into the oceans, dams and water transfers can have a deleterious effect on biological production in these important ecosystems. The environmental effects of reduced runoff would also be extended to the habitat of migratory birds. In a study of the potential ecological effects of the proposed GRAND Canal project on Hudson and James Bays, it was found that "Changes to coastal staging areas in both bays would most likely destroy a major portion of the North American migratory bird population. (Milko, 1986, p. 316).

The importance of freshwater inflows in driving coastal circulation and productivity in the oceans is also a matter of concern. According to Michael Healey of the Westwater Research

Centre at the University of British Columbia, "the brackish outflows from estuaries drive coastal currents and can affect water properties a great distance from the estuary." Healey's observation that "rivers simply do not end at the sea" suggests that dams and diversions and other water export proposals affecting streamflow may have far-reaching ecological consequences. (Healey, 1992).

While the possible physical consequences of dams and diversions suggested here are enormous in their magnitude, they do not constitute all the potential environmental effects. As noted by Canada's most authoritative experts on dams and diversions, Chad Day and Frank Quinn, Many of these are becoming better understood and more predictable but surprise at unexpected developments continues to be the norm. (1992, p. 178).

2. Water Diversion and Export Proposals Affecting Ontario

Virtually all the water export proposals affecting Ontario involve the Great Lakes either as a reservoir (i.e. the GRAND Canal) or as a source of water to be diverted south. To the extent that Great Lakes water is partly Canadian-owned, these may be considered as proposals to export Canadian waters.

There is growing interest in diverting water out of the Great Lakes Basin to more southerly basins in the United States. During the past three decades, thirteen such proposals of various magnitudes have put forward. (Appendix 1). While earlier proposals generally called for diversions of enormous volumes of water, the 1980s mark a trend toward smaller-scale diversions, which pose a significant cumulative threat. Several actual Great Lakes diversions and proposals are discussed below.

The GRAND Canal

Twenty years ago, the perception of water shortages in the United States caused attention to be focused primarily on western Canadian rivers as potential sources of water. Several large-scale water diversion concepts, of which the North American Water and Power Alliance (NAWAPA) was the most famous, were put forward at this time. Since the early 1980s, attention has been given equally to the Great Lakes as the conduit for water transfer to the United States. In his 1985 book, *Power From the North*, Robert Bourassa described the Great Lakes as "a natural reservoir to serve the continent." (p. 153). Of the water export proposals involving the Great Lakes, the GRAND (Great Recycling and Northern Development) Canal is the best known.

The GRAND Canal is a water transfer project designed and promoted by engineer, Thomas Kierans. The concept envisages a dike across James Bay, which would create a huge freshwater reservoir by capturing the flows of rivers entering the bay from Quebec and Ontario. From there, the water would be pumped over the divide between the Hudson Bay

and Great Lakes basins, and into the Great Lakes. A series of existing diversions and new transfer canals would be used to divert water south and west to the US High Plains, the Colorado basin and to California. Provision for the diversion of water out of Lake Superior to serve southern Manitoba, Saskatchewan and Alberta are also included in the GRAND Canal scheme. Total costs were estimated in 1987 to be between \$80 billion and \$130 billion. (Gamble, 1987).

Kierans has advocated this project as the best way to address four major problems: fluctuations of Great Lakes water levels and shortages within the basin; a shortage of water on the Prairies; shortages of water in the U.S. Midwest and southwest; and the need to avoid any future diversions of northward-flowing rivers. He characterizes the GRAND Canal as a "recycling" and not a "diversion" project because it does not call for the diversion of Canadian rivers, but would merely "recycle" the water given up by Canadian rivers to James Bay.

To say that the project would not divert any rivers, however, is somewhat misleading, as the ecological effects of a river do not end at its mouth, but extend well into receiving body of water. The GRAND Canal scheme proposes to divert a massive amount of water from its natural course through Hudson Bay, the Hudson Strait and along the Labrador coast. The effects on the Hudson Bay ecosystem and beyond would be significant:

The GRAND Canal scheme, which.....would divert 61% of Hudson Bay's freshwater budget south, has ecological implications for the North. The formation of ice in Hudson Bay could increase as its pycnocline [layering of waters of different density] develops earlier in the spring and deepens in the summer and ice breakup is delayed because of the removal of the warm James Bay outflow in the spring. A reduction in primary [biological] productivity could result because of changes in the pycnocline's development, the removal of nutrients normally associated with spring's melting ice and a decrease in stable stratification periods as the dike removes the dampening action of James Bay on tidal and wind-generated disturbances.

Changes in nutrient content and freshwater circulation out of Hudson Bay could potentially affect productivity downstream on the Labrador Shelf, and changes in productivity and ice pack within Hudson Bay would detrimentally affect fishes and marine mammals. Changes to coastal staging areas in both bays would most likely destroy a major portion of the North American migratory bird population. (Milko, 1986, p. 316).

The GRAND Canal has enjoyed the backing of political leaders, financiers and large engineering firms. In his 1985 book, *Power From the North*, Quebec Premier Robert Bourassa strongly supports studies of the scheme. (Bourassa, 1985). Engineering companies including SNC-Lavalin (Canada's largest), Bechtel Canada, and Rousseau, Sauve, Warren Inc. have been strong supporters and Atomic Energy of Canada Ltd. - with the possibility of supplying CANDU reactors to power the pumps - has been contractually involved. Simon

Reisman, Canada's Chief Negotiator for the Canada-US Free Trade Agreement, served as a consultant to the GRAND Canal Company, and in a 1985 article in Canadian Business Review, he asserted that "This project could provide the key to a free-trade agreement with the United States..." (Gamble, 1987).

Since its incorporation in 1964, the GRAND Canal Company (GRANDCO) has completed seven studies on topics such as development of a corporate strategy, the locations of James Bay dike construction and routing of water to the US Midwest. (Gamble, 1987). In 1985 and 1986, GRANDCO lobbied the federal government to obtain \$500,000 in funding for feasibility studies. While this request was denounced by officials in environment Canada and other departments, the National Research Council provided GRANDCO with \$30,000 for studies. Environmental, native and citizen groups responded by demanding that the grant be rescinded. (Bocking, 1987, p. 122).

While four engineering firms have indicated a willingness to conduct comprehensive feasibility studies, the federal government's policy opposing export of water by inter-basin diversions had the effect of denying the resources necessary for these studies to take place. (Kierans, 1993). In addition, the federal government's policy has had the effect of depriving GRANDCO of the active support of the major engineering companies that backed it originally. In the event that the policy is changed -- and in the absence of federal legislation prohibiting large-scale water exports this is quite possible -- it may be expected that GRANDCO will become active again.

In any case, it appears that the GRAND Canal would require considerable government subsidies in order to proceed, owing to its enormous cost and to uncertain demand for the water. A 1986 economic study of the project concluded: "Estimated net benefits are a small fraction of estimated costs, even before quantification of social costs, environmental costs, and the opportunity cost of the water itself." (Muller, 1986).

Although there has been no major impetus given to the project in the past few years, Mr. Kierans continues to write articles and speak at conferences to stress the view that the GRAND Canal is necessary to ensure security of supply and control of water levels in the Great Lakes. He has laid particular emphasis on research warning that climate change could considerably lower water levels in the Great Lakes. (Kierans, 1993).

Occasionally, the GRAND Canal concept resurfaces in the news. This was the case in the summer of 1991, when Dennis Mills, federal Member of Parliament for Broadview-Greenwood riding in Toronto published a booklet and organized a public information session to boost the project. While he later claimed not to be an "advocate" of the project, but merely "to advance the debate" Mills and others who are attracted by the putative advantages of the GRAND Canal have helped keep the project alive. (Mills, 1991).

The Chicago Diversion

A diversion out of Lake Michigan at Chicago already exists, known as the Chicago Sanitary and Ship Canal. It was constructed in the early part of this century to reverse the Chicago River so that instead of flowing into Lake Michigan, it flows into the Illinois River, which flows into the Mississippi. This relieves Chicago of the problem of having its sewage flow into Lake Michigan -- which is the source of the city's water supply. While the flow of the diversion is limited by a U.S. Supreme Court edict to 91 m²/second (3200 ft²/second), it can accommodate more than twice that amount.

Drought conditions in the Mississippi and Missouri basins in the summer of 1988 led the Governor of Illinois to request that the flow of water through the Chicago Sanitary and Ship Canal be tripled for a period of 100 days. The the purpose of this request was to restore water levels in the Mississippi River so that barge traffic could be resumed. While rains in the late fall of 1988 relieved the problem before a decision had been rendered, the summer of 1988 served as a warning that pressures to divert water out of the Great Lakes are likely to recur from time to time in response to drought in other basins. The 1993 flooding in the Mississippi notwithstanding, short-term, natural variability of the climate is certain to keep alive the issue of large scale water transfers.

The diversion out of Lake Michigan at Chicago is of particular concern because, unlike Lakes Superior, Huron, Erie and Ontario, lake Michigan is not considered an international lake and does not fall under the jurisdiction of the International Joint Commission. Thus, while diversions out of any of the other lakes would require the approval of Canada, the affected provinces and the IJC, a diversion out of Lake Michigan could be effected unilaterally.

Expanding the Mississippi Waterway

The Maritime Administration of the U.S. federal government is currently promoting the idea of expanding shipping on the Mississippi waterway. The expanded inland shipping system would link the mid-United States, Canada, and Mexico via the Great Lakes, the Mississippi River Basin and the Gulf of Mexico. The concept is strongly supported by the US shipping and port industries. Known as the Maritime System of the Americas, it has been put forward as a means of facilitating the increased trade that is expected to flow among the three countries as a result of the North American Free Trade Agreement. (Harlee, 1992).

If it materializes, the expansion of ship traffic on the Mississippi could have serious consequences for water quality and quantity in Great Lakes and other water bodies. At worst, the demand for secure water supplies in the Mississippi system that this would entail could be used to support water diversion schemes such as the GRAND Canal project.

Whether there will be significant demand for north-south transportation of the type that

would be best served by inland shipping is unknown presently. In order for the Maritime System of the Americas to be competitive, the regulatory barriers that currently militate against inter-continental ship transport would have to be relaxed. In addition, the system would require significant investments in new shipping technologies and physical improvements to the waterway in order to function efficiently and enable it to compete with north-south rail links.

A major conference was held in New Orleans in March 1993 to promote the concept. Sponsored by the U.S. Maritime Administration, it featured speakers from Canada, the United States and Mexico. A number of regional follow-up meetings are planned for the next year in Canada and Mexico.

A related proposal involves a barge canal that would link Fairport Harbour near Cleveland to the Ohio River 160 kilometres south. This has been proposed to open the midwest to world shipping markets, and would involve a diversion of Lake Erie water into the Ohio River Basin. Ohio Congressman, James Traficant has attempted to have the project approved by Congress every year since 1987. In spite of the great financial costs such a project would entail, federal funds have been appropriated to study its feasibility.

Small-Scale, Municipal Water Diversions Out of the Great Lakes

Over 50% of the American population depends on groundwater for its drinking water supplies. The declining quality and quantity of groundwater in many regions is a cause of growing concern. At the same time, the U.S. Environmental Protection Administration (EPA) is applying more rigorous drinking water quality standards, which are becoming more difficult to meet for those cities and towns dependent on inadequate groundwater sources.

One region where this poses a problem is in southern portions of the Great Lakes basin, particularly below Lakes Erie and Michigan. Here, withdrawals from the Lakes are an attractive option, as they provide a relatively cheap source of relatively good quality water. In recent years, a number of diversions to provide water supplies for municipal systems have been requested and some have been approved. Government officials acknowledge that dozens more municipalities south of the Great Lakes watershed would find diversions of Great Lakes water a desirable alternative to their current low quality well water supplies. (Great Lakes United, fact sheet). Considering that the present population of 40 million in the Great Lakes Basin is expected to increase by as much as a factor of two in the next four decades, (IJC, 1985) pressures for future diversions out of the lakes are likely to grow.

The proposal to divert 6.4 million litres/day from Lake Michigan to the city of Lowell, Indiana is an example: In order to meet national drinking water standards, the City of Lowell found it expedient to pipe water from Lake Michigan to dilute their own groundwater source, which is excessively high in fluoride. This water would have been

discharged into the Mississippi River basin, thus constituting a small inter-basin diversion. The proposal was narrowly rejected in 1992. In a vote under U.S. law (U.S. Water Resources Development Act, 1986) which requires the unanimous approval of all eight Great Lakes state Governors for a water diversion to take place, the Governor of Michigan was the only one of the eight to turn it down.

Some municipal diversion proposals have gone ahead:

- Since 1990, the Pleasant Prairie (Wisconsin) diversion has transferred up to 1.8 million gallons per day of water from Lake Michigan to replace the city's tainted well water which had been naturally contaminated by radium. After use, the water is discharged out of the Great Lakes and into the Mississippi basin.
- The Kenosha diversion in Wisconsin, brings water from Lake Michigan by pipeline to the western part of the City of Kenosha, Wisconsin. After use, this water flows into the Mississippi basin via the Sewage Treatment Plant located in Pleasant Prairie.

Others are pending:

- The Michigan Department of Natural Resources has approved an application by a group of farmers for a withdrawal of water from Saginaw Bay in Lake Huron to irrigate approximately 2,000 acres of land. Although this does not involve inter-basin diversion, the Mud Creak Irrigation project calls for an average daily volume of about 7 million gallons of water to be consumed per day. The proposal was approved in July in spite of objections by Ontario and several Great Lakes States under the terms of the Great Lakes Charter. Concern has been expressed that approval of the project will lead to larger irrigation projects in the Great Lakes basin.

While the environmental impacts of any one of these diversions is negligible, the cumulative impact of many small diversions out of the Lakes could pose an environmental and economic threat, particularly when combined with other stresses such as global warming. As noted in The Great Lakes Charter, which was signed by the Provinces of Ontario and Quebec together with the Great Lakes States in 1985:

Studies conducted by the International Joint Commission, the Great Lakes States and Provinces, and other agencies, have found that without careful and prudent management, the future development of diversions and consumptive uses of the water resources of the Great Lakes Basin may have significant adverse impacts on the environment, economy, and welfare of the Great Lakes region.

3. What is the Likelihood of US Demand for Ontario's Water?

Water shortages are the stuff of daily news in the United States. For example, a single issue

of US Water News last year included articles under the following headlines: "Conservation is matter of survival on High Plains; Calif. plan may hike (water) rates by 28%; Hoover Dam lake projected to decline; Colo. farmers show how to save Ogallala Aquifer; Drought worries in New York City are evidenced by well drilling rigs; In richest groundwater state: Nebraska well levels decline in drought; Calif. firm files for rights to allow (water) transfer from Alaska. (April, 1992).

Since the Second World War, there has been a significant increase in demand for water, particularly in the western U.S., due to expanding irrigation and rapid population growth. (Arizona's population increased by more than half during the 1970s and Nevada's by more than two-thirds; California continues to expand at rate of 800,000 people per year). Between 1950 and 1980, total U.S. water withdrawals grew at a rate 66% greater than the population. As a result, the availability of unused water is declining rapidly. The Colorado River is so overallocated that barely any of it reaches the ocean, and the most important source of groundwater in the US, the Ogallala aquifer, is being depleted. For the entire United States, about one-quarter of the groundwater extracted each year is not being replenished. On 15 million acres of land under irrigation, the water table is dropping on average, about two metres per year. (Wilkinson, 1986).

Based on the facts presented above, there would appear to be growing demand for Canadian water. However the question should be put differently: Is there likely to be sufficient demand for our water to make water export projects likely?

A number of factors need to be considered when addressing this question. They include the hydrological conditions and projections in the United States; the shift in thinking from supply to demand management; the economics of supplying water to the U.S. market; the implications of climate change on water resources; and the political pressures that may be mounted to acquire additional supplies of water for U.S. needs. These factors are discussed below.

Hydrology

An examination of water resources in the United States shows that while there are water scarcities in certain regions, the overall picture shows that resources are generally sufficient to meet present demand. Every comprehensive analysis of U.S. water supply has concluded in more or less the same terms as the 1978 Water Resources Council report that "...there is no national water shortage problem now nor in the foreseeable future." (Bocking, 1987).

A more recent analysis by the U.S. Council on Environmental quality concludes:

With regards to water quantity and quality, the trend data confirm that competing demands continue for available surface and ground water as sources of public and rural water supply, irrigation and industrial water, electric power generation,

recreation, and fish and wildlife habitat. Despite severe drought, chronic water shortage, overdrafting of groundwater, saltwater intrusion and reduction in water quality in certain areas, water supplies are sufficient to accommodate competing uses in most regions of the Nation. (Council on Environmental Quality, 1989, p. vii).

Despite major droughts and chronic water shortages in some localities, the Nation is not "running out" of water. (ibid., p. 31).

The perception of water scarcity in the United States comes mainly from three regions in the southwest. These include southern California; the Colorado River basin including Utah, Nevada and Arizona; and the High Plains of Texas, New Mexico, Oklahoma, Nebraska, Kansas, and Colorado. Periodic water shortages, such as occurred in the Mississippi and Missouri basins in the summer of 1988 also heighten concerns about water scarcity. With the exception of some dry areas in the Mississippi basin, the eastern U.S. is not considered a water scarce region.

Water withdrawals in the eastern United States are far lower (1,600 gal/person/day) than in the western regions (2,900 gal/person/day) principally because of the large amount of irrigation in the west. East of the Mississippi River, total consumption of water is less than 10% of the renewable supply, and in the western Mississippi basin including the Missouri, Arkansas and Texas-Gulf regions, it is between 10 and 40%. This compares with ratios of 40-100% in the US southwest and the Colorado River basin, where consumption actually exceeds the renewable supply because of groundwater depletion.¹ (Waggoner and Scheffter, 1990).

The distinction between hydrological conditions in western United States and in the east may be significant for Ontario. With the exception of the full-blown GRAND Canal scheme, proposals to divert water to western states involve water from western Canada. Since the GRAND Canal, if it does proceed, will be undertaken in stages, (Muldoon, 1989). US demand for Ontario's water - at least initially - will be more likely to emanate from central and eastern regions in the United States.

While projections of future water withdrawals and water availability are far from accurate, it is worth noting that what projections have been made for US water to the year 2000 do not indicate general water shortages in the eastern United States. Even in the Upper

¹ For Canada as a whole, the balance between renewable water supplies and demands is much more favourable than for the United States. In 1981, Canadian withdrawals were less than 2 percent of renewable annual supplies and this is expected to increase to a maximum of 4 percent by 2011. The only major exceptions to this favourable balance are found in the southernmost parts of the prairie provinces in the Assiniboine-Red, Missouri and South Saskatchewan basins. Here, the ratio of water withdrawals to water availability approach those found in the water-scarce southwestern parts of the United States. Withdrawals in the Great Lakes Basin are also relatively high, approaching 30% of renewable annual supply. (Pearse et. al., 1985, pp. 46-47).

Mississippi and Texas-Gulf regions, mean water flows minus withdrawals are projected to be adequate for fish and wildlife habitat. This compares favourably with water-scarce regions in the the southwest such as in Nevada and Utah where flows are expected to be about 55% of optimal and the lower Colorado (Arizona) where flows are expected to approach zero. (Waggoner, p. 37). These projections assume present climate and do not take the implications of climate change into consideration.

Groundwater

While surface water continues to be the primary source of water supplies in the US, since about 1950, ground water has become the preferred source of additional supply and is being used increasingly. States with the largest groundwater use are found in the western USA, where irrigated agriculture requires massive amounts of groundwater pumping. Significant water table declines due to the removal of groundwater at a rate that exceeds natural recharge have been noted in southern California, Arizona and in the Great Plains.

The Ogallala Aquifer, which underlies portions of 8 states in the Great Plains, may be the largest aquifer on Earth and supports a multi-billion dollar agricultural industry based on irrigation. Since the Second World War, increasing pumping of its water for irrigation has resulted in rates of withdrawal that substantially exceed rates of natural recharge. As the aquifer is depleted, some farmers have already taken land out of production or reverted to dryland farming. Even assuming high prices for crops and improvements in conservation, it is projected that, as the Ogallala runs out of water, millions of acres of land will shift out of irrigation by 2020. (Peterson and Keller, 1990). This is an example of regional water scarcity that is certain to provoke future demands for inter-basin water transfers, as it has in the past.

Economics

As with the hydrological perspective, the economic perspective suggests that there is no general water shortage in the United States. Where water scarcity does occur, this is considered to be the result of wasteful technologies and the inefficient allocation of water among competing economic uses. If water were conserved and allocated more efficiently, it is believed, there would be little or no concern about water scarcity in the United States.

In economic terms, the use of water in the U.S. (as in Canada) has been extremely inefficient. This results from the fact that the price of water bears no relation to its actual cost. Irrigation agriculture provides the best example of the inefficient use of water. By far the largest consumer of water in the country, irrigation uses 80-90% of available water in the west and between 30 and 40% for the U.S. as a whole. Irrigation projects run by federal and state governments provide water to farmers at a small fraction of the real cost. Irrigation agriculture is made possible only by enormous government subsidies that cover the cost of

project infrastructure and much of the cost of water delivery. The result is gross inefficiencies. For example, 35% of California's water is used to grow rice and cotton, which contribute a mere one-third of one percent to the state economic product. (Bocking, 1987).

The implication of this is that because so much water is being wasted through poor technologies and inefficient allocation, perceived water scarcity problems can be addressed by putting the available water to more efficient use. Progress in two areas is required: adoption by farmers of water-conserving technologies such as drip and sprinkler irrigation; and the development of water markets to enable the transfer of water rights from agriculture to industrial and urban sectors where demand for water is growing. It has been shown that, with progress in these areas, there is sufficient water available in the western United States to meet much of the growth in demand from non-agricultural sectors while keeping agriculture "viable and even prosperous." (Zilberman et. al., 1993).

Though an uncertain and long-term process, technology improvements and changes in the rules governing water allocation have begun to take place. The fiscal problems plaguing governments in the 1980s combined with the ascendancy of the idea of market based allocation have resulted in an apparent shift in water management in the United States:

U.S. water policy...is moving into a new era of management, one that focuses on demand management, not supply. This movement, still in transition, represents not only a fundamental shift in political attitudes and values, but also in social and economic organization, and more recently, legal and political institutions which will be very hard to reverse. (Smith, 1993, p. 5).

Perhaps the most notable illustration of the new approach to water management is a bill passed by Congress in the fall of 1992 and signed by then President Bush. Among other things, it allowed, for the first time in U.S. history, for farmers in California's Central Valley Project to sell their water rights to California's cities. Indications are that other large water projects will be altered along the same lines, permitting farmers to sell their water.

The shift in water management toward market-based allocation, water conservation and demand management represents a marked change from attitudes and policies that were prevalent thirty years ago, when the promotion of large-scale water transfers from Canada to the United States was in its heyday. Importing water from Canada was discussed widely in the 1960s. Today however, it is considered a realistic option by fewer and fewer people. Instead, serious examination of water problems in the United States, as elsewhere, generally relates to the better, more efficient use of existing supplies. Sandra Postel of the Washington-based Worldwatch Institute has described this as "a new water era:"

A new water era has begun. In contrast to earlier decades of unfettered damming, drilling, and diverting to gain ever greater control over water, the next generation will be marked by limits and constraints -- political, economic, and ecological.

...Measures to conserve water and use it more efficiently are now the most economical and environmentally sound water supply options available for much of the world...(Postel, 1992, p. 24).

The Cost of Canadian Water

The financial costs of delivering Canadian water to the United States are of particular importance in light of the shift in water management noted above. In 1985, the Pearse Inquiry drew the conclusion that large-scale Canadian water exports are uneconomical:

...even if Canada afforded the least costly source of water for the arid south-western United States, which appears unlikely, it would almost certainly cost more than \$1,300 per thousand cubic metres to deliver. To agricultural users, who account for most of the demand, the water would be worth less than \$130 per thousand cubic metres. And under current arrangements, they actually pay less than a tenth of this figure. (Pearse et.al., pp. 128-129).

No serious attempt has been made to assess the complete financial, social and environmental costs of any proposal for large-scale water export. Although a rough framework for weighing costs and benefits of such proposals has been developed (Scott et. al., 1986), proponents of water export have eschewed application of cost-benefit analysis. Those who have examined this question agree that the costs of such projects would far outweigh any benefits for the prospective exporter.

Of particular relevance to Ontario is the high cost/benefit ratio of the GRAND Canal, as noted above. That the GRAND Canal proposal cannot be supported economically suggests that its backers are counting on massive public subsidies to make it work. This, however, in the present fiscal climate appears out of the question.

The Impact of Climate Change on Water Resources

While the hydrological and economic considerations noted above appear to militate against the likelihood of large-scale water transfers, climate change forecasts appear to work in their favour. It is generally believed that the major impact of global warming in the United States will be on water supply and demand. Few water experts disagree that these impacts will be significant:

If the buildup of carbon dioxide and other greenhouse gases continues at the current rate, climate warming is expected to be felt within the next few decades and then increase, seriously affecting water resources. The warming will increase both the evaporation of water and the demand for water, stretching water resources in two directions. (Waggoner, 1990, p. ix).

Climate change is expected to affect water resources differently in different regions depending on a variety of circumstances. In general, the sensitivity of stream flow to climate change is expected to be very great in regions where the climate is already relatively dry. Thus, the effects of climate change will likely be felt most strongly in the US mid and south-west, where it is arid and where water is already considered scarce.

To understand the implications of water shortages induced by climate change, Sandra Postel gives the analogy of California, which suffered a drought lasting from 1987 to 1992:

In four of the five drought years that began in 1987, California's runoff -- the volume of water in its rivers and streams -- was less than half of normal. By May 1991, soil moisture had reached critically low levels, with the entire state south of San Francisco falling in the category of "extreme drought" according to a widely used soil-moisture index. California's many large reservoirs helped buffer the effects of sparse rainfall, but ...By June 1991, the total volume of water in the state's reservoirs was at 55 percent of total capacity, and some were almost completely dry.

As surface supplies diminished, water users began pumping more groundwater, particularly in the agriculturally important Central Valley. As a result, groundwater storage dropped as well, with water tables in seven Central Valley counties falling by 2-10 meters in less than five years. (Postel, 1992, p. 89).

While certain to have an adverse effect on arid regions of the country like southern California, experts agree that "Every region of the United States is vulnerable to disruptions of water supply or changes in water quality due to climatic changes." (Gleick, 1990, p. 239). In affected regions, climate change will require permanent changes in demand, either by re-allocating available water supplies, conserving water supplies through demand management and improved technologies and/or by making changes in physical structures, including water diversions.

Another complication of climate change will be increased variability -- and greater extremes -- in hydrological conditions. Thus, it is expected that floods will be higher, and droughts will be more persistent and severe. These changes in variability, it has been noted by American hydrologist Peter H. Gleick, may be expected to "cause the most costly societal responses, such as flood control, large water transfers, and storage." (*ibid*, p. 239). In these circumstances, it is not unlikely that measures such as large water transfers involving Canadian waters will be reconsidered.

Gleick has identified areas of the United States where water supplies are vulnerable to climate change. These include basins where demand for water is unusually high in relation to available surface water supplies. Not surprisingly, these basins are concentrated in the southwestern part of the United States, where concerns about water supplies are already very high.

Regions where the ratio of groundwater overdraft (where groundwater is pumped faster than the natural rate of recharge) to total groundwater withdrawals is high, are also especially vulnerable to decreased water availability resulting from climate change. These regions are found mostly in the US southwest and midwest. Current levels of water consumption in the western US depend on groundwater mining of over 20 million acre-ft/yr, ensuring that "future competition over supplies will intensify even in the absence of further growth in demand or adverse climate change." (Fredrick and Kneese, 190, p. 396). Impacts of climate change on irrigation will also be in the west where irrigators will be hard put to maintain even present levels of irrigation.

Finally, climate change will exacerbate urban water supply problems that already exist throughout the United States. Many urban water systems, which already reach far out into their respective cities hinterlands, are being stretched. In recent years, throughout the United States, the rate of construction of reservoirs for municipal and industrial water supplies as well as irrigation has not kept pace with the growth in population. This means that the considerable pressures that already affect urban water supply will grow with climate change. (Council on Environmental Quality, 1989, p. 27).

An examination of the implications of climate change for water resources suggests that the prospects for large-scale water transfers from Canada to the United States are likely to increase. It has been noted however, that "while global warming makes diversion a possibility it does not make it a probability." (Smith, 1993, p. 39). The conditions of water scarcity and broader variability that are expected to result from climate change will likely lead to a greater emphasis on efficiency and demand management as well as securing additional water supplies.

Impacts of Climate Change on the Great Lakes Basin

For the purposes of the present study, consideration of the impacts of climate change on the Great Lakes is warranted. In general, global warming is expected to exacerbate existing water resources problems in the Great Lakes basin. William K. Nuttle of the Rawson Academy notes in a 1993 study that "The Great Lakes can expect a decline in water levels and river discharge to historic low levels, which has implications for shipping, recreational water use and hydro-electric power generation." (Nuttle, 1993).

An indication of the extent of the decline in water levels to be expected was given by the International Joint Commission, which released the report of a six-year study into fluctuating water levels in the Great Lakes in June, 1993:

The most advanced computer models currently predict that water supplies to the Great Lakes and St. Lawrence River will be dramatically reduced over the next century -- possibly to the extent that Lake Superior's level could drop by one third of a meter (one foot), and the other lakes could be reduced between 1.2 and 1.5

metres (four and five feet) St. Lawrence River flows at Montréal could be reduced by as much as 40%. (IJC, 1993, p. 12).

Clearly, this would have devastating implications for both human and natural systems in the Great Lakes basin. While not necessarily constituting a form of international water export, it is inevitable that pressures to divert water from other basins into the Great Lakes to compensate for the effects of climate change on water levels will mount. Indeed, proponents of the GRAND Canal are already using this to bolster their proposal. (Kierans, 1993).

Politics

While rational economic considerations may make large-scale water export seem unlikely, they could be overridden by politics, as they have been in the past. Powerful interests in the United States, particularly in agriculture, have fought pricing improvements and lobbied for water imports and they have won. (Scott et. al, 1986). "In the west ... where water is concerned," notes Marc Reisner, "logic and reason have never figured prominently in the scheme of things." (Reisner, 1986, p. 14).

Even though the constituencies that support water transfers -- rural agricultural areas in the US southwest -- have been declining in economic and political importance in relation to urban industrial areas, farmers in the U.S. southwest continue to promote large-scale water transfers as a means of relieving water supply problems in their regions. They enjoy the support of agribusinesses as well as local politicians, bankers, and real estate interests.

As Richard Bocking has noted, hydrological studies showing that the United States is not running out of water fail to assuage the concerns of people who are affected by local water supply problems: "National surveys stating that no significant shortage of water exists are not likely to be persuasive for a farmer dependent upon underground water which is being exhausted by excessive pumping." (1987, p. 109). Water issues are often regarded subjectively: some may say there is sufficient water while others may claim there is water scarcity. The point is that if enough people think that there is a water shortage, strong political pressures may yet be exerted to relieve it by importing water from afar.

In spite of the economic arguments, water conservation and the full development of water markets is not a certainty. Even with the promise of much greater efficiencies, governments may be unable to resist the political attraction to importing water. As noted of water management and policy by U.S. Senator Dave Durenberger when he spoke in Toronto in 1984: The first principle of water policy...is that rational thinking doesn't apply..... Water is a political, not an economic, commodity. (Bocking, 1987, p. 121).

4. Conclusions

Hydrological data pertaining to the United States reveal that in general and in the near future, water supplies are adequate to serve needs. With the trend toward more efficient allocation of water resources, it is reasonable to conclude that demand for large scale water imports from Canada is not likely to be strong in the near future. Furthermore, the exorbitant costs of large-scale water diversions from Canada to the United States will prevent their serious consideration unless the fiscal position of governments changes so as to make it possible for such projects to receive subsidies.

In the longer term, however, with the implications of global warming, demand for large-scale transfers of water from Ontario and other parts of Canada to the United States is much more likely to become pressing. If forecasts of lower lake levels and reduced streamflow in many key parts of Canada and the United States prove to be accurate, water diversions, along with a much stronger emphasis on conservation and demand management are sure to be considered. In the mean time, other circumstances make it likely that there will be growing pressures for smaller-scale diversions out of the Great Lakes, the combined impact of which could be significant.

Natural climatic variability, possibly enhanced by climate change, will ensure continued concern about water exports, as it did with low levels on the Mississippi in 1988 and the drought affecting the southwest from 1986 to 1992. The current situation of the Mississippi and of water availability in California notwithstanding, we can be certain that the day will soon come when water levels in these places are felt to be "too low" and there will once again be talk of diverting water.

In conclusion, the management of water resources in the United States is analogous to a race between attempts to conserve and manage demand for water, and the effort to secure additional supplies. While conservation and demand management appear to have the upper hand at the present time, Canadians cannot afford to be complacent.

Section 2 - Appendix 1 - Proposals to Divert Great Lakes Waters to Basins in the United States*

1. The Great Recycling and Northern Development (GRAND) Canal project, which would use the Great Lakes as a reservoir in a continental scheme to divert water flowing into James Bay to the U.S. southwest. (1959 to the present).
2. North American Waters -- A Master Plan (NAWAMP), which proposed to pipe large volumes of water from Lake Ontario to New York City and the Susquehanna River. (1964).
3. The plan by North American Water & Power Alliance (NAWAPA) and the Mexico-U.S. Hydroelectric Commission plan to drain Great Lakes water into the Mississippi and Hudson River and ultimately into Mexico (1964 to 1968).
4. A proposal to build coal slurry pipe from Lake Superior to Wyoming which would withdraw vast quantities of water (1981).
5. A project to pipe vast quantities of Great Lakes water to the High Plains states and southwest to replace their depleted aquifer (1984).
6. A proposal to feed New York City's vast population with Lake Ontario water (1982 to 1986).
7. A concept involving the blasting of a 400-mile paved canal from Lake Superior to the Missouri River in South Dakota at a cost of \$30 billion (1983).
8. An attempt to increase the Chicago Diversion through the Chicago River to lower high Great Lakes levels (1985).
9. A proposal to construct a barge canal (called the Ohio River Canal or "Traficant Trench") from Lake Erie to the Ohio River through eastern Ohio for shipping (1986-1991); every year its study receives federal funds.
10. A federally-funded plan to punch a hole in bottom of Lake Michigan to drain water through bedrock layers for southern Illinois cities (1987).
11. An attempt to increase the Chicago Diversion through the Chicago River to raise low Mississippi River levels caused by drought (1988).
12. The Kenosha, Wisconsin diversion which started in late 1991 without approval and was ended in fall 1992 after having been discovered and investigated.
13. The Lowell, Indiana proposed diversion of 3.2 million gallons per day which was narrowly turned down in 1992.

* Information provided by Great Lakes United

Chapter 3

Provincial Powers to Prevent Water Export

1. Introduction

What are the implications of the inclusion of water under the terms and conditions of the FTA and the NAFTA?

For those who have had the opportunity to examine in detail the relevant documents, there is no question but that 'all natural water other than sea water' is included under the terms of both the FTA and the NAFTA, and that this inclusion gives the U.S. (and, possibly, Mexico) unprecedented and irrevocable access rights to Canada's water resources in perpetuity.

In the words of Paul Muldoon, lawyer and researcher in the area of environmental and energy law:

What can be asserted by way of a general theme is that the FTA holds the potential to substantially erode government control over water resource use and allocation in Canada and further complicate the regulatory framework governing those resources.

In Chapter One of this document, concern over the loss of sovereignty over Canada's water resources under the FTA and the NAFTA were discussed in some length as they relate to the implications of specific sections of their Agreements. In response, several provinces, notably Ontario and British Columbia, have pursued discussions on the ability of the provinces to "say no" to water exports.

What follows is a discussion of legal opinions provided by noted Canadian environmental and trade lawyers on the latitude afforded the provinces in this regard. Discussion of these issues can be divided into four areas: rights of access, limits on the exercise of provincial authority, limits on the exercise of federal authority, and avenues of appeal. Because these opinions were sought several years ago with respect to the FTA, they reference only that Agreement. However, because of the parallel provisions of the FTA and the NAFTA, they apply to both agreements. Discussion is divided into four areas: rights of access, limits on the exercise of provincial authority, limits on the exercise of federal authority, and avenues of appeal.

B.C. is closer to the edge of the water market frontier than is any other Canadian province. What lessons can be learned from the B.C. experience? The last half of this Chapter presents a review of B.C.'s existing and proposed water export schemes and their implications for stakeholders.

2. Rights of Access

A succinct explanation of the peril in which the FTA places Canadians seeking to exert control over their own water supply is provided by Paul Muldoon:

Once exports of water have begun (that is, once approval has been given), the FTA may limit governmental influence and control over national water policies since measures normally employed in such situations may not be available under the Canada-U.S. Free Trade Agreement. Thus, once the canal door is open, even slightly, the FTA may make it very difficult to close it or even control how much further it should be opened. The most direct route for the provincial government to prevent ... transfers of water is not to grant any rights to transfer water. If the province has not already sold its water rights, and does not want to sell or grant such rights, then the province retains authority over the use and allocation of water resources. If, however, water rights are granted and sold in the future, various provisions of the FTA are triggered which, in effect, prevent governments from interfering with the market forces of the water trading business.

The province of B.C. has already issued water export licences. The company holding the largest B.C. export licence was recently purchased by an American firm. Large volumes of "non-treaty" Columbia River water have been recently sold to the Americans in a side deal between B.C. Hydro and Bonneville Power Administration, ostensibly to facilitate fish flushes. Current water users - be they municipal, industrial or agricultural - purchase water from the Crown through water supply rates. Canadian water rights will continue to be granted or sold in the future - fulfilling Muldoon's prophecy. The National Treatment provisions of the deal mean that American and Canadians have equal rights of access to these market transactions.

To take this one step further using the example of supertanker exports, even if water rights had been granted or sold in the past (which, of course, they have) and if Canada should enact new laws to prevent such rights from being granted in the future in response to the threat of American acquisition, the United States could complain of discrimination on the grounds of being denied National Treatment.

3. Limits on the Exercise of Provincial Authority

Ability of the Province to Prohibit a Project

According to Gunton, the FTA should have no impact on the province's ability to initiate a project. It may have some effect, however, on the ability to prohibit a project to the extent that:

- i. Article 103 of the FTA may place more onerous obligations on the federal government to use its constitutional powers to constrain provincial actions contrary to the FTA;

- ii. under Article 201, actions contrary to the intent of the FTA may be in contravention even though they are not specifically prohibited.

B.C.'s moratorium on supertanker exports is an interesting case in point. Enacted in March of 1991 and subsequently extended several times (it is still in effect), the move was in response to mounting public pressure over pending supertanker exports of water to southern California. Although frequently cited as a ban on supertanker exports, it is not. The moratorium merely freezes the issuance of new supertanker export licenses. Had the government attempted to revoke existing licenses, they would clearly have been subject to the challenges Gunton observes.

Indeed, since B.C.'s moratorium against new licenses stands to prejudice only the interests of Americans (Canadians are unaffected by it), B.C.'s action could still arguably be challenged under the nullification and impairment or designation of a monopoly provisions of the FTA. (Currently, only one company holds a license of a quantity sufficient for commercial export. Since the moratorium, pending applications for quantity increases by other license holders have been held in abeyance.)

Limits of Governmental Interference on Pricing

If a Canadian private company holds water rights, there is no restriction any Canadian government can put on the price they receive for selling that water. The result, as Muldoon puts it, is that "water will be sold to the highest bidder, regardless of nationality".

A reasonable assumption is that the price charged by private sector water exporters would be significantly higher than the average price charged Canadians. In British Columbia, water rates average \$11 per acre foot. Water exporters pay up to \$22 per acre foot. (This additional fee for export amounts to an export tax which is not allowed under the FTA.) The California community of Goletta was prepared to pay B.C. exporters a price in the neighbourhood of \$2000 per acre foot (U.S. \$) for delivered Canadian water. Who could blame an entrepreneur from seeking to meet such a lucrative demand?

If, because of a future water shortage, Canada attempted to cut back on U.S. water exports, we would have to cut back Canadian users proportionally, ensure that there was no price discrimination between the two markets, and could not interfere with normal channels of supply. Assuming the latter would not pre-empt any cutbacks (which it likely would), then clause two would mean that we either would have to raise the price of water to British Columbians or lower the price to Americans. Assuming a government could not politically raise the domestic price to that set by export entrepreneurs, the only alternative would be to drop the American price, likely prompting vast lawsuits against the B.C. government by those companies whose profit expectations would have been drastically cut by the government's action.

to drop the American price, likely prompting vast lawsuits against the B.C. government by those companies whose profit expectations would have been drastically cut by the government's action.

Right of a Province to Cancel a Contract

According to Saunders, "In the absence of other legislation [e.g. FTA and NAFTA], the provincial government has the constitutional ability to dispose of its water resources as it sees fit, given its proprietary rights and legislative powers to manage the lands... It is clear under Canadian constitutional law that a province may revoke such rights - even without compensation - so long as this possibility is explicitly provided for in the legislation". This right of variance or revocation may be limited by extra-provincial rights if deemed to be directed specifically at interfering with such rights.

The FTA "affects the ability of the province to alter the terms of an existing contract to the extent that a) it increases the obligations of the federal government to force provincial compliance, [Article 103] and b) it extends the nullification and impairment provisions to include actions which nullify or impair a benefit reasonably expected." (Gunton).

The problem is most likely to arise if the United States objected to the action of a provincial government - for example, if a province revoked a license for tanker exports - by arguing that Canada had not taken "all necessary measures" (as we are obliged to do under FTA Article 103) to ensure provincial compliance. (It is of interest to note that the FTA considerably strengthens the GATT in this regard, which only requires the parties to take such "reasonable measures as may be available".)

At minimum, there would be pressure on Canada to use its trade and commerce powers to legislatively override the provincial action. The recent Crown Zellerbach decision by the Supreme Court of Canada provides authority for the proposition that the validity of federal intervention in provincial resource management matters can be strengthened considerably by the existence of international treaty commitments, even where the treaty is not directly binding. (Saunders).

The FTA further constrains the ability of the province to refuse to renew an export contract to the extent that:

- a) "it obligates the federal government to use its constitutional authority to force provincial compliance,
- b) the nullification and impairment article covers actions that nullify or impair a benefit reasonably expected even though they may not be explicitly prohibited and
- c) it imposes proportionality requirements on quantitative restrictions applied under

[GATT] Articles XI:2(a), XX(g), XX(i) and XX(j). Should the province be able to find the means to justify not renewing an export contract... such action clearly can be challenged under the FTA and may be subject to proportionality obligations" (Gunton).

Under such circumstances, refusal of a province to renew an export contract would also likely be subject to challenge under the non-interruption of supply provisions of both the FTA and the NAFTA.

Purchase of Water Export Rights

It need not be Canadians who invest in such schemes or who reap the profits under the FTA. Issuance of water export licenses must be afforded to Americans on the same conditions they are available to Canadians. And, once exports had begun, there would be no "turning off the tap."

Paul Muldoon points out that

...the principles of proportionality with no price discrimination are triggered. Water exports would be a 'normal channel of trade' and under the FTA, neither party can interrupt 'normal channels of supply.

And since British Columbia has already issued licenses permitting water export by supertankers, the tap may already be turned on. Because water rights have been granted or sold to Canadians in the past, should B.C. enact new laws to prevent such rights from being granted in the future, the U.S. could argue that this was simply a transparent attempt to preempt their legitimate rights (the "nullification and impairment of benefits" argument) under the National Treatment provisions.

The implications of U.S. influence over B.C.'s tanker export policies may surface sooner rather than later.

When control of Western Canada Water Enterprises, Inc., holder of the largest bulk water license in B.C., was transferred to Powerburst Corp. of Fresno, California, the province was unable to halt the acquisition. When questioned on this point during a media interview with the Vancouver Sun on 1 February 1992, Richard Penner, acting manager of Water Licensing in the B.C. Ministry of the Environment, responded that there was nothing in the current legislation to prevent a non-resident from obtaining a license, adding that "We expect there will be a policy in place that will deal with these questions before the moratorium expires on June 30th".

Penner's response overlooked two critical factors: Western Canada Water's present water export license for 42,635 acre feet per year is not affected or in any way prejudiced by the

present moratorium, which only applies to the issuance of new water export licenses. Also, as previously noted, the very ability of the province to unilaterally embargo, through its present moratorium, the issuance of new licenses for the export of water may contravene the FTA because it constitutes nullification and impairment of the agreement as it relates to both the National Treatment and the monopoly provisions of the deal. This complication would likely impair any effort Canada might make to give its citizens preferential use of its water resources.

4. Limits on the Exercise of Federal Authority

Much had been said by politicians concerning the ability of the federal government to prevent large scale diversions of water. The majority of the statements concern perceived federal authorities under the implementing legislation for the FTA and the NAFTA and the proposed Canadian Water Preservation Act, none of which do anything to override the terms of the Agreement itself.

One Scenario - Supertanker Exports

One approach to assessing the limits on federal authority over water exports is to assume the case wherein the Canadian Water Preservation Act (CWPA), which died on the order paper, was reintroduced and passed into legislation giving the federal government the jurisdiction to limit the export of water. Under this scenario, let us assume also that a province wished to proceed with supertanker exports in opposition to a federal government environmental review of the scheme. Setting aside for the moment the FTA, there is legal evidence to suggest that in the event of a domestic conflict between the provincial and federal governments over legislative jurisdiction under a new Act, the federal legislation may hold sway by virtue of the doctrine of paramountcy.

This is not necessarily the case with respect to tanker exports of water under the FTA and NAFTA.

The general concern relates to whether this legislation would be, with respect to tanker traffic, really directed at trade and commerce at all. The purpose of the [proposed] Act was "the preservation of Canadian water resources". While this could be construed as essentially a trade question, there are at least some indications from the Supreme Court that the trade and commerce power may not extend this far... It is at least arguable that a court would characterize the federal legislation with respect to tanker traffic as an ultra vires attempt to interfere with provincial control of resources - even though the legislation is cast as an exercise in trade regulation. (Saunders).

This has specific implications with respect to the stipulations within the proposed CWPA for

environmental assessments prior to authorization of tanker exports.

It seems to me debatable whether, under the guise of trade regulation, the Supreme Court would permit federal interference in purely local questions of environmental management if no other demonstrable federal interest exists... The proposed legislation as drafted raised serious questions as to whether it is in conformity with the obligations clearly present in the FTA with respect to tanker shipments. Given the scenario of a province agreeing to tanker sales of its own water, the federal regulatory system put in place in the proposed CWPA represented a clear interference with trading relations. (Saunders).

Both the prohibition of large-scale exports (including tanker exports) and the licensing regime for small-scale exports (again, including tanker traffic) in the CWPA are explicitly discriminatory; they do not, for example, apply to similar transfers of water within Canada, nor are they linked explicitly to any GATT exception... This regime for discriminatory treatment of tanker exports might well be considered a "colourable" device to avoid the proscriptions in the FTA against export taxes, QR's and minimum prices. (Saunders).

Limits to Set Priority or Nature of Use

As previously noted, FTA National Treatment provisions go beyond the GATT definition to include exports as well as imports. The effect of this provision is that both countries are prevented from imposing taxes, laws and regulations, or any other measure to discriminate against products such as bulk water sales for export. The same would apply for major water projects. Governments could not discriminate between users in either country. If the Canadian government were to undertake a major water diversion project to make water available for Canadian users (e.g. irrigation, hydroelectric generation or municipal water system), they would be compelled, if challenged, to also make this water available to American users providing the U.S. paid for the additional capital works to accomplish this.

Federal Authority in the Face of the FTA

The Canada-U.S. Free Trade Agreement overrides the Federal Water Policy prohibition of water exports as well as any law, such as Bill C-130 or C-156, enacted to give effect to the prohibition. Domestic legislation does not change the rights and obligations set out in the FTA. This fact is reflected in FTA Article 103 (extent of obligations) which states "The Parties to this Agreement shall ensure that all necessary measures are taken in order to give effect to its provision... (Clark).

If, for example, the Canadian Water Preservation Act was re-introduced and passed by Parliament,

...the U.S. could argue the prohibition of water exports nullified its FTA national treatment rights and a bi-national panel would probably agree. There are many examples of countries - including Canada and the U.S. - amending or reinterpreting legislation and changing regulations to reflect findings of GATT panels or accepting commensurate retaliation. Although the Government's water-related legislative proposals cannot change the FTA, the FTA can change both Federal and Provincial water policies and legislation and regulations. (Clark).

Potential for Redress By the International Joint Commission

Background - The Harmon Doctrine

In 1895, the United States responded to a complaint by Mexico about diversions which had reduced the flow of the Rio Grande where that river forms the boundary between the two countries.

The American government insisted, in effect, that tributaries to the river lying in the United States were only subject to the sovereign laws of the U.S., and were not subject to international law, whatever that might be. In other words, waters originating in a country were under the sovereign domain of that country. This position was asserted by then U.S. Attorney-General Harmon, and is now described as the "Harmon Doctrine."

Boundary Waters Treaty

Canada opposed this doctrine in the negotiations leading up to the conclusion of the Boundary Waters Treaty, but the United States would make no concessions in this regard. As a result, the Boundary Waters Treaty except as otherwise agreed deals only with waters, both rivers and lakes, which lie along the boundary, or which cross the boundary, between Canada and the United States; and it excludes tributaries.

The Boundary Waters Treaty, in Article VII, provided for the establishment of the International Joint Commission (IJC) with responsibility for the orderly implementation of the Treaty. Comprised of two Sections, one representing American and one Canadian government interests, the IJC fulfills its mandate through the establishment of Boards to study specific issues arising within the context of the Treaty.

Relationship to Water Exports

The Columbia Treaty, at the insistence of the U.S., departed radically from both the Harmon Doctrine and the Boundary Waters Treaty. Under the Columbia Treaty, Canada is barred from making any diversions from the Columbia system. The United States succeeded in maintaining its position against any such diversions because they would diminish the downstream benefits to which the U.S. would be entitled under common law

through the doctrine of "first in use." It was General MacNaughton, then-Head of the Canadian section of the IJC, who unsuccessfully fought for the right to divert Columbia tributary waters into the Fraser River.

In dealing with the various references made to it, the IJC generally has followed the principles, supported by the Boundary Waters Treaty, that measures taken in one country with respect to boundary waters shall not cause any injury in the other country (Article II). However, the IJC cannot interfere with ordinary use of water for domestic or sanitary purposes. Article IV of the Boundary Waters Treaty deals with measures which have the effect of changing levels of boundary waters. This Article has usually given rise to cases stemming from complaints about high water levels on the Great Lakes.

The definition of boundary waters in Article I of the Boundary Waters Treaty renders the Treaty, and the powers and purposes of the IJC derived from the Treaty, moot with respect to Canadian water exports arising from the FTA and the NAFTA. This being the case, it seems clear that neither the Boundary Waters Treaty nor the IJC itself could be concerned about interbasin diversions such as the Grand Canal or NAWAPA schemes, since these would not fall within the definition of "boundary waters." Nor would coastal tanker traffic in water.

This is not to say, however, that the two parties, by some formal agreement, could not designate the IJC as the appropriate body to consider a water export proposal. This was the case during the 1970's when, in response to Canada's concerns regarding the magnitude of the project and the environmental effects of biota transfer, the Garrison Dam diversion from the Missouri to the Red River systems was taken up by the IJC's agenda. Alternatively, perhaps some separate Commission modelled on it might be set up to give legitimacy to such a task.

5. Avenues of Appeal

As noted by the Center for International Environmental Law, Washington, D.C.:

Critical to understanding the threat NAFTA poses to water supplies is understanding the process by which the Parties will resolve future conflicting interpretations of NAFTA. NAFTA, as well as the FTA, contemplates the use of dispute panels, which are traditionally composed of international trade specialists. As currently conceived in Chapter 20 of NAFTA, the trade panel will meet and make its decision in almost total secret; even final panel reports may be withheld. The decision will be based wholly on trade expertise and the text of the agreement. Outside scientific expertise may only be provided to the panelists if both parties consent and only to the extent of resolving questions of fact. Perhaps more important, only governments can raise complaints under NAFTA; virtually no citizen participation is permitted. Given the closed and myopic dispute resolution format, a dispute panel is even more likely to

find a large-scale water transfer consistent with NAFTA. Without a specific exemption in the text for large-scale water exports, Canada will have few arguments to support export restrictions on water transfers.

6. Lessons From British Columbia

British Columbia remains a land of new frontiers. Just 120 years since entering Canada, there remains a strong vein of respect for the resource entrepreneurs - from the lumber baron families who continue to hold sway in Vancouver society to a record of government in Victoria that has catered to free enterprise - to the detriment of public interest. The province's forests are dwindling, and its mines becoming less and less competitive world-wide. Those who would seek their fortune from British Columbia's natural bounty now have their eyes on another resource - perhaps the province's last - water.

Two of Canada's most aggressive water export proposals have sprung on its west coast. One, based on supertanker shipments of water to California, has sparked vigorous debate. The other, a large scale, interbasin diversion of water from the North Thompson to the Shasta Dam in California, has been more subtly pursued.

In addition to the above schemes, which are still on the drawing boards, a total of 19 companies hold surface water licenses from the B.C. government to bottle over 4 million litres of water per day.

Supertanker Exports: the Santa Barbara contract

More than 30 B.C. companies are currently jockeying for position to export water by supertanker from British Columbia's pristine coastal outfalls. Seven export licenses were issued by then-Premier Bill Vander Zalm's Social Credit government to ship a total of 50,197 acre-feet a year. Twenty more licenses - representing an additional 145,130 acre feet of water a year - await approval by the Water Management Branch.

In what many described as the opening salvo in a very long and contentious battle, proponents and opponents of large scale water shipments to the United States confronted one another in British Columbia during the summer of 1990. At issue was the potential sale of water by supertanker to the coastal California city of Santa Barbara.

Nearly a decade ago, in an apparent attempt to limit growth, Santa Barbara municipal council voted against participating in a state diversion system which would have increased water supplies. During the summer of 1990, feeling the effects of a five year drought, population growth and poor management practices, "water police" on the watch for "wastrels" patrolled Santa Barbara streets while local residents grappled with the effects of a mandatory 45 percent cutback in water use. Local entrepreneurs - filling a unique demand

for spray painted lawns - added a new dimension to the phrase "the grass is always greener."

Enter three Canadian water export companies - Western Canada Water Enterprises Inc. (WCW), Snowcap Water Ltd. and Aquasource Ltd.- promising to supply the California community with supertanker shipments of between 2,500 and 10,000 acre-feet (up to 12.4 billion litres) of B.C. water per year. The water - to be pumped directly into Santa Barbara's existing municipal water system - was to be supplied by coastal outflows from glacier-fed Link Lake near Ocean Falls (WCW), Tzela Creek on Toba Inlet (Snowcap) or Freil Creek on Hotham Sound, Powell River (Aquasource).

Although proponents are fond of describing proposed tanker shipments as a "drop in the bucket," emerging demand for water exports by supertanker represent some very big business interests. Export prices for water to be supplied under this first contract alone were reportedly between U.S. \$2,700 and \$3,400 per acre foot, representing potential sales of between U.S. \$27 - 34 million per annum based on shipments of 10,000 acre feet/year. (An acre foot is the amount of water required to cover an acre of land to a depth of one foot. One acre foot is the equivalent of 325,000 gallons or roughly 1.2 million litres.)

To put this export price in perspective, the amount paid by B.C. firms to the provincial government for water export licenses is estimated by the Business Council of B.C. to be in the neighbourhood of \$9 to \$18 Canadian per acre-foot. Even the higher figure amounts to barely six tenths of one per cent of the proposed export price.

Western Canada Water Inc. was considered to be the odds-on favourite in the Santa Barbara bid. A B.C. firm long-rumoured to have strong connections to both the Social Credit and Conservative governments, WCW had in place since 1986 a 25 year license from the B.C. Ministry of Environment, Lands and Parks to export 42,635 acre feet of water per year from Link Lake, an abandoned mill site at Ocean Falls and had applied for permission to export a further 57,363 acre-feet per year. Additionally, WCW had spent years and hundreds of thousands of dollars helping Santa Barbara research solutions to its water supply problems. WCW was listed on the Vancouver Stock Exchange in August of 1987, becoming the world's first publicly traded water company. In 1988, WCW was listed on the US NASDAQ exchange, and in 1991 transferred its VSE listing to the Toronto Stock Exchange. Not surprisingly, stock prices on these exchanges moved in tandem to the prospect of water markets, with prices rising in the summer of 1988 on the announcement of WCW's preliminary negotiations with Santa Barbara, in the fall of 1989 in response to a \$5 million fundraising effort to build a new bottling plant to supply the Japanese market, and in the summer of 1990 and 1991, when the Santa Barbara and Goleta bids were tendered.

The other two players in the initial bidding were Snowcap Waters Ltd. and Aquasource Ltd. Snowcap, a Courtenay, B.C. firm in a joint venture arrangement with the California company Sun Belt Water Inc. in 1988 held an annual export permit for 200 acre feet from Toba Inlet, and has an application before the provincial government to increase this to 15,000 acre feet. Aquasource, a West Vancouver company, obtained an export license in 1986 to draw 1,125

acre feet per year of water from Freil Lake near Hotham Sound, about 50 miles north of Vancouver and also had an application pending to increase their export volumes.

The original decision date of mid-June 1990 was postponed several times as Santa Barbara Council considered their options - one of which was a proposal by a U.S. firm to build a reverse osmosis facility to desalinate sea water.

Finally, a short-list - consisting of the desalination option and two B.C. companies, WCW and Snowcap - was announced.

Enter the Klahoose Band, a B.C. native community whose reserve lands and traditional territories encompass the watershed and streams which would together provide the source of water for Snowcap's export proposal.

In an eloquent and timely letter to Santa Barbara's Mayor and City Council on the eve of the announcement date of the successful bidder, the Vancouver law firm of Rush, Crane and Guenther, solicitors for the Klahoose Band, notified the California municipality of their client's request for a deferral of any decision until the band was able to make a more detailed representation to Santa Barbara Council. They further put the municipality on notice that the Band had raised objections to any proposal to export water from the Toba Inlet area, those objections being based upon "insufficiency of environmental study, lack of consent or approval of the Band based upon its reserve and aboriginal rights and interests existing in that area, and insufficiency of public information and debate upon the issues." They concluded with a warning that the Band was determined to prevent the large scale export of water from the Toba Inlet area without its approval.

The specific concerns of the Klahoose Band related, in part, to the adverse environmental effects likely to arise from the project. The natives were concerned that the introduction of tanker traffic into the area would result in bunker oil spills, flushed bilges and the emptying of ballast tanks in closely confined waters in inlets and between islands. They thought it probable that construction and/or enlargement of diversionary structures and loading facilities would alter water courses and that the removal of such a large volume of fresh water would cause changes in temperature, salinity, oxygen and nutrient levels in Toba Inlet itself. The band's objections also related to the implications of the proposed exports under the terms of the FTA. Most significantly, their concerns related to the issue of consent, or in this case lack of consent, of the Native community and the implications for aboriginal rights and unextinguished land claims.

In short order, Santa Barbara's Mayor and Council received a similar representation from solicitors representing the Native Band whose territories (near Ocean Falls) were affected by WCW's export proposal.

Not surprisingly, in the face of almost certain litigation were they to select either of the supertanker export proposals, the City of Santa Barbara - after initially postponing their

decision for three days - announced that they had chosen the desalination plant option, although adding somewhat enigmatically that they were "keeping the door open" to supertanker exports in the future.

In the late fall of 1990, Goleta Water District, which provides water to a farming community of 70,000 on the outskirts of Santa Barbara, announced its interest in purchasing water from Canada. Snowcap and Western Canada Water again tendered bids to supply the California community with tanker shipments of 7,500 acre feet of water per year over a seven year contract. Again, Western Canada Water was considered to be the front-runner.

Negotiations on the Goleta contract continued through December and into 1991. Protestations from native and environmental groups continued. In response to mounting public concern over the proposed export of water from B.C.'s coastal streams, then-B.C. Environment Minister Cliff Serwa announced a complete review of the province's water export policy.

Several days later, information surfaced in the media that on 27 December 1990, a private meeting had been held between B.C. Premier Bill Vander Zalm, B.C. Minister of International Trade Elwood Veitch and representatives of the Goleta Water District. One of the reasons for the meeting was Goleta Water District's grave concern that since Western Canada Water was the only firm to have the requisite export licenses in place, they could be facing a less than competitive bidding process.

According to Goleta Board member John DeLoreto, Goleta raised this issue strongly at the December meeting with Vander Zalm, "I wanted to telegraph a clear signal to the Canadian government that we insisted that there be more than one bidder on our project." Subsequent media releases by Snowcap state that in response to DeLoreto's concerns, Vander Zalm assured Goleta that a process was in place for Snowcap to obtain all necessary approvals, and that the review of that firm's application would be completed "prior to any deadline set by Goleta." Premier Vander Zalm also provided assurances to the California community at this meeting that a water delivery deal with a B.C. company would not be rescinded by the province.

On 15 March 1991, in a unanimous decision, the Goleta Water District selected Snowcap to fill the \$105 million (U.S. \$) water contract through the shipment of one supertanker of water a week for seven years at a delivered cost of \$2,200 (U.S. \$) per acre-foot. Snowcap had only one loose end to wrap up before it could sign the deal - approval by the province of its application to increase its water export license by a further 15,000 acre feet per year. By this time, according to the company, then-provincial Manager of Water Licensing James Mattison had informed Snowcap that they had complied with all requirements, and in fact Mattison had shown them the amended license, fully prepared and only requiring one final signature. Paley also claims he was in possession of a letter from then-Environment minister Cliff Serwa assuring him that the expanded licence bid would be approved.

Meanwhile, B.C. native leaders had effectively mobilized their concerns to the point that the First Nations Council had endorsed the strongly worded position put forward by the 54 band Coast Salish Nation calling for an immediate moratorium on all water export proposals and water license applications until four conditions were met: satisfactory settlement of all aboriginal rights and title; a full assessment of the environmental implications of water exports, including their cumulative effects on marine and fresh water systems; a full assessment of the implications of water exports under the terms of the Canada-US Trade Agreement; and full public debate. The Coast Salish Nation further resolved to "take whatever actions are required to ensure that such a massive giveaway does not occur within our traditional territories without our consent and over our objections."

In response to the growing opposition from B.C.'s native community, John DeLoreto, Goleta Water District board member, replied "If we have to pay an extra \$50 per acre-foot to help buy out Indian disputes, no problem. I think it's a great project. It's the only thing we can bring in quickly. What's the big environmental damage?"

On 20 March 1991, Environment Minister Serwa announced that no further water licenses for bulk export purposes would be issued until after 30 June 1991, the scheduled completion date of the newly-announced Policy Review Committee's assessment of BC's water export policy, undertaken by former Deputy Minister of Education Jim Carter and now referred to as the "Carter Report".

In what seemed to be a virtually seamless political move, this decision gave the appearance of addressing native and environmental concerns while at the same time leaving Western Canada Water free to pursue the Goleta export market unfettered by competition from Snow Cap.

In a hastily-called media conference one day after the government's announcement, Snowcap was quick to cry political favouritism, alleging, among other things, that while Snowcap was actively pursuing the contract with Goleta, B.C. International Trade Minister Veitch had privately advised the water district to "go see Western Canada Water," and that after the March 20th decision, Snowcap had been told by Deputy Minister of Environment Richard Dalon "if we [Snowcap] wanted to export water, we should go see Western Canada Water Ltd."

In response to media queries on the day of the government's announcement, Katy Crawford, President of the Goleta Water District, said she had received an unsolicited letter from Premier Vander Zalm on 8 March 1991 confirming the details of the water supply agreement between Western Canada Water and the Province of British Columbia. The letter was also included as part of WCW's bid. "I have no idea why we received it" Ms Crawford stated. "My response is that they [Western Canada Water] must have some good connections with the government." The Premier's letter to Goleta was made public by Snowcap the next day.

In the end, Goleta did not pursue the contract. Partly, this was due to their dislike for the way WCW conducted business. In part, it was also due to the fact that the March 1991 rains, which replenished Goleta's reservoir, gave them the time to pursue a broader range of options.

The hiatus of public concern with water exports did not last for long. Public fear again resurfaced with the February 1992 announcement of Western Canada Water's acquisition by U.S.-based PowerBurst Corp.

By the fall of 1991, WCW had lost millions of dollars and was financially insolvent. In January 1992, shareholders of Western Canada Water Enterprises Inc. approved a proposal to merge with PowerBurst Corp. of Fresno California, a company controlled by U.S. real estate developer and entrepreneur Edward DeBartolo Jr., owner of the NFL's San Francisco 49ers and former owner of the NHL's Pittsburgh Penguins. This merger put PowerBurst, as the dominant shareholder, effectively in control of the 42,635 acre-feet water export license. Since WCW is the only company which holds a commercially viable export permit, the merger effectively gives an American-owned company a monopoly on B.C. water exports.

This did not sit well with then-B.C. Liberal Leader Gordon Wilson, who called on the New Democratic Party provincial government which had inherited the situation on coming to power in October 1991 to stop the deal. "I certainly have serious reservations about allowing the largest licence for export to be controlled from the United States" Wilson said in an interview with The Vancouver Sun. According to an information circular distributed to WCW shareholders, the company had "no obligation to seek the prior consent" of the province for the merger. In response to Wilson's statements, Richard Penner, acting manager of the provincial water licensing department, said there was nothing in current legislation to prevent a non-resident from obtaining a license.

Canadian Water Resources Association Convention, 1992

Widespread public discussion on water exports died down somewhat until May of 1992, when the Canadian Water Resources Association held a conference on water exports at the Hotel Vancouver. Entitled Should British Columbia's Water Be For Sale, 19 papers were presented over a two day period by authors from Canada, the United States and Mexico - would-be water export entrepreneurs, environmentalists, native leaders, economists and senior water diversion lobbyists.

Nine of the papers presented at the conference were commissioned by Vancouver-based right wing think-tank, the Fraser Institute. Not surprisingly, these papers focused on the potential benefits of continental water sharing and the establishment of continental water markets. With one exception, these papers were all presented by either American or Mexican authors.

The gist of the research commissioned by the Fraser Institute can be summed up by the remarks of Terry Anderson, Senior Associate at the Political Economy Research Center in Bozeman, Montana, who coordinated the nine studies. According to Dr. Anderson, one solution to drought woes in both the Okanagan and California is to make water a marketable commodity and allow it to be traded.

British Columbia policy on water exports

The luncheon speaker on the final day of the conference was B.C. Environment Minister John Cashore. Cashore used this opportunity to release the Carter Report (The Export of Water from the British Columbia Coast, prepared at the request of the previous Social Credit Government by Victoria consultant Jim Carter dated January 1992) and to announce a two year extension to the provincial government's moratorium on the issuance of further bulk water exports. (The province's initial 3 month moratorium, enacted in March 1991, had been renewed once already, for a one year term expiring on June 30, 1992.)

In his luncheon remarks, Cashore said that before the expiration of the moratorium on the issuance of new licenses for the export of large shipments of B.C. water by marine vessels, "we will have a definitive policy on water exports, supported by comprehensive legislation." Cashore stated that as a new government, he and his colleagues were just beginning to understand that the implications of water exports were "extremely complex," with repercussions in many different areas, including international trade policy.

Expressing "a legitimate fear" that once water begins flowing to the U.S., B.C. will be prohibited under trade law from turning it off, Cashore promised studies and assessments over the next two years that will weigh and measure the environmental, economic and jurisdictional issues to ensure that water export policy is compatible with an overall policy review of water legislation. Cashore also said the government intends to introduce controls on ground water within the province, including "managing the rights to ground water use." He also pledged an extensive public consultation process to ensure that stakeholders and the people of B.C. will have the opportunity to present their viewpoints on the issue of water exports.

Pointing out that prior to the moratorium his office had been flooded with water export applications, Richard Penner, manager of the B.C. Water Management Division's water licensing section, claimed in an interview with B.C. Report (11 March, 1991) that the moratorium is intended to give the government time to establish export guidelines under a new Water Management Act.

While initially assuaging some measure of public concern, the extended moratorium rested on somewhat shaky legal ground.

First, in terms of the Goleta contract, the actions of the B.C. Government in foreclosing the issuance of a license to Snowcap pending a three month review of water exports put

Western Canada Water in the position of a monopoly supplier. Consequently, Snowcap - through its U.S. affiliate Sunbelt - may indeed have had rights of redress under the Canada-US Trade Agreement, specifically under Article 2010 which governs the procedure which must be followed should either party to the agreement contemplate the designation of a monopoly.

Second, but far more significantly, the FTA and the NAFTA specifically prohibit the province from taking action which could stand to prejudice (nullify and impair) rights of Americans under the agreements. The province provides water under licensing arrangements to British Columbians for agricultural, industrial and municipal use. If export licenses to provide water to Americans are denied by the government, this arguably nullifies and impairs rights under the FTA. If push came to shove, the federal government could be called upon to get the province "in line" or face trade retaliation from the Americans in the face of a bi-lateral ruling against us.

The Santa Barbara and Goleta contracts were too small an issue to force the hands of American trade negotiators on water access. They were but the first volleys of a very long game plan.

Bottled Water

The market for bottled water is a lucrative one. According to Western Canada Water Enterprises Inc., the U.S. bottled-water market is valued at \$1.5 billion U.S. and growing.

A total of 19 companies hold surface water licenses from the B.C. government to bottle over 4 million litres of water per day.

In addition to its bulk water export license, Western Canada Water (now owned by Powerburst) also holds a license for 552.6 acre feet per year of water for bottling purposes, and markets water bottled under the brand names "Canadian Glacier" and "Canadian Blue." The company reports sales of \$4.5 million a year. WCW's "Canadian Blue" label rivals French competitors Evian and Vittel for top place in the lucrative California non-carbonated water market.

Clearly Canadian Beverage Corp, a Vancouver-based public company, selling bottled mineral water and mineral water-based fruit drinks to markets in Canada, Japan and California, draws a reported 94,400 litres of water per day from wells in Tillicum Valley, 10 kilometres south of Vernon. This water is shipped daily in 23,600 litre-capacity tanker trucks to bottling plants in the U.S. (B.C. Report, 11 March, 1991.) According to a Canada's W5 news program (January 3, 1993), the company ships 8,200 truckloads of water a year to the U.S. for bottling. In 1991, the company had sales totalling \$70 million.

Tourists driving through the normally peaceful Tillicum Valley community in the heart of

B.C.'s Okanagan Valley would notice nothing more remarkable than picturesque fruit orchards and summer cottages. They would certainly not be aware of the feud which is quickly boiling to the surface as a result of Clearly Canadian's water withdrawals. According to area residents, Clearly Canadian's mining of ground water from the region for over five years is "draining their water supply dry." (B.C. Report, 11 March, 1991.)

Jane Anderson, one of 32 Tillicum Valley residents who protested to the North Okanagan Regional District, claims some of the wells have already gone dry and there is no mechanism in place to monitor how much water the company is extracting nor how this impacts the area's water table. The company's activities also anger John Baumbrough, director of the Vernon Water Conservation Committee, who argues that Vernon orchardists - who contribute significantly to the regional economy and have suffered shortages and droughts in recent years - will have no where to turn for assistance if local wells run dry. Mark Zobel, an engineer with the ground water section of the Water Management Branch, concluded in a media interview that the Tillicum Valley has a viable but inconsistent supply of ground water, and as a result "you can't really predict who'll go dry." (B.C. Report, 11 March, 1991.)

In response, North Okanagan Regional District director Joan Yardley referred residents to provincial authorities, noting that the authority to legislate the amount of ground water withdrawn and monitor the speed at which aquifers replenish falls under provincial jurisdiction. (B.C. Report, 11 March, 1991.)

While licensing is required for the bottling and export of surface water, B.C. is the only province in Canada which does not yet have regulations requiring the licensing of ground water withdrawals. In May 1992, Environment Minister John Cashore committed to the development of a new Water Management Act. In July 1993, the B.C. government released a series of discussion papers and began an extensive review of water management policy and legislation. That process is ongoing and legislation regarding groundwater is one of the issues under review.

The North Thompson Diversion

In the interior of British Columbia, Multinational Resources (a joint venture between B.C. parent Multinational Water and Power Inc. and U.S. partner KVA Resources Inc.) is lobbying hard on both sides of the border for a \$4 billion plan to divert 1 million acre feet of water per year from the North Thompson River into the Columbia River and from there, via a 400-mile pipeline across Oregon, to the California system at Lake Shasta. KVA Resources, a Bellevue, Washington company that has constructed a number of hydroelectric dams in the U.S. northwest, would be the project developer. (Multinational Water and Power Inc.)

More than any of B.C.'s water export players to date, Multinational Water and Power's

President and Chief Executive Officer, William E.S. Clancey, epitomizes the essence of B.C.'s resource entrepreneurs. A Social Credit insider, former aide to B.C. Premier W.A.C. Bennett and Vancouver Stock Exchange promoter, Clancey's offices are festooned with pictures of a smiling Bill Clancey with W.A.C. Bennett and, more recently, Bill and Lillian Vander Zalm. Clancey was involved with the launch of numerous resource-based stocks on the VSE, many of which were his own gold-mining ventures.

"I think we're in the position now where the Arabs were with oil 40 years ago says Clancey. "By the year 2000, water will be worth more than oil. (British Columbia Reports, June 24, 1991.)

Multinational Water and Power claims to have already sunk over \$500,000 into a two-year study of the concept and now wants to spend \$4.5 million in private funds on a two-year feasibility study. The eventual cost of the project is expected to be \$3.8 billion.

The company's proposal differs from other diversion schemes in that they do not plan to construct any dams or artificial reservoirs to store the water. The conceptual plan calls for the transfer of water from the headwaters of the Fraser River, the North Thompson River and the Columbia River. These three major river basins originate close together in the alpine regions of the Rocky Mountains, near Valemount, British Columbia.

The North Thompson River begins life as glacial melt in the Cariboo Mountains, 250 kilometres southeast of Prince George. The river flows eastward towards the B.C.-Alberta border until it reaches the whistle stop of Gosnell on the CN Rail line, about 50 kilometres south of Valemount. There, it takes a sharp turn and continues southward to Kamloops, where it meets with the South Thompson. The Thompson rolls west, then south to Lytton, where its pristine waters merge with the Fraser River. Each year, an estimated 100 million acre feet of fresh water pours down the Fraser to the coast, and into the Strait of Georgia.

Under the Clancey scheme, 1500 cubic feet per second (1 million acre feet of water annually) would be taken from the North Thompson near Gosnell, B.C. via an underground pumping system leading to a 20,000 metre long mountain tunnel and from there into the existing storage reservoir of the Canoe Reach - MacNaughton Lake area of the Columbia River Basin. From there, water would flow south to the U.S. through the existing Columbia River system by way of Mica Dam, generating power as it flows through several hydroelectric facilities now in place. The flow would be diverted again into the John Day Dam Reservoir (160 kilometres east of Portland, Oregon) then transported via a series of pumping plants and generating stations to the Pit River near Lakeview, Oregon and Althuras, California. The proposed conveyance system would consist of two ten foot diameter pipelines or an open canal depending on site conditions, economics and environment. From the Althuras area the water would flow down the Pit River, passing through seven existing power generating stations en route to the Shasta Reservoir located north of Redding, California. From the Shasta Reservoir, the water would pass through the Shasta Power Plant and Sacramento River to be applied to the overall water system, making one million acre feet

per year available for diversion to the Los Angeles area. The additional energy created by the water as it passes through hydroelectric dams on the Columbia is intended to compensate for the energy required to pump the water across the plateaus of central Oregon.

According to Gary Shupe, of KVA Resources, current consumption of water in the Greater Los Angeles Basin and water supply areas for the Los Angeles Department of Water and Power and the Metropolitan Water District of Los Angeles accounts for some three million acre feet per year. The additional supply of one million acre-feet per year, coupled with a conservation plan currently being initiated in the area, could probably carry the basin at its existing growth rate and consumption through the first quarter of the twenty first century.

In their literature, Multinational estimates that water prices in the Southern California area are projected to range as high as \$3,000 an acre-foot by the year 2000. The company's financial projections are based on a market of \$1,000 per acre foot, which in turn would generate a net of some \$600 million per year after debt servicing and operation and maintenance costs are considered.

In addition to the payments to the provincial treasury from the sale of water, Multinational Resources projects employment generation of 5 million hours with 1,000 workers during the peak construction period. Upon completion, the project is estimated to generate 100,000 hours in annual employment. It is estimated that the value of increased power generated at Mica and Revelstoke generating facilities would produce \$24.2 million annually (1992 dollars). Under the Columbia River Treaty, British Columbia would be entitled to either half the power, or equivalent income from power generated in the U.S. This would give the province an additional \$12.1 million per year (1992 dollars).

In interviews with U.S. media, Clancey states that much of the cost of the aqueduct could be financed by municipal bonds floated by potential buyers for the water. Multinational said it is already holding discussions with interested Southern California water users, but it has so far not identified them. In 1991, the California Department of Water Resources offered Sacramento Valley farmers \$125 an acre-foot to leave their fields fallow and store their water instead in an Emergency Water Bank that will sell it to urban and agricultural interests in the south. The initial goal of the water bank was to store 1 million acre-feet - the same amount proposed for sale by Multinational. Clancey is betting that urban users will be willing to pay ten times the water bank rate if the state's growth continues and especially if the drought conditions experienced over the past decade persist. At \$1,000 per acre-foot, the scheme compares favourably with an estimated \$1,900 U.S. an acre foot for energy-intensive desalination plants and similar prices for supertanker deliveries.

While the idea may well spark interest in the U.S., it is not met with equal enthusiasm by Canadians. In a 24 June 1991 interview with the San Francisco Chronicle, Nelson Riis, Member of Parliament from Kamloops, B.C. presented Americans with an unequivocal statement: "The overwhelming majority of Canadians are appalled at the idea. Our rivers

are not for sale." The paper went on to report that Riis was sponsoring legislation that would prohibit transfers of water from one watershed to another, putting a stop to the kind of interbasin transfer proposed by Multinational. Similarly, Okanagan-Shuswap MP Lyle MacWilliam's constituents take a dim view of the proposal. In the spring of 1992, MacWilliam tabled in the House of Commons 55 petitions containing 2,530 signatures from residents throughout the Okanagan-Shuswap opposed to the Clancey plan. According to MacWilliam, the provisions of the free trade agreement with the U.S. would enshrine Canada's obligations to maintain such exports once a contractual agreement has been signed. "Even in the event of domestic water shortages," said MacWilliam, "once such contracts are signed, Canada could not reduce the supply of its water exports unless it reduced its own domestic supply accordingly. Once you turn on the taps, it is awfully difficult to turn them off." (British Columbia Reports, June 24, 1991.)

Nathan Matthew, Chief, North Thompson Band, Shushwap Nation, has been an active spokesperson for First Nations' opposition to the Clancey plan. The North Thompson Band and the Ktunaxa/Kinbasket Tribal Council have both held open public meetings on the proposed diversion, giving voice to strong objections not only from band members but community groups as well.

Despite this, William Clancey continues to lobby the B.C. government in support of his plan; Multinational Resources Inc. is prepared to fund an environmental assessment of the diversion scheme if the government will provide some assurances of "support in principal" for the proposal. The B.C. government has yet to officially respond to Clancey pending announcement of their upcoming water export policy.

NAWAPA Revisited

The North American Water and Power Alliance (NAWAPA), a discredited plan from the 1960's to divert water from Northern B.C. through the Rocky Mountain Trench to the southwestern U.S., has resurfaced and is being promoted by the U.S.-based Foundation for Water and Power for North America. (FWAPNA)

Former U.S. ambassador Francis Dale is president and chief promoter of FWAPNA, a \$300 billion plan he claims will solve U.S. water shortages, trigger Mexican industrialization and rejuvenate the North American economy. According to Dale, who claims support all the way to the White House, FWAPNA is a concept whose time has come.

In a May 1992 interview with British Columbia Report, Dale says he is only asking that Canadian governments take a "non-emotional, scientific, detached look at this concept to determine its merits." He adds that he understands Canadians' fears about relinquishing control of their water but maintains water does not belong to communities or even states or provinces. River systems span vast areas. As a result, B.C.'s water must be considered a "continental right," one that is shared by both countries. (British Columbia Report,

May 25, 1992).

The plan would divert water from Alaska through the river system of B.C. to the U.S. This would be accomplished by damming three rivers: The Peace, the Kootenai and the Columbia Rivers in southwestern B.C. and Idaho. The result would be the creation of a huge reservoir (800 kilometres long and 16 kilometres wide) flooding the Rocky Mountain Trench. The Trench would become part of a system of 177 lakes and reservoirs funnelling millions of acre-feet of water into parched areas of Canada, the U.S. and Mexico. Water would also be diverted east through the Peace River, turning western North America into a huge water grid.

In a media interview following his presentation of the plan to the Canadian Water Resources Association conference held in Vancouver in May 1992, Dale described the project as "like a huge water pipe system - you could turn it on and off... This will be the first major project of the North American common market." (Vancouver Sun, May 8, 1992).

7. The Columbia Treaty - Hydroelectricity and Water

The majority of British Columbians did not appreciate the link between hydroelectricity exports and water exports until the spring of 1992, when U.S. authorities in the northwestern states, facing drought conditions, began using more Columbia River water than usual from the Mica, Arrow and Duncan reservoirs in southeastern B.C., dropping lake levels in some B.C. communities by up to 10 metres.

Increased drawdowns from the Columbia system, combined with Bonneville Power Administration "swaps" of hydro for water under the Treaty, unprecedented B.C. power shortages in 1992-3 and the recent disclosure of ad-hoc sales of large quantities of "non-treaty" water to the American utility by B.C. Hydro has focused considerable attention on the Columbia Treaty, and Canada's inability to redress these issues in the face of both the FTA and the NAFTA.

Background

In 1944, the Governments of Canada and the United States of America referred to the International Joint Commission (IJC) the problem of determining whether or not a greater use than was then being made of the waters of the Columbia River system would be feasible and advantageous to both countries. To study this question, the IJC established the International Columbia River Engineering Board (ICREB), which carried out extensive studies and analyses of the problems of development of the Columbia River Basin.

In January 1959, the two Governments requested the IJC to report on principles to be used in determining and apportioning between the two countries the downstream benefits to be

realized in the United States as a result of construction and operation of upstream storage reservoirs in Canada.

The Board submitted its findings in March 1959 to the IJC. Negotiations commenced in February 1960 regarding the terms of a Columbia River agreement, and on 17 January 17 1961, The Columbia Treaty was signed by Dwight D. Eisenhower for the U.S. and Prime Minister John G. Diefenbaker for Canada.

The Treaty provided that Canada construct a series of dams in British Columbia at Mica Creek, Lower Arrow Lake and Duncan Lake to provide 15,500,000 acre-feet of Canadian water storage capacity, and to manage the waters in the Columbia River Basin for a period of 60 years from the commencement of the storage operations in accordance with U.S. flood control needs and assured plans of operation designed to produce downstream power benefits in the United States. For flood control benefits during this period, Canada received a lump sum payment of \$64,400,000 U.S. Under the terms of the Treaty, Canada was entitled to one-half the downstream power benefits, that is, 50 per cent of the value of the additional power generated in the U.S. as a result of river regulation by upstream storage in Canada. The Treaty further specified that the U.S. had the option of commencing construction of the Libby storage dam, and Canada had the option of making various diversions of the Kootenay River during the life of the Treaty.

During the period January 1961 to January 1964, negotiations were carried on between the Governments of the United States, Canada and British Columbia on improvements to the Treaty and the sales of the downstream power benefits in the United States.

On 22 January 1964, a Protocol was agreed upon between the two countries which amplified and clarified the Columbia Treaty. This document reaffirmed Canada's right to make any diversions of Columbia Basin water required for consumptive needs such as irrigation and municipal uses, clarified Canada's right to continue in perpetuity any diversion of the Kootenay River water in accordance with the terms of the Treaty, confirmed Canadian control over the detailed operation of the Canadian Treaty storage for power purposes and included a clear statement that the Treaty does not establish any precedents that apply to any waters other than those of the Columbia River, nor does it modify the application of the Boundary Waters Treaty to such other waters.

By an exchange of notes (Terms of Sale and Canadian Entitlement Purchase Agreement), it was agreed that a) Canada would have the three Treaty dams in operation according to a specified schedule, b) that Canada would sell to the United States (through their single purchaser entity under the Treaty, the Columbia Storage Power Exchange) its full entitlement to downstream power benefits for 30 years for a lump-sum payment of \$254,400,000 U.S. and c) that these funds would be applied by Canada towards the cost of constructing the Treaty dams. The Canadian Entitlement Purchase Agreement was signed for Canada by Hugh Keenleyside, then-Chair of the British Columbia Hydro and Power Authority, and for the U.S. by Howard C. Elmore, then-President of the Columbia Storage

Power Exchange.

The Government of Canada and the Government of British Columbia had entered into a main agreement on 8 July 1963 and a supplemental agreement on 13 January 1964. Under these agreements, B.C., as owner of the water resource, received the downstream power benefits or the proceeds of their sale, the flood control payments, and the Kootenay River benefits resulting from the Duncan and Libby reservoirs. In return, B.C. agreed to use the payments under the Treaty to construct the three Treaty dams in accordance with an established construction schedule, and to operate them through the B.C. Hydro and Power Authority in accordance with the terms of the Treaty. In this agreement, B.C. also indemnified Canada in respect of any liability to the United States. Signatories to this agreement were Prime Minister Lester B. Pearson and Secretary of State for External Affairs Paul Martin, for Canada, and Premier W.A.C. Bennett and R.G. Williston, Minister of Lands, Forests and Water Resources, for British Columbia.

Notes and instruments of ratification covering the Treaty and Protocol were exchanged on 16 September 1964, designating B.C. Hydro and Power Authority and the Columbia Storage Power Exchange as the Canadian and American Entities, respectively. These were signed by Paul Martin, Secretary of State for External Affairs for Canada and W. Walton Butterworth, U.S. Ambassador to Canada. (B.C. Hydro and Power Authority, October 1964.)

The construction of the Treaty dams did not occur without considerable impact on communities and the environment. Twenty seven thousand acres of high quality farmland was flooded in the Arrow Lakes Valley by the Hugh Keenleyside Dam near Castlegar. According to reports, farmers who loved their homesteads clung to their properties, many staying until the rising water lapped at the floor boards. Part of the "mitigation package" for these communities included consideration of the future economic benefits related to tourism on the newly-created reservoir.

Operation of the Treaty

Canada's management of the Columbia River Basin to generate water flows to U.S. hydroelectric stations sufficient to meet the needs of American consumers is determined in accordance with a series of five year plans filed with B.C. Hydro by The Bonneville Hydro and Power Administration. These are updated on a yearly basis through the submission of an annual plan.

In the establishment of the price for Canada's share of the first thirty years of downstream power benefits, a specific price was established for each dam. The first of these sale contracts, relating to power benefits generated by the Duncan Lake Dam, expires 31 March 1998. The contract on the Arrow Lakes Dam expires 31 March 1999, and the one relating to the Mica Creek Dam on 31 March 2003. (B.C. Hydro and Power Authority, October

1964).

Negotiations are already underway between Bonneville Power and Light and B.C. Hydro and Power Authority in preparation for the 1998 deadline. For Canada, the lead agency in the process leading up to the formal negotiations is the newly-formed Crown Corporations Secretariat.

Recent Increased Drawdowns from B.C. Reservoirs

In the spring of 1992, as a result of low snowpack and light spring rains, B.C. Hydro forecast a 34 per cent drop in the average stream inflow into the Columbia River basin. Stream inflow to the Columbia Basin in B.C. was projected to be 90 percent of average; forecasts for the U.S. portion were only 50 per cent.

As a result, U.S. authorities in the northwestern states facing drought conditions began using more Columbia River water than usual from the Mica, Arrow and Duncan reservoirs in southeastern B.C.

Residents in the community of Fernie, situated on the banks of Koocanusa Lake, watched the level of their lake drop close to 10 metres. Televised news footage showed irate tourist operators unable to dock their boats at floats which, even fully extended, now rested on the parched mud of the lakebottom. In clips reminiscent of newscasts from the parched U.S. Southwest, local tourism operators charged that the drop in water levels was devastating to community economics and appealed for government assistance. In response, area residents were told by the province that their lake was not really a lake but a reservoir which could and would experience fluctuating water levels over time and therefore compensation was not warranted.

In the midst of this fray, it was also learned that the U.S. was expected to ask for more water during the summer of 1992 than B.C. was obliged to provide under the Treaty. Tempers flared, and politicians were challenged for solutions.

Many local residents, politicians and environmental groups called on the B.C. Government to stop the drawdowns. Liberal Party energy critic Daniel Jarvis, noting that the federal External Affairs Department had refused to fight the issue by reviewing the terms of the Treaty, challenged the provincial Energy Minister to intercede by reopening the agreement. Arguing that the drought applied to both sides of the Columbia River Basin, and that there were significant environmental implications to providing more water to the U.S., Jarvis stressed that "this is not just an environmental issue, this is the prelude to a dangerous precedent that will affect the Free Trade Agreement and our children's water resources in this province for years to come." (Victoria Times Colonist, June 5, 1992.)

In response, B.C. Energy Ministry Ann Edwards could only advise that B.C.'s hands were

tied. Economic and environmental concerns notwithstanding, not only were the Americans fully within their rights to draw down these waters under the terms of the Treaty, but moreover their actions were as specifically envisaged under the Treaty in the event of drought. (Victoria Times Colonist, June 5, 1992.)

Right of the Americans to "Swap" Hydro for Water

It was during this period that another aspect of the Columbia Treaty came to public attention - the ability of the Americans (through Bonneville Power Administration) to, in essence, "swap" hydro for water at their option. Not only could the Americans draw down more water during periods of drought, they could also ask Canada to hold back water which would normally be delivered for hydro-electric benefits, replace the power which would have been generated with this water with power purchased on the open market (e.g. from California, B.C. Hydro, etc.) and have Canada release the water as water (bypassing U.S. turbines) when they need it for fish enhancement, agriculture, recreation, tourism and transportation.

One occurrence of this was during January and February of 1992, when the U.S. elected to forego power benefits which were theirs under the Treaty, purchased instead two months of replacement power on the open market and requested that Canada store the water which otherwise would have been released to generate that power in the Mica and Arrow Lakes system. In the spring, the U.S. instructed Canada to release this water to flush a sensitive American salmonid release. This caused water levels in the Mica and Arrow reservoirs to plummet, raising alarm in surrounding communities.

In discussions with B.C. Hydro, it was confirmed that the U.S. could, technically, replace 100 per cent of the power benefits of the Columbia Treaty with power purchased on the open market, and request that Canada store the water - which, after all, they had "paid" for in the calculation of Canada's half share of downstream power benefits in the original Treaty negotiations - for later release for whatever purposes the U.S. wished to make of it. (Holm, prs com, spring, 1992).

Market principles would indicate that when the value of water rises above the cost of replacement power, the Americans will swap power for water. The price of purchasing alternate electricity supplies in the summer of 1993 suggest that when the value of Columbia water released as water - e.g. not drawn down according to forecast monthly hydroelectric generation volumes under the Treaty but stored and released at some future time for, say, a fish flush bypassing U.S. turbines - rises above \$10 per acre foot, the Americans will swap power for water under the Treaty. Water markets in the U.S. southwest are currently as high as \$2000 per acre foot in some regions.

In a 5 June 1992 media interview with the Victoria Times-Colonist, Edwards said that pressure over the summer months was likely to increase. "They're looking at ways to

balance the draw down and may have to draw more from another reservoir to offset," she said. "We can't say no because it's a treaty. The only thing you can do is try and move around in our reservoir system where we take the water, so it does the least damage."

1993 Power Shortages in B.C.

B.C. Hydro has traditionally been a net exporter of power. This trade picture was drastically reversed in 1993. In August of 1993, B.C. Hydro reported that it had been importing electricity, mostly from Alberta's TransAlta Utilities, because of low water levels in Hydro's reservoirs on the Columbia and Peace rivers. B.C. Hydro reported imports of \$38 million worth of power from April to July of 1993, \$11 million worth in July alone. Total power import requirements for the year are estimated at \$163 million. "We can keep our plants going full bore during the night to supply B.C. Hydro" explained a TransAlta spokesman. (Victoria Times Colonist, 16 August, 1993).

Why did the province suddenly go from a net power exporter to a net importer? A sharp increase in power exports (in 1992, B.C. Hydro exported 58 percent more power than in 1991) combined with the lowest runoff volumes in 42 years left B.C. reservoirs at record low levels, hampering provincial hydroelectric generation capability. There simply isn't enough water in the reservoirs to meet the province's electricity demands. Water levels in the Mica reservoir during August of 1993 were at 55 percent of capacity. Low levels in the Columbia River system forced increased power generation from Williston Lake (Peace River hydroelectric system). The drawdown of Williston Lake was so severe that area pulp mills complained they could no longer get the volumes of water they needed from lake intake pipes, and local tourism operations were sharply affected. In response, B.C. Hydro officials announced that they were considering curtailing the draft on the lake by restricting area water licenses. Fort St. John mayor Steve Thorlakson called on the government for a re-opening of discussions on the construction further new hydroelectric generation capacity in the Peace (Site C).

Meanwhile, on the U.S. side of the Columbia River basin, water levels in the Libby and Coolee dams were described by Bonneville Power Administration representatives as "close to full". So full, in fact, that the Coolee Dam "light show" (a U.S. tourist attraction which depends on water spilling over the crest of the dam) was unaffected.

Ironically, less than a month following Hydro's announcement of large scale electricity imports, B.C. Energy Minister Anne Edwards announced a new provincial policy to allow long-term (20 year), firm electricity exports from B.C.

The cost of B.C.'s hydroelectric shortage goes well beyond the cost of replacement power. TransAlta Utilities generates most of its power by burning coal. In 1985, emissions from coal, oil and gas fired power plants pumped 4.8 tonnes of carbon dioxide (greenhouse gas emissions) into the atmosphere for every \$1,000 worth of electricity produced. While the

figures may have changed somewhat since 1985, Statistics Canada analysts report that there is no doubt but that these types of electricity generation remain the single largest source of carbon dioxide pollution in Canada. (Victoria Times Colonist, 14 July, 1993).

As noted in the chapter on agriculture, carbon dioxide, the principle greenhouse gas in the atmosphere, has increased in concentration by about 30% since pre-industrialized times. When combined with other greenhouse gases, an effect equivalent to a doubling of carbon dioxide will occur during the first half of the 21st century. Some researchers predict that if current industrial growth and fossil-fuel use continues unabated, it could subject the globe to a temperature increase of 4 to 15 degrees Fahrenheit in half a century. (Schaefer.) A paper on hydrologic extremes and climate change presented to the Round Table on Western Drought evidences the linkage between climate change and water:

...a number of sectors are sensitive to hydrologic variability and change. These include hydroelectric power generation (a 100 million dollar per year export industry in Manitoba) irrigation (insufficient supplies to meet a 40% increase in demand in 1988), water quality (salinity to groundwater influx to rivers, blue-green algae blooms, problems in waste assimilation), waterfowl (record low numbers of breeding pairs, botulism outbreaks), fisheries (suffocation due to high water temperatures, winter kill) and recreation (low water, forest closures). (Schaefer).

Despite these grave concerns, B.C. Hydro continues to import coal-based electricity from Alberta while exporting water from the Columbia basin and favouring long term hydroelectricity exports. Further, one of the options under active consideration by B.C. Hydro to supplement provincial electricity demand is an increase in production from the coal-fired Burrard generation plant. (Victoria Times Colonist, 16 August, 1993).

Non-Treaty Sales of Water

Increased public focus on water management as a result of the sharply curtailed provincial hydroelectric generation capacity and alarmingly low water levels in the Mica and Williston reservoirs during the summer of 1993 brought a new aspect of the problem to the attention of the public - "non-treaty" sales of Columbia River water to the Americans.

As a result of agreements between B.C. Hydro and Bonneville Power Administration, an undisclosed number of ad hoc, "non-treaty" sales of Columbia river system water to the Americans occurred over the past several years. (Non-treaty water is a term used to describe water which is not committed to the Americans for hydroelectric generation under the Columbia Treaty) One such sale was for 2.5 million acre feet of water from the Mica reservoir in 1990. The government has not disclosed the price paid by the U.S. for this water, describing it as a "complex economic formula".

These ad hoc "non-treaty" sales were formalized in August 1993 by a 10 year agreement (The B.C. Hydro - Bonneville Power Administration Coordination Agreement) which gives the American utility control over an additional 2.25 million acre feet of Canadian Columbia River water stored behind the Mica Dam. This amount represents close to half the non-treaty storage capacity (5 million acre feet) of the Mica reservoir.

Implications

No terms were included in the Treaty relating to unforeseen future environmental or economic impacts, nor was any apparent consideration given to aboriginal land rights. When the Treaty was signed, its renegotiation or premature termination by either party for cause relating to either environment, economic or native land concerns was not envisaged.

The increased drawdowns under the Treaty and the ability of the American utility to "swap" power for water hold clearly negative implications for B.C. power generation, tourism, regional development and agriculture.

Absent the FTA and the NAFTA, these problems could presumably be addressed in the upcoming renegotiation of the next 30 years of Canadian downstream benefits. Since Americans have the ability under the existing Treaty to swap power for water, then the obvious solution would be to institute a rate differential between the price they must pay Canada if the water is used for hydroelectric generation and the price they must pay Canada if they ask B.C. Hydro to instead store the water for later release the water as water (bypassing U.S. turbines). Under the former conditions, the Americans would be expected to pay current hydroelectric rate equivalents (which now amounts to roughly \$10 per acre foot). Taking Columbia Treaty benefits as water rather than hydroelectric would trigger a price reflective of water markets in the U.S. (up to \$2000 an acre foot). This would provide a substantial disincentive for such swaps, and further create the "rock and a hard place" between which to place the Bonneville Power Administration, allowing Canadian negotiators sufficient clout to re-open and renegotiate the aspects of the 30 year old Treaty which have now proven to be so detrimental to Canadian interests.

The FTA and the NAFTA preclude Canada from taking these options. As Paragraph 5 of Annex 905.2 (Regulatory and Other Measures) of the FTA clearly states:

The Parties fully expect that the Bonneville Power Administration and British Columbia Hydro will continue to negotiate mutually beneficial arrangements consistent with the objectives of this Agreement and separately seek any additional authorities that may be needed.

While it may be argued that Paragraph 5 of Annex 905.2 does not apply to water taken as water, not an energy source, under the Columbia Treaty by virtue of the fact that it appears in an Annex to Chapter 9 (Energy), it is very doubtful that this interpretation would be

upheld for the following reasons:

1. The use of the words "this Agreement" instead of "this Chapter" clearly extend the wording of Paragraph 5 to the Agreement in its entirety. Throughout the Agreement, most of the text appearing in the Annexes to specific Chapters is explicitly bracketed in its scope to apply only to the terms contained in that Chapter. This is done by the use of wording such as "for the purposes of this Chapter", or "consistent with Article "x" of this Chapter. The paragraph immediately preceding Paragraph 5 of the Energy Annex is an example of such wording, as are Annexes 1305.3 and 1204. Use of the term "this Agreement" means that B.C. Hydro is fully bound by all terms of the Agreement, including those effecting water.
2. Water is clearly a good between the Parties under the Columbia Treaty. The treaty gives the U.S. the ability to tell Canada how much, when and where to release water from its dams on the Columbia River system. They did not purchase power from Canada, they purchased water, the drawdowns of which they have the right to regulate at their option to use for power generation, fish enhancement, or any other purpose they deem fit. The Americans paid for this water by agreeing to transfer 50% of the downstream power benefits to Canada. For the first 30 years of Treaty operation, the Americans purchased back this power from Canada for \$254 million and we are currently in negotiations to determine their value (price) for the next 30 years.
3. Simply because hydroelectric values were used to establish the value of these benefits does not mean that it was hydroelectricity that was sold. It was merely the reference point for pricing. Indeed, the Treaty stipulates that Americans must pay Canadians one half of the downstream power benefits for the water which is released regardless of whether or not the Americans choose to bypass their turbines and use that water not for power but for other purposes (e.g. environment, agriculture, tourism, or regional economic development). The Columbia Treaty is clearly about delivering water for sale to Bonneville Power Administration.
4. The power-for-water "swaps" which the American's have undertaken in recent years have established a precedent of water supply. The recent ad-hoc sales of water out of the Canadian Columbia River Basin (now entrenched in the 10 year Coordination Agreement) clearly entrench this precedent of water sales to the Americans. B.C. Hydro is explicitly bound by the terms of the FTA. Canada cannot apply minimum export prices, nor can they take measures which would "disrupt normal channels of supply". The tap is open, and the handle is on the U.S. side of the border.

Chapter 4

Agriculture

1. Introduction

Water is the lifeblood of agriculture, an essential ingredient (with soil, carbon dioxide, nutrients and light) in the creation of plant life, which is, in turn, the essential link in our food chain. Without water, there would be no agriculture. Without agriculture, there would be no food.

Some would argue that this fact alone does not give rise to concerns regarding water exports. The globe is a diverse one, they point out, and sound economics dictates that each country produce those products for which it has the highest comparative advantage. If we can export water at a higher price than apples, why grow apples? Leave the apples to another region of the world to produce.

An example of such thinking can be found in a recent issue of The Economist (4 July 1992), which contains an article on the proposed diversion of water from the Kielder Reservoir through the Tyne and Wears rivers in Northumberland, England into the Tees, Swale and Thames rivers to meet the water needs of England's thirsty south-east. The difficulty in doing so rests not with engineering feasibility, nor the cost of construction (much cheaper than available alternatives) but the price of the water itself. The National River Authority, which inherited Kielder when Britain's water was privatized, charges companies three times as much for drawing water out of those rivers which could potentially be supported by Kielder as it charges for water from other rivers. Linking together the systems through a Tees-Swale connection would mean sharp increase (from #4.92 to #13.54 per thousand cubic metres) in water rates for Yorkshire consumers presently drawing from the (unlinked) River Swale.

The Economist concludes that the issue cannot be properly tackled

so long as the pricing of water in most parts of the country remains so distorted. Britain's periodic water shortages, like California's, come down to the fact that no true market exists. Anyone who doubts it should take a train trip through Lincolnshire and watch the spray irrigators casting their huge arcs of water across the subsidized crops. Nearly half the water taken by private users in the NRA's Anglican region, at standard prices, is used for watering vast fields of potatoes, carrots and lettuces. Barely 100 miles south, lawn sprinklers are becoming a wicked luxury. Metering and careful pricing would do far more for what is now referred to as the 'parched south-east' than any aqueducts from the north.

The implication, of course, is that the water used to irrigate crops could be more profitably employed to water urban lawns (with, presumably, potatoes, carrots and lettuce sourced elsewhere).

A more local example can be found in B.C.'s Okanagan Valley, where orchardists farming what is undeniably some of the highest potential orchard land in the world are facing increasing stiff competition for valley water supplies from urban-growth advocates. Maximizing the sustainable economic potential of this region is inextricably linked to strong defense of agricultural water use. But municipal politicians are slow to respond to orchardist's priorities.

The purpose of this chapter is to examine the importance of water to agriculture and the environment, survey the mounting concern within these sectors regarding the management and security of our water supply, and assess the implications of this for Canadian public policy.

2. The American Experience

In the Summer 1992 issue of the Organic Farmer, Editor Grace Gershuny, in introducing a number of articles on agricultural water use in the United States, makes the following observation:

...water takes precedence over food as a basic necessity of life. As an elemental symbol it unites all of humanity. Whether we wait for it to fall from the sky or mete it out through an irrigation system, we must consider how our actions today will affect access to clean water for generations to come. (Gershuny).

American agriculture remains the largest single water user in the United States. The irrigation projects that dominate most western rivers in the U.S. were built to achieve the turn-of-the-century visionaries' dream that water, applied to huge, fertile valleys, would turn their ideal climate and deep soils into a cornucopia of grains, fibres, fruits, vegetables and other crops, creating wealth and prosperity to tens of thousands of farm families.

But for the visionaries of today, the dream has fallen far short of its promise. As a result of wide-spread corporate farming and vertical integration (through direct farm ownership and/or contract farming, often by large multinational firms), a few huge farms in the west (bigger than anywhere else in the world) dominate agricultural water usage - benefiting from irrigation water through the United States Bureau of Reclamation at bargain basement prices. Many farm families are finding that the markets for their products are depressed, making it hard for them to survive in a farm economy dominated by a few, large operations which exert market power through vertical integration and/or large-scale contract farming arrangements. Toxic problems, unemployment, poverty and a lack of basic services such as adequate health care dominate the concerns of residents in many farm communities. And

farm water drainage problems, soil salinity build-up, ground water pollution and toxic pesticides wreak havoc on the environment surrounding agriculture, despite the fact that many farmers say that the nature of their work makes them better stewards of the environment than most other people. (Gershuny).

Many concerned farmers, environmentalists, rural residents and academics believe that these problems are a direct result of the influence of large-scale farming lobbies on Bureau of Reclamation (BOR) policies. Established by Congress to finance and construct irrigation projects in the arid west with benefits targeted to farm families, current law specifies that landowners can receive subsidized irrigation water only on farms of 960 acres or less. Larger farms are supposed to pay the full cost of their water. (Gershuny).

This hasn't occurred in practice. According to a recent study by the California Institute for Rural Studies (CIRS) focussing on a large district in the Central Valley of California the 603,000 acre Westlands Water District (WWD), the largest single recipient of BOR water in the U.S. the management of irrigation projects has benefitted large landholders to the direct detriment of smaller ones. (Gershuny).

Once an inland sea, the Central Valley as the Sacramento and San Joaquin Valleys together are known gradually filled with sediment that created fertile soil. Its irrigation has made California the leading agricultural state. And the leading agricultural water user.

The CIRS study charges that "some of the area's largest landholders have engaged in misleading and deceitful practices to circumvent the intent of Congress" in restricting water subsidies to farm families. Identifying a pattern in which many acres are managed as a unit even though principles in the farm business represent themselves to the BOR as separate "farms" eligible for subsidized water, it was found that well over 200,000 acres of land in this one district were receiving subsidized water even though their farm operations averaged 4,260 acres each. While the majority (70 percent) of the farms in the WWD were legitimate recipients of the subsidy (960 acres or less), they only represent 25 percent of the land in the district. (Gershuny).

Such abuse of the system is not surprising because of the way that directors are elected to local water boards, large land-holders are able to unduly influence board decisions. Instead of one vote per resident, the Valley's water districts apportion votes based on the appraised value of the land owned in the district. (Therefore, Southern Pacific Land Co., who owns 81,200 acres in WWD, casts 13 percent of the total votes in the 603,000 acre district.) (Gershuny).

Not surprisingly, the decisions taken by California's Valley water boards often reflect the interests of a handful of powerful individuals with large land-holdings over the wishes of a disenfranchised class of low-paid labourers on whom they are dependent. (The Westlands Water District is home to only two communities - Cantua Creek and Huron. Both are comprised of primarily, 79.2 and 91.4 percent respectively, Hispanic populations, and the

median family income in these two towns averages 35-45 percent below the median for the state of California. The largest single source of employment is farm labour.) (Gershuny).

The effect of increasingly larger-scale production units has also hurt the regional economy of the Valley by shifting the market dynamics in several key commodity areas. One example of this is the huge almond plantings which came into production in the late 1980's, resulting in wide-spread losses among smaller-scale producers. (Gershuny).

In the spring of 1988, the California Action Network, the California Association of Family Farmers, the League of Rural Voters, the National Resources Defense Council (NRDC), the Trinity County Board of Supervisors and the National Wildlife Federation launched a suit in Sacramento federal court asserting their complaint that BOR policies violate the intent of Congress to set a firm limit of 960 acres on the size of a farm eligible for federal irrigation policies. "Instead, the rules both allow and encourage large-scale operations to simply restructure on paper into a maze of trusts and 'paper' farms to get around the subsidy limitation," according to a NRDC news release. (Gershuny).

But like pushing water up hill, concerned area residents and smaller, family farmers attempting to assert their concerns are fighting a powerful agri-business lobby. About two-thirds of the cotton, almonds and sudan hay grown in California are sold on the international market. In 1989, California exported \$4 billion of farm commodities, 10 percent of the nation's agricultural exports. Agriculture consumes 80 - 85 percent of California's developed water supply, some 20 to 30 percent of which can be saved through conservation and improved management. (Benbrook).

(For example, alfalfa uses over 25 percent of the water supplied to California agriculture. Approximately 1.1 million acres of alfalfa are grown in California. Each acre is cut an average of five times per year. Each cutting uses an average of one acre foot of water. It's the state's thirstiest crop. Pasture requires similar water use. While important to the state's dairy farmers, California's alfalfa production and pasture lands are certainly not of national significance. California's rice farms use a total of five to seven acre feet of water per planted acre season to flood fields during harvest and support plant growth, but nearly half of this is returned to the state's waterways. Consumptive use per acre of rice is between two to two and one half acre feet per crop acre. There are 375,000 acres of rice land in California, one out of every 6.6 planted nationwide.) (Benbrook).

Facing increased pressure from urban users, American farmbelt communities are not immune to the lure of abundant Canadian water to fill reservoirs and recharge aquifers for irrigation purposes.

3. Global Warming and Climate Change

There was a time, not so long ago, when Canadians viewed their water resources as vast and

untapped. The Western Drought of 1988, combined with an upsurge in continental water sharing discussions, the renewed focus on the Columbia Treaty and the uncertainty surrounding water under the FTA and the NAFTA has changed much of that, particularly as it relates to agriculture.

On 18 July 1988, a Round Table on Western Drought was held in Winnipeg, Manitoba. Attended by representatives of Alberta, Saskatchewan and Manitoba provincial governments, Agriculture Canada, Environment Canada and the Canadian Wheat Board, the Round Table discussions presented compelling evidence that Canada's agriculture sector must start seriously evaluating the security of their future water supplies. (Schaefer).

International atmospheric general circulation models presented at the meetings all indicated a substantial warming across the Canadian prairies. Warming is now expected to take place at up to five times the rate to which we have become adapted. Within a decade or two conditions in both an absolute sense and with respect to the rate of change may be outside the range of previous experience. (Schaefer).

Speakers concurred that there is generally high confidence that global warming will result from observed and projected increases in the atmospheric concentrations of greenhouse gases. Carbon dioxide, the principle greenhouse gas in the atmosphere, has increased in concentration by about 30% since pre-industrialized times. When combined with other greenhouse gases, an effect equivalent to a doubling of carbon dioxide will occur during the first half of the 21st century. Some researchers predict that if current industrial growth and fossil-fuel use continues unabated, it could subject the globe to a temperature increase of from 1 to 5 degrees Celsius within the next century. (Schneider).

In 1988, the U.S. National Research Council reported that global average surface temperature data indicates that 1987 was the second warmest year on record (exceeded only by 1981) and that the 1980's averaged distinctly warmer than any previous decade since the record began 100 years ago. On a global basis, annual temperatures have risen by 0.5 to 0.7 degrees Celsius in the past 100 years. The four warmest years have occurred since 1980. (Schaefer).

While there was confidence in the relationship between greenhouse gases and global warming, speakers expressed little confidence in projected changes in precipitation. Drought and flood studies being conducted by the United Nations Environment Program, the World Climate Program and the Canadian Climate Program anticipate that the hydrologic cycle (rainfall) will be more dynamic in a warmer world. While it is difficult to anticipate what this will mean for specific regions, a recent climate study in Saskatchewan found that drought frequency and severity would likely increase, with the number of days with highs above 30 degrees Celsius increasing and the number with minimums below -30 degrees Celsius decreasing. (Schaefer).

A paper presented by Martin Parry and Zhang Jiachen at the 1990 World Meteorological

Organization's Second World Climate Conference in Geneva makes the following sober observation:

To date, less than a dozen detailed regional studies have been completed to serve to assess the potential impact of climatic change on agriculture. It should be a cause for concern that we do not, at present, know whether changes of climate are likely to increase the overall productive potential for global agriculture, or to decrease it. There is therefore no adequate basis for predicting likely effects on food production at the regional or world scale. All that is possible at present is informed speculation. The risks attached to such levels of ignorance are great.

The Atmospheric Environment Service of Environment Canada reports that Canada "would be among the most significantly affected areas in the world," further stating that water resources will be particularly stressed:

There is particular concern for the southern prairies, where agriculture could be seriously affected and for the Great Lakes Basin, where lake levels could fall substantially. Decreased water supplies mean increased competition for available water resources. (Schneider).

Overall one would expect a change in the distribution of precipitation, both in the mean and in the occurrence of extremes. Even in the case of modest increases, most Canadian computer models indicate a loss of soil moisture due to increased evaporation into a warmer atmosphere. (In the Spring of 1992, Southern Alberta farmers reported that soil moisture content was down by 33%, and that the soil is anhydrous to a depth of 12 to 18 inches. Such soil conditions increase problems of topsoil erosion, of severe concern to prairie farmers.) Models which have taken a "what if?" approach to selected scenarios have concluded that prairie droughts would likely become more frequent and possibly more severe. Strong spatial gradients in precipitation complicate the analysis and possible prediction of drought. Over smaller areas severe drought may occur whereas over larger areas results may average closer to normal. (Schaefer, Schneider).

At a June 1988 international conference entitled "The Changing Atmosphere; Implications for Global Security", the water resources group reported that "many of the most destructive impacts of global atmospheric change on society and the environment will be associated with changes in regional water resource systems. Unless arrested and reversed, climatic warming... will increase demand for water, decrease water supply reliability, increase vulnerability to droughts and floods, damage the integrity of aquatic ecosystems and increase the potential for social conflict in many regions of the world." (Schneider).

At the Round Table meetings, Environment Canada officials reported on a recent Canadian Climate Program study of the impacts of global warming on Saskatchewan which found that drought frequency and severity would likely increase. Significant problems exist with regard to the salinity of groundwater in many prairie regions, particularly in Saskatchewan. During

periods of drought, groundwater salinity, salt build-up in soils and wind erosion become interlinked and concurrent problems. In other studies, it was found that the frequency of temperature extremes would be significantly altered. (Schaefer).

Another Environment Canada study reviewed at the Round Table conference indicated that the period 1981-85 was comparable to the period 1933-37 from the perspective of cumulative precipitation deficits, as were the decades beginning in 1928 and 1978. The study noted that only two of the past 10 years had above normal runoff. (Schaefer).

A general instability in climate and resulting runoff resulting in three "100-year" floods in the Slave Lake area in the mid-1980's and three major floods in Alberta during 1988 were cited as examples of the extreme events being brought about by variations and changes in the atmospheric circulation. (Schaefer).

There is general agreement that the great natural variability of flow in prairie rivers will be exacerbated by climatic change. Southern areas make very little or no contribution to runoff. The bulk of the water carried into major rivers originates on the east slopes of the Rocky Mountains. Recent low flows are not unprecedented, but in some cases near the extreme boundary. At the same time, significant floods have recently occurred, leading to the possibility that greater variability is in evidence.

Speakers at the Round Table conference also noted that since long term climatic statistics used for design purposes have been based on available records which seldom extend back for more than 100 years, these may be no longer valid in light of climatic change. Adjustments must be made to what we use in order to meet the challenge for the appropriate design of major capital investments and to properly drought proof prairie farmers. (Schaefer).

After studying the phenomena of drought in relation to climatic change, participants concluded that "drought has a wide range of impacts in Western Canada, including but not limited to those affecting agriculture, water resources (including hydroelectric generation), wildlife, waste management, recreation, forestry and fisheries. Some indicators of impact are an unmet 40% increase in irrigation water demand, a drop in water quality, increased salinity, fish and wildfowl losses and major and well-publicized losses to prairie agriculture." The Round Table went on to recommend continued monitoring, research, risk assessment and "the need to look at integrated sustainable economic development in the context of atmospheric change." (Schaefer).

The concern over security of Canadian water supplies for agriculture is not limited to the Prairie Provinces. Coincident with the Round Table on Western Drought meetings, Ontario was also experiencing drought conditions similar to those in Western Canada.

More recently, agricultural communities in the interior of British Columbia have become increasingly aware of water scarcities. The Winfield and Okanagan Centre Irrigation District

(WOCID), the largest supplier of water to the Lake Country region of British Columbia, has experienced water levels which are 35 percent lower than normal. In 1992, Vernon City Council spent more than a million dollars to install water meters and distribute water saving devices free of charge to 5,000 homes in the Vernon area. In the fall of 1992, Oliver, B.C. orchardists, vineyard operators and others in the agricultural sector were put on notice by the federal Fisheries Department that "water for fish will take precedence over water for farming". (Mortenson).

4. Leadership from Canada's Agricultural Professionals

Not surprisingly, one of the first groups to raise public policy concerns as they relate to the water-trade question was Canada's agricultural professionals. At the 69th Annual General Meeting of the Agricultural Institute of Canada - a body representing over 6,000 men and women working as professionals in the field of agriculture in Universities, government offices, laboratories and in the private sector - held in Montreal in July 1989, the following resolution, introduced by the British Columbia Institute of Agrolgists, received unanimous endorsement:

WHEREAS the federal government, during the last election campaign, repeatedly assured Canadians that the Canada-U.S. Free Trade Agreement did not confer access rights to Canadian water beyond that in bottled form;

AND WHEREAS there exists considerable disagreement on this point amongst many highly-respected Canadian resource, trade and constitutional experts, many of whom contend that the Canada-U.S. Free Trade Agreement confers unprecedented and irrevocable access rights to Canada's water resource (including large scale diversions) through the combined effects of Tariff Item 2201.9 and Articles 105, 409 and 711;

AND WHEREAS the unquestioned retention of Canadian sovereignty over our domestic water resource is fundamental and critical to the sustainable development of Canada's agriculture sector;

THEREFORE BE IT RESOLVED that the Agricultural Institute of Canada request that the Government of Canada, at its earliest opportunity, resolve the uncertainty surrounding this issue through the execution of a separate and binding joint diplomatic agreement, ratified by both the U.S. Congress and the Canadian Parliament, that **wording notwithstanding, nothing in the Canada-U.S. Free Trade Agreement applies to Canada's water resource in other than bottled form.**

A second resolution, calling on provincial governments to place a moratorium on all bulk water exports until such an agreement is reached, was also passed:

WHEREAS some provincial governments are currently in the process of privatizing

water rights;

AND WHEREAS some of the private sector recipients of these rights are considering the bulk sale of water to the United States;

AND WHEREAS absent a separate Canada-U.S. diplomatic agreement to the contrary, such exports may be, at the option of the United States, irrevocable in perpetuity under the rights of access conferred in the Canada-U.S. Free Trade Agreement and therefore contrary to the long-term, sustainable development of Canada's agriculture sector;

THEREFORE BE IT RESOLVED that the Agricultural Institute of Canada, through its member provincial institutes, request that the individual provincial governments **place a moratorium on the export of water to the U.S. in any form beyond bottled until the access rights to Canada's water under the Free Trade Agreement is clarified to apply only to water in bottled form.**

It is significant to note that prior to introducing the resolution on the floor of the national AGM, the B.C. Institute of Agrologists had taken the rather unusual approach of polling B.C. commodity groups (in addition to Institute members) for their input and support. When the resolution was introduced, it was accompanied by documents of support from 15 B.C. commodity groups.

The importance of this issue to agriculture is compellingly evidenced by the fact that the water-trade resolution drew unified support from both the beef producers (traditionally free market advocates) and the supply managed commodities (traditionally market protectionists). Compelling, as it is the first time these very disparate commodity groups found themselves on the same side of an international trade issue.

On 31 August 1989, Don Hoover, P.Ag., then-President of the Agricultural Institute of Canada, wrote individual letters to the Right Honourable Brian Mulroney, Prime Minister of Canada; the Honourable Lucien Bouchard, then-Minister of the Environment; the Honourable John Crosbie, then-Minister Responsible for International Affairs; and the Honourable Don Mazenkowski, then-Minister of Agriculture asking them to "assist our efforts in reassuring the Canadian professional agricultural community of the sanctity of Canada's right to discretionary control of this primary resource which is pivotal to Canada's agricultural survival."

In his letter to Crosbie, Hoover raised strongly-worded concerns regarding the fate of Canadian water under the Free Trade Agreement:

We at the AIC feel that it is imperative that our national membership of agricultural professionals and the Canadian agriculture sector as a whole - a sector upon which the entire Canadian economy has an enormous dependence - be assured of the

viability of Canada's water resources relative to Canada's needs in perpetuity. We are seeking a clear and unequivocal statement from the Canadian government on the supremacy of Canada's discretionary control over this most vital of Canada's resources. We contend that this birthright must be preserved within the Canadian domain and reserved for present and future generations of Canadians. We have recently written to the Prime Minister on this crucial matter which has been a long-standing priority for us, and we are hopeful of his clarification on the official status of Canadian discretionary control and utilization of our water resources.

In his reply of 20 September 1989, John Crosbie stated that:

the Government amended Bill C-130 to state that the FTA does not apply to water, except in the case of water packaged as a beverage or in tanks. In light of Section 7 of Bill C-2 which was passed by Parliament and became law on January 1, 1989, I do not believe the Institute's proposal for a separate and binding joint diplomatic agreement with the United States on water exports is necessary.

In his reply of 20 March 1990, the Honourable Lucien Bouchard noted the Federal Water Policy (FWP) of 1987's prohibition of large-scale exports of Canadian water, the subsequent incorporation of specific limits and conditions applicable to water exports incorporated into the Canada Water Preservation Act (Bill C-156, which, shortly after being introduced, died on the Order Paper upon dissolution of Parliament) and his intent "to reintroduce this or similar legislation to fulfil the commitment outlined in the FWP."

An AIC Professional Development Forum entitled Water, Free Trade, and Canadian Sovereignty - Can We Afford to Postpone Clarification of This Issue? and held concurrently with the Agricultural Institute of Canada's 70th Annual Meeting the following year (1990), the program outline had this to say on the subject of water exports:

The ability to control the soil-water interface is one of the cornerstones of sustainable agricultural development. Concerns regarding upcoming drought, desertification, global warming, and the forecast reduction in agricultural production capacity of many key exporting regions of the United States (e.g. California) clearly underscore the need to ensure the sanctity of Canada's right to discretionary control of this primary resource. Yet many resource, trade and constitutional experts contend that the Canada - U.S. Trade Agreement confers unprecedented and irrevocable access rights to Canada's water resource, including large scale diversions. At last year's 69th AIC annual meetings in Montreal, delegates unanimously passed an important resolution calling on the federal government to take specific steps to clarify this issue. The federal government has responded that the actions called for in the AIC resolution are unnecessary. What are the public policy implications of postponing clarification of this issue?

As a result of the 1990 Professional Forum, the National Council of the Agricultural Institute

of Canada, at its 25 July 1990 meeting, passed a resolution that:

the AIC continue its dialogue with the federal government which commenced in 1989 to effect the clarification objectives embodied in the 1989 AGM's resolution #3.

Subsequently, a second letter was sent to the Honourable Michael Wilson, Minister for International Trade by then-AIC President Dr. Freeman McEwan on 15 June 1992. Again, clarification of the water-trade issue was requested. Referencing the replies which had been received from his colleagues in response to the 1989 correspondence, and the 1990 AIC Annual Conference Professional Forum, McEwan pointed out that:

Legal experts expressed very different opinions concerning the security afforded by the wording of Bill C-130. Since that time, the water controversy has continued to resurface as an area of concern from our members. The AIC still considers the matter of Canadian Water Resources to be of primary concern and the very lifeblood of Canadian agriculture. We believe that the need to preserve this most precious Canadian resource for present and future generations remains one of the most important national priorities. In view of the negotiations between Canada and the United States and Mexico toward a North American Free Trade Agreement (NAFTA), we are seeking your reassurance that Canadian ownership and control over this singularly vital Canadian resource will not be compromised in any way.

In correspondence of 14 July 1992, Michael Wilson responded to McEwan's concerns as follows:

I can categorically reassure you that Canadian control over this country's water resources and large-scale water diversion have not been raised in the NAFTA context. The government is not negotiating access to Canada's waterways, lakes or rivers, nor is the U.S. seeking such access in the NAFTA negotiations.

Wilson then referred again to the security afforded by Bill C-130 and the Federal Water Policy of 1987. "This position remains unchanged and is in no way affected by the NAFTA restrictions."

5. The Response of Canadian Communities

The approach taken by Canada's agriculture professionals has provided leadership for other groups wishing to effectively press for clarification of this important issue.

Resolutions identical to the AIC 1989 resolution on water exports have also been passed by the B.C. Federation of Agriculture (August 1990), the Manitoba Farm Women's Institute (April 1992) and Manitoba's Keystone Agricultural Producers (January 1992).

Similar resolutions have also been passed by the the Provincial Council of Women of British Columbia (1991) and the United Church of Canada (Alberta).

At the Reform Party of Canada's October 24, 1992 convention held in Winnipeg, the Calgary Southwest chapter of the Reform Party introduced the following resolution: "The Reform Party of Canada assures that, notwithstanding the inclusion of water in the Canada/US Free Trade Agreement and the North American Free Trade Agreement, exclusive and unrestricted control over water in all its forms will be maintained by and for all Canadians, and that both trade agreements will be amended to reflect this." This resolution was supported by 96% of the delegates to the Reform Party of Canada convention, and is now a part of their International Trade Policy.

On May 28, 1992, in a Bi-National Statement on Environmental Safeguards, a specific exclusion for water under the NAFTA was endorsed by the following Canadian organizations: Canadian Nature Federation, the Canadian Environmental Law Association, the Sierra Club, Cultural Survival, Friends of the Earth, the Rawson Academy of Aquatic Sciences and Pollution Probe. It was also endorsed by the following U.S. groups: the National Audubon Society, the National Wildlife Federation, the Community Nutrition Institute and the Environmental Defense Fund. In the fall of 1992, the Association of B.C. Professional Biologists also formally requested water's exclusion from the NAFTA. First Nations groups across Canada and the United States are expressing escalating concern.

Most recently, the B.C. Federation of Agriculture, at their 1993 AGM, unanimously passed a resolution calling on the federal government to explicitly exclude water from the NAFTA.

At their 1993 Annual General Meeting, the Ottawa Valley Branch of the Ontario Institute of Agrologists passed a resolution asking the Agricultural Institute of Canada to again urge the government to protect Canadian sovereignty over water resources under the international trade agreements.

During the 1993 federal election campaign, the federal New Democrats and the National Party platforms have prominently included retention of sovereignty over Canada's water resources in their election platforms. This position has also been supported by the Reform Party.

6. Implications

The ability to irrigate the land is a cornerstone of sustainable agricultural development. There is already tremendous concern regarding the effects of greenhouse gases on soil moisture content and precipitation. Good public policy is about keeping our future options open. Unless the water-trade issue is resolved, Canadians will lose this option, and with it their sovereign right to judiciously manage water resources in the interests of Canadian farmers and society.

The implications of this will effect not only the productivity of Canada's agricultural potential, but also the ability of Canadian agriculture to compete effectively in changing international markets. The effects of drought, desertification, global warming and a reduction in agricultural production are predicted to be greater for American exporting regions. According to the prediction of a new computer model of the atmosphere developed at the NASA-Goddard Institute for Space Studies, the United States Mid-west farm belt and the south-eastern United States will be among the first regions on Earth to feel the effects of warming caused by the release of carbon dioxide and other gases into the atmosphere. Canadian producers could win new markets if they had assured water supplies.

At issue for Canadians is not only the irrigation of existing farm land, but the ability to alter cropping patterns, bring new land into production and increase the volume, diversity and location of domestically-produced foodstuffs to reflect changing domestic needs and international market and climatic trends. This is a critical public policy priority not only in terms of Canada's agricultural sector, but also in terms of regional economic development, rural infrastructure, sustainable development and our environment.

Sustainable stewardship of both the land and the water is essential to the future of Canadian agriculture. Restricting irrigation projects to low-volume reservoirs makes irrigated agriculture both feasible and defensible. Ensuring that water can meander in gentle tributaries through fertile valley bottoms, encouraging through irrigation the productive capacity of the soil, is completely consistent with sustainable economic stewardship.

To accomplish such aims, it is essential that Canada retain sovereignty over our water resources. To achieve this, it is imperative that water, in other than bottled form, be excluded from the terms of both the FTA and the NAFTA.

Chapter 5

Putting Our Own House in Order

1. Introduction

There are two ways that international trade in water relates to the way we manage water resources at home. First, our concerns about water exports may be seen as hypocritical in light of our own record of water management. This, as discussed below, could work against us if we should try to hold back our water from export within the framework established by international trade agreements.

Second, free trade can work against sustainable water management in both the importing and the exporting country. These two ideas are discussed below.

2. Managing Our Own Water Resources

Compared with most other countries, Canadians have placed very little value on water resources. "Despite its vital importance to every facet of Canadian society," note water experts Michael Healey and Ron Wallace, "water is so pervasive a substance in Canada, and the technology of supply is so well developed, that most Canadians take it for granted." (1987) The result is that we consume more water on a per capita basis -- an average of 360 L per person per day -- than people in any other country except the United States. (Environment Canada, 1991).

The history of resource development in Canada also attests to our having taken water for granted. It comes as a surprise to many people to learn that Canadians have diverted more water from one basin to another than anyone else in the world. In fact, we are the world's champions in water diversion by a wide margin - exceeding the combined total of the two runners-up, the United States and the former soviet Union. If all the water artificially diverted in Canada -- 4,400 cubic meters per second -- were channelled into one river, it would be our third largest, after the St. Lawrence and the Mackenzie. (Pearse, 1985).

Of the 18 major (exceeding 25 M3/second) inter-basin water diversions in Canada, five are found in Ontario: the Lake St. Joseph to Root River diversion; the Long Lac diversion into Lake Superior; the Ogoki diversion into Lake Superior; the Little Abitibi diversion; and the Welland Canal. All of these were constructed in northern Ontario to augment hydro generation and are owned by Ontario Hydro except the Welland Canal from Lake Erie to Lake Ontario, which is managed by the Government of Canada for ship transportation.

Map - Water Transfers in and Affecting Canada, Pearse et. al., 1985. p. 33.
See Appendix A, p.95.

The way that we manage our own water resources is significant in the context of international trade agreements because it could work against our efforts to protect water within the framework established by these agreements.

Both the FTA and NAFTA include provisions that allow countries to restrict natural resource exports for reasons of conservation and environmental protection.² It has been argued that these provisions enable Canada to prohibit major water exports. (Johnson, 1989).

The problem is that Canada's propensity to dam and divert rivers would make any effort on our part to restrict water exports on conservation or environmental grounds appear rather hypocritical. (Saunders, 1990). Any attempt on our part to apply these provisions to protect our water resources would be unlikely to receive serious consideration by a trade dispute panel, particularly as large-scale water projects involving diversions continue to be discussed in our own country, particularly in Quebec.

Recent Trends in Water Management in Ontario

There has been no major diversion constructed in Ontario since 1963, nor are any being contemplated in the Province. In addition to current overcapacity, the main reason is the extremely high economic, environmental and social costs of augmenting supplies of hydroelectricity through such facilities when contrasted with demand management. In view of these factors, it is most unlikely that additional large-scale water diversions will be constructed in Ontario to generate hydroelectricity in the foreseeable future.

The Georgian Bay Pipeline Proposal

While large-scale water diversions appear to be out of the question in Ontario for the time being, a minor transfer of 227 million litres of water per day is being considered to augment municipal water supplies. A proposal to pipe water from Lake Huron to serve municipalities in Simcoe County and York Region with a possible extension to communities in Peel, Halton, Wellington and Kitchener-Waterloo has been put forward by Calgary-based TransCanada PipeLines Ltd. The 150-km. pipeline would cost in the range of \$500 million.

According to its proponents, the pipeline is needed "to replace existing groundwater supplies

² These provisions are found in the General Agreement on Tariffs and Trade (GATT) and are included in the FTA and the NAFTA.

in communities where it is found to be chronically lacking from a quality, quantity or long term reliability perspective." (TransCanada PipeLines, 1992). Among the many problems that have been associated with the pipeline proposal are concerns that it would alter development plans and facilitate unwanted development in the regions affected; that it would require an expansion of sewage facilities in order to treat the additional water piped in; that it would introduce new sources of water pollution; that it could damage rivers and headwaters in the affected watersheds; and that it could have an ecological impact on parts of Lake Huron.

Progress in Conserving Water

Until recently, Canadians have regarded water as an unlimited resource. In the face of water supply problems, degradation of water quality and and fiscal tightness however, we have begun to adopt a new attitude. An indication of this came in March, 1993, when Environment Canada sponsored the first national conference and trade show on water conservation in Winnipeg.

The extremely low water use efficiency that characterizes the Canadian economy offers a wide scope for water efficiency improvements. With technologies that are available today, it has been estimated that farmers could reduce their water use by as much as 50%, industries by up to 90% and cities by a third, without affecting economic output or quality of life. (Environment Canada, 1993). The challenge, as described in the summation of the Winnipeg conference is "to break the umbilical cord between water supply and water use by water demand management."

This is beginning to take place. The use of policies and policy instruments for water conservation is increasing at the federal, provincial and territorial levels of government. Four of the thirteen jurisdictions have legislation that specifically addresses water conservation; four are planning new legislation; and seven have had water conservation policies in place without legislation. (CCME, 1993). In addition, many municipal governments across Canada have taken a lead in promoting water conservation.

There is no evidence that these efforts have resulted in appreciable reductions in water use to date. In Ontario, water use continues to increase every year and, if current rates of growth are maintained, is projected to double in municipalities by the year 2011. (Ontario, 1993). Across Canada, the most recent data available (for the period 1972 to 1986) show that municipal water use increased by 49%; water use for mining rose by 64%; and for thermal generation of electricity, by 172%. Irrigation continues to be one of the most inefficient water uses. This is due to heavy government subsidies -- provinces pay an average of 85% of the total monetary cost of supplying water for irrigation on the prairies. (CCME, 1993) -- Leakage, evaporation and seepage from ditches also cause inefficiencies. Across Canada, the number of hectares under irrigation has grown by over 400% since 1951. Manufacturing is the only sector where increases in water use are known to have fallen: in fact, due to the

relative decline of the manufacturing sector in Canada as well as efficiency improvements in technologies and processes, the manufacturing sector is using 5% less water today than in 1972. (Environment Canada, 1991, pp. 3-8 to 3-14).

Ontario's Water Efficiency Strategy

Three of the main water problems identified in Ontario point to the need for improved municipal water efficiency: the problem of insecure water supplies in communities served by groundwater sources; water quality concerns arising from discharges from municipal wastewater plants; and the high costs of renewing water treatment and wastewater infrastructure. (Sharratt, 1993). In view of this, an Ontario government initiative to reduce municipal water use was announced in August, 1991. The Water Efficiency Strategy involves several government departments and the public in an effort to hold municipal water use constant for the next twenty years through more efficient use.

While the Strategy is not yet fully in place, a number of initiatives have been undertaken to date in order to meet the twenty-year target:

- i. a public information awareness program to raise awareness of ways to reduce water use;
- ii. an education program to promote water and energy conservation which is being run as a demonstration project in twenty-five Hamilton area schools;
- iii. a program to improve government owned or leased facilities for water efficiency, including a policy decision that water efficient fixtures will be installed during all future building renovations and in new facilities;
- iv. changes to the plumbing code stipulating water efficiency provisions for faucets, showerheads and toilets;
- v. a household water audit demonstration program;
- vi. sponsorship of industrial water audits.

Other Water Conservation Measures in Ontario

Ontario also supports water conservation through the Ontario Water Resources Act, by which a permit is required if more than 50,000 litres/day are to be drawn from either a ground or surface water source. The Water Rights Act can also limit withdrawal of water for conservation purposes through a permit process. Ontario's Municipal Industrial Strategy for Abatement Regulations also encourage conservation of water by discouraging discharges.

The proposed Ontario Clean Water Agency, to be established upon the passage of legislation in the fall of 1993, is a Provincial Crown corporation which will help municipalities plan and develop water and sewage services. The Agency will take over the provincial ownership of 153 water treatment plants and 77 sewage treatment plant in the Province and, in addition, will operate 116 municipally-owned water and sewage facilities. These water services will be operated on a cost-recovery basis, which is likely to result in more efficient water use as a result of increased prices. The Agency will also promote water efficiency through administering the Municipal Assistance Plan for financing the upgrading and construction of water treatment and sewage infrastructure. This will be done by requiring municipalities to improve water efficiency as a prerequisite for provincial funding under the Plan.

3. Trade Agreements and Conservation Programmes

As shown in Section 1, water is included in both the Canada-United States Free Trade Agreement (FTA) and the North American Free Trade Agreement (NAFTA). These agreements thereby provide the framework by which international commerce in water may take place. This may work against efforts to manage water sustainably in both exporting and the importing countries.

A country that imports, or has the option of importing water, will be less inclined to promote water conservation at home than if it had to rely on its own resources. This is the case with water as it is with energy products, wood and other resources. Thus, the inclusion of water in the FTA and NAFTA may have the effect of relieving pressure in the United States to conserve water resources. In fact, the assured U.S. access to Canadian resources which is provided by these agreements is one of the main reasons that they enjoy support in the United States.

In addition, water conservation programmes in both importing and exporting countries could be considered to have an impact on trade, and could thus be subject to challenge. For example, any form of government subsidy intended to promote water conservation in industry could be considered an unfair trade advantage by the industry's foreign competitors and challenged. The mere possibility of such action may be enough to discourage governments from adopting water conservation initiatives involving some form of subsidy, a phenomenon that has been called "the chilling effect."

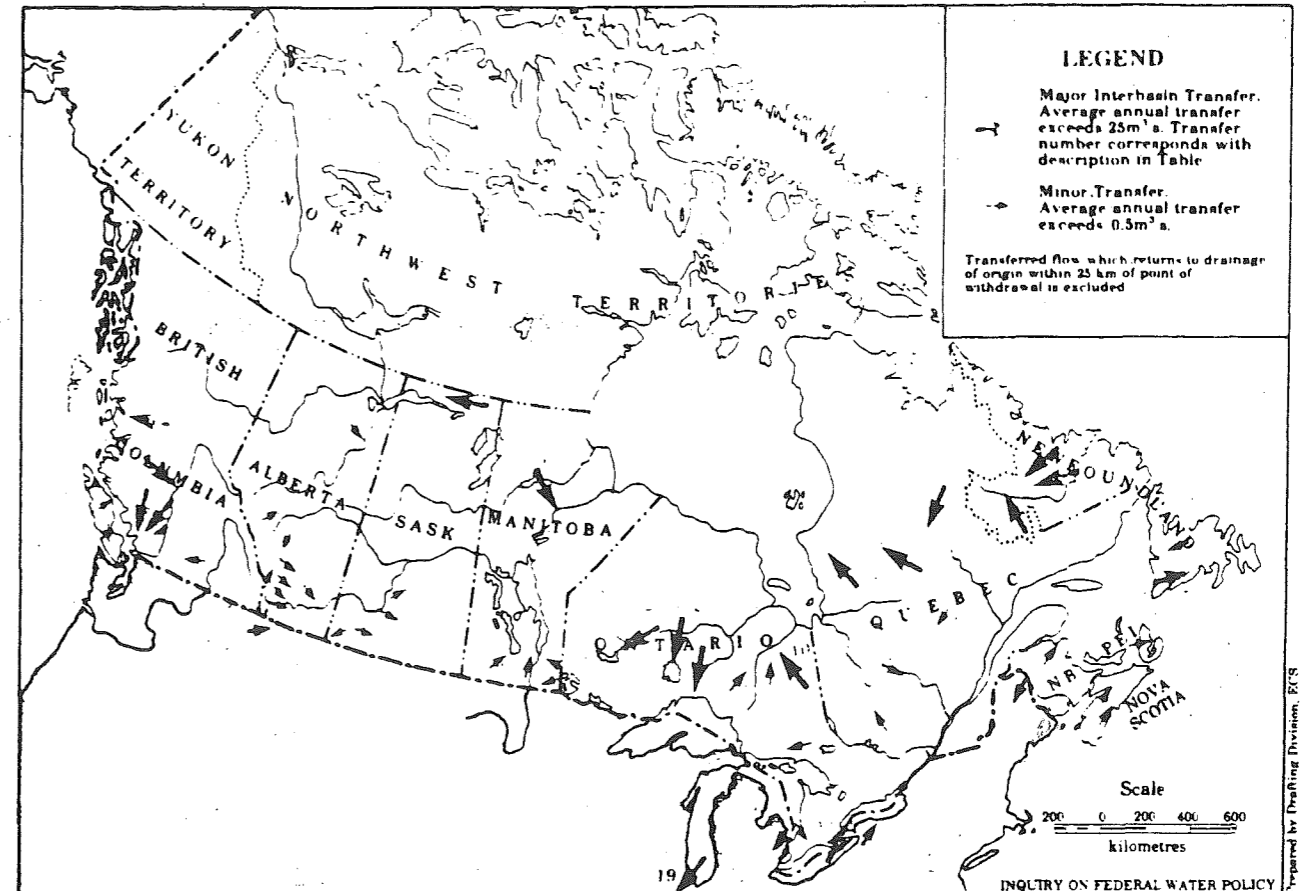
Where domestic tax or pricing policies are used to promote water conservation, the opposite situation arises: instead of foreign competitors being at a perceived disadvantage, they will be seen as having an advantage unless similar policies are adopted in their respective jurisdictions. The perceived competitive disadvantage that this would place on domestic industries would have the effect of discouraging these conservation measures from being adopted. Moreover, any attempt to encourage a trade partner to adopt equal measures so as to avoid a situation of unfair advantage through countervail would be impossible under

the FTA and NAFTA.

Another way in which both NAFTA and the FTA discourage resource conservation is by preventing governments from applying export restrictions. The inclusion of water in the Agreements leaves Canadians with little, if any means of legally restricting water exports unless Canadian governments resolve to resist trade-based challenges to such restrictions.

The actual impact of NAFTA and the FTA on federal and provincial efforts to promote water conservation are difficult to identify, as water conservation initiatives have only recently begun to take shape. Experience in other sectors such as fisheries and forestry however suggests that the free trade regime is antithetical to resource conservation programmes. (CELA, 1993).

WATER TRANSFERS IN AND AFFECTING CANADA, 1985



No.	Jurisdiction	Project	Contributing Basins	Receiving Basin	Average Annual Transfer (m³/s)	Uses	Operational Date	Owner
	B.C.	Kemano 1	Nechako (Fraser)	Kemano	102	Hydro	1952	Alcan Ltd.
	B.C.		Bridge	Seton Lake	92	Hydro	(1934)1959	B.C. Hydro
	B.C.		Cheakamus	Squamish	37	Hydro	1957	B.C. Hydro
	B.C.		Coquitlam Lake	Buntzen Lake	28	Hydro	(1902)1912	B.C. Hydro
	Sask.		Tazin Lake	Charlot (L. Athabasca)	25	Hydro	1958	Eldorado Nuclear
	Man.	Churchill Diversion	Churchill (Southern Indian Lake)	Rat-Burntwood (Nelson)	752	Hydro	1976	Manitoba Hydro
	Ont.		L. St. Joseph (Albany)	Root (Winnipeg)	86	Hydro	1957	Ontario Hydro
	Ont.		Ogoki (Albany)	Lake Nipigon (Superior)	120	Hydro	1943	Ontario Hydro
	Ont.		Long Lake (Albany)	Lake Superior	38	Hydro Logging	1939	Ontario Hydro
	Ont.	Welland Canal	Little Abitibi (Moose)	Abitibi (Moose)	40	Hydro	1963	Ontario Hydro
	Ont.		Lake Erie	Lake Ontario	250	Hydro Navig.	(1829)1951	Govt. of Canada
	Que.	James Bay	Eastmain-Opinaca	La Grande	798	Hydro	1980	J.B. Energy Corp.
	Que.	James Bay	Frégate	La Grande	31	Hydro	1982	J.B. Energy Corp.
	Que.	James Bay	Caniapiscau	La Grande	771	Hydro	1983	J.B. Energy Corp.
	Nfld.	Churchill Falls	Julian-Unknown	Churchill	196	Hydro	1971	Nfld. & Lab. Hydro
	Nfld.	Churchill Falls	Naskaupi	Churchill	200	Hydro	1971	Nfld. & Lab. Hydro
	Nfld.	Churchill Falls	Kanairiktok	Churchill	130	Hydro	1971	Nfld. & Lab. Hydro
	Nfld.	Bay d'Espoir	Victoria, White Bear, Grey and Salmon	Northwest Brook (Bay d'Espoir)	185	Hydro	1969	Nfld. & Lab. Hydro
	Illinois	Chicago Diversion	Lake Michigan	Illinois (Mississippi)	90	Municipal Sanitation	(1848)1900	Chicago San. Dist.

Source: Adapted from Quinn, Frank. 1981. "Water Transfers-Canadian Style". *Canadian Water Resources Journal*, Vol. 6 No. 1.

Chapter 6

False Profits vs. An Alternate Economic Vision

1. Introduction

Entrepreneurial capacity is the rhythm which makes our economy jump. Classical economic theory dictates that markets, not regulators, are most efficient at delivering optimum economic performance. North America is quickly moving toward economic continentalism in response to such theories.

But before accepting the supremacy of the invisible hand in each and every circumstance, judicious public policy demands that the state know whether that hand is going to nurture or punish in the medium term.

According to the U.S. Water Resources Council, the average American uses 1,385 Imperial gallons daily, one and one half the amount used by the average Canadian and three times what the average European uses. The Council predicts that by the year 2000, 16% of the country's major regions will suffer water shortages.

Reexamining the wisdom of current economic thinking as it applies to Canada's water resource has become an urgent public priority. The assumptions which bear examination in assessing economic theory relating to water markets are twofold:

1. the extent to which the entitlements of market-marginalized stakeholders are protected by water markets; and
2. the mobility of the resource itself.

Many Canadians firmly believe that when the Americans want our water, they will simply come and get it, some conjuring up pictures of Marines at the border if Canadians say no.

The "persuasion" will be far more subtle. With some exceptions (the Gulf War being a recent example), future battles between nations will not be waged with guns but with economics.

To date, rational public policy discussion on the water-trade issue has been effectively pre-empted by two (contradictory) economic myths:

1. that large scale, continental water sharing proposals do not make any economic sense and therefore are not to be taken seriously, and

2. that the development of functioning, price-responsive water markets will most efficiently rationalize supply and demand consistent with continental economic growth and development strategies.

To resolve the dilemma we now find ourselves in on the water-trade front, the fallacies underlying both of these economic assumptions must be exposed.

2. Myth 1: Continental Water Sharing Proposals Are Not Economically Feasible

Many people on both sides of the border who would otherwise vigorously oppose large-scale water exports (mainly out of concern for the environment, but also related to concerns surrounding regional economic development, agriculture, resource sovereignty, sustainable development, the carrying capacity of water resources and unresolved aboriginal land issues) have been lulled into a sense of complacency by the argument that such projects will never be undertaken because they simply will not pass economic muster.

With the exception of the Columbia Treaty, continental water sharing mega-projects (such as the proposed Clancey diversion in B.C. and the GRAND Canal project in Quebec) differ from most existing North American water and hydroelectric projects in that they propose to move water across national boundaries. They are, however, identical in purpose to domestic water projects and governed by the same economic analysis.

With the exception of projects such as the Chicago River and Lake Nipissing diversions, the stand-alone economics of existing water mega-projects have rarely, if ever, supported their investment. This is because their benefit-cost analysis was calculated on either:

- a) greatly-subsidized benefit payments - e.g. artificially-low water rates to American farmers, or
- b) the view that water is a valueless by-product of hydroelectricity exports.

Neither of these assumptions underlying "yesterday's economics" reflect present political and economic realities. Consequently, they do not offer any assurances that continental water mega-projects can be dismissed as "frivolous".

Socio-Economic and Political Forces Supporting Continued Water Subsidies

Setting aside for the moment the argument that escalating water prices may reduce the need for such subsidies, there is no reason to believe that the U.S. won't continue to subsidize the delivery of water to American farms and cities and so make proposals economically feasible in fact. U.S. political and economic factors support such subsidies.

Farmers in drought-ravaged heartlands of America have long exerted a persuasive influence on politicians, as have the investment and job creation benefits associated with the construction of large water projects. Consequently, such projects have been justified not simply on the basis of what can be recovered in terms of agricultural water rates, but also the non-quantified, social, economic and political benefits lying outside the agricultural sector.

Standing shoulder to shoulder with agricultural water users are now an increasing number of firms in the industrial and infrastructure sectors which rely on continuous and plentiful supplies of water for trade and commerce (for example, water for manufacturing and cooling purposes and firms reliant on river transport systems) as well as existing and future communities. Government's assurance of a long-term, continuous supply of water to these sectors confers significant political and economic benefits upon which a "subsidy" could arguably be based.

If the value of political hay could be factored into benefit-cost equations, the true basis upon which governments make decisions would evidence why such schemes cannot be discounted on mere economics.

But more importantly, even as there is now greater demand for secure, long term supplies of water for many American cities, industry and rural communities, there is concurrently a lesser need to rely on subsidies to accomplish this. In the new reality of economic continentalism, water has acquired a market value sufficient that many large-scale water diversion projects may, indeed, make economic sense in many regions of North America.

Water As A "Good" in Hydroelectricity Exports

The Columbia Treaty compensates Canada for benefits associated with flood control and hydroelectric generating capacity. No value was placed on the water itself, likely because it was argued that water which was flowing through the Columbia river basin would have eventually made its way down to Americans anyway, so its value has not been increased by a series of dams which store and let down the water according to hydroelectric needs.

This bears further examination. Water is an unusual commodity in that it is highly valued when in short supply and valued at zero (or, in the case of flood, negatively) when it is in excess supply. Just as last month's newspaper has no market value today (excluding its value to recycling), water which flows through rivers in the winter is of no economic value in May when required to flush salmon releases or fill irrigation/transportation needs of a drought-stricken Spring. A "regulated" water supply is the "good" created by the Columbia dams. The ability to store and release water in Canada in accordance with U.S. needs creates a value to the water itself beyond its hydroelectricity potential - a value which did not exist prior to the creation of that storage capacity.

As water supplies become scarce, and the cost of compliance rationing high (both in terms of technology and opportunity costs), the value of benefits generated from major water storage and diversion schemes increases substantially. This dramatic (and for many unforeseen) increase in the value of water (at times in excess of hydroelectricity values) enhances considerably the economics of large-scale hydroelectric diversion projects.

The New Economics of Continental Water Sharing Proposals

Prices paid for water in the Los Angeles area by various categories of users in 1990 ranged from \$362 to \$857 per acre foot. The 1991 Goleta contract (awarded to Snow Cap Ltd. but killed by the province's moratorium on new licensing - see Chapter 3) priced water at \$2,000 U.S. per acre-foot. Desalinated water supplies, currently under investigation by Goleta, would cost \$2300 per acre-foot in today's energy market.

Peter Lewington, writing for Canadian Banker (January-February 1991), finds that "Bankers are involved directly or indirectly with many commodities ranging from gold to wheat. Water may not yet appear at the top of many priority lists; and that may prove to be a costly omission... wherever one looks in the world, water is a factor in both peace and prosperity; realities of great relevance to bankers... Both national and international bankers will increasingly find that water has become a vital consideration in successfully extending credit."

A recent San Francisco consultant's study predicts that if all California manufacturers had to cut water consumption by 30 percent, the state's annual economic output would fall by \$20 billion. "If we don't have some kind of water market," warns Bank of America economist Frederick Cannon, "we could bankrupt California."

In a recent article on Canadian constitutional wrangling in the Financial Post (June 22, 1992), editorial writer Ted Byfield, founder of Western Report, Alberta Report and B.C. Report magazines, concludes the following:

No sooner will the new Constitution be in place that the campaign will open in Quebec for further sovereignty. The new deal will be pronounced inadequate, and the effect of this disruption will be to continue de-stabilizing the whole country, preventing any significant economic turn-around. At the same time, the really big player in this whole affair will make his first move. I mean, of course, the Americans. They think continentally. When they look at the western sector of the continent, they see a frightful problem and an obvious solution. The southwestern states - one of which, California, alone equals the whole of Canada in population - have run out of water and the situation is becoming critical. The Americans look at the northwest of the continent and see more than enough water to solve their problem being poured uselessly into the Arctic Ocean through the Peace-Athabasca-Slave-Mackenzie system. Finally they see the Rocky Mountain Trench, a huge gutter-like ditch running from the water in the north to [the] central Washington desert, [as] a natural

watercourse. You can depend on it that just as the Canadian constitutional crisis evidences total futility, the Americans will hit Alberta, B.C. and the Yukon with the most attractive offer imaginable. Jobs on a scale never seen before, and statehood for the two western provinces, if they're interested.

Water markets have the potential to achieve a better balance between water users. On March 2, 1992, Business Week, in an article entitled California's Next Cash Crop May Soon Be... Water? devoted its Economics column to explaining the market mechanisms being put in place by that state to allow farmers to sell their water allocations to thirsty cities. Some economists (for example, Richard E. Howitt of the University of California at Davis) believe that reallocating to urban use as little as 7% of the water currently being used by farmers would provide adequate supplies of water to California cities for the next twenty years.

Detractors of this approach argue that cities such as Los Angeles could bid up the price of water sufficient to put farmers, small towns and environmental needs out of the market. They also point out the costs to rebuild the crumbling levees of the Sacramento River delta. Chuck Benbrook, former Director of the National Academy of Sciences Board of Agriculture, suggests alternatives to drastic water reallocation schemes for California agriculture:

The logical way to proceed would be to use policy concepts embedded in federal farm policy... An acre of alfalfa uses an average of one acre foot of water per cutting. So, if all alfalfa producers were to enrol in a program calling for - mandating in times of crisis - an average reduction from five to two acre-cuttings across the whole state [California], there would be about three million fewer acre-cuttings, saving about three million acre feet of water for diversion to [other] uses... Through creative program design, it could be done so that farmers would be delighted, yet at a cost of about \$30 per acre foot of water saved. A similar percentage cut back for rice farmers would cost about \$50 per acre foot of water saved - in contrast to the estimated \$100-\$140 per acre foot under the state's acreage retirement plan. Schemes that cost much more per acre foot of water saved do so because someone is making a handsome "windfall" profit on a long-standing water right. Schemes that involve buying land and water outright - permanently shutting down agriculture - may seem justified, and look great economically in drought years, but what about the jobs and economic activity foregone in the years of water abundance? What about the social costs of adjustments all up and down the valley? Dams can be open and shut. Farming communities, like plants, require a minimal degree of annual sustenance to survive. Let's cut back, even dramatically, when we must, but let's not cut to the core when we don't need to. (Benbrook).

But the state's farmers and cities are fast coming to a rare agreement that some form of water marketing is inevitable. Without it, warns Michael McGill, executive director of the Bay Area Economic Forum, "urban California is going to rise up and say: 'We're taking that water.'" (Business Week).

U.S. businessman Albert Parker is doing just that. Since 1985, Parker and his partners have raised \$42 million to buy water rights in Nevada, California and Colorado. Now 56, Parker hopes to raise another \$250 million by 1998 to buy water rights throughout the western U.S. Buying the rights from farmers or ranchers, he then goes through the costly exercise of converting the rights from agricultural use to municipal or industrial use, then sells the water rights to water-hungry municipalities or large real-estate developers. (In many parts of the U.S. mid-west, real estate developers can no longer get building permits until they have secured a long-term water supply.) Recently, Parker and his partners paid ranchers along the Carson River near Reno, Nevada \$4 million for the rights to draw 3,800 acre-feet of water a year, plus two small reservoirs and 2,800 acres of land. They sold most of the land, then began the water rights transfer process, which Parker expects to have finalized by the end of this year. He projects that he can then sell the water rights for \$1,500 to \$2,500 per acre foot of annual flow. (Taylor).

According to The Economist (March 28, 1992),

Only by accepting that water is a tradeable commodity, like coal and oil and timber, will sensible decisions be possible. Many countries once abhorred the idea that water is just another raw commodity. No longer: at an international conference in Dublin earlier this year, a large number of governments signed a statement saying, in effect, that water was an economic good and should be treated as such. Once that is recognized, the opportunities for imaginative husbandry of water are greatly increased.

Even with the most efficient allocation and diligent conservation measures, market demand for water in the U.S. South West and Mexico in the year 2000 will undoubtedly remain strong as a result of development pressures. If past continental water diversion schemes were measured instead on today's water values, the economics would improve dramatically. Currently-subsidized farm water rates of around \$10 per acre-foot (2 cents per 1,000 gallons) from California's Central Valley Project average 50 times less than city rates for water drawn from the newer, more costly State Water Project.

For example, in the "Clancey Proposal" described in Chapter 3, Multinational Water and Power Inc. justifies the economics of its project to divert 100 million acre-feet of water per year from the North Thompson into the Columbia River system for sale to the Americans on a U.S. purchase price of \$1,000 per acre foot. In fact, at this price, Clancey projects a net annual benefit (excluding benefits from hydroelectric sales) of \$600 million U.S., to be equally split between a) the Province of B.C. and b) U.S. shareholders, taxes and expenses. (Clancey projects that B.C. would also receive \$77 million in annual hydroelectric benefits at a value of \$320,000 per MW).

The industrialization potential of Mexico under the proposed NAFTA multiplies by orders of magnitude the profits which can be realized with additional water supplies, and too the interest groups which would benefit economically from continental water sharing schemes.

International and trans-national companies are poised to invest in Mexico - an underdeveloped portion of the North American continent which has significantly lower labour costs, a far less costly climate, shares an extensive border with the United States, and is or soon will be fully integrated with that country on an economic and trade level. Mexico is, for many firms, a vast, untapped "suburb of the U.S." awaiting industrial/agri-food colonization.

The only flower Mexico does not have to offer in its shimmering bridal bouquet to the free market is water. Not surprisingly, business interests - through their successful lobby efforts on behalf of the FTA and NAFTA - have set out to ensure that Mexico can provide all the conditions required for them to "set up shop" - including access to the water supply required to enter profitably this new and exciting market.

Roberto Salinas Leon, Academic Director for the Centre for Free Enterprise Research, Mexico City authored one of the Fraser Institute commissioned papers (Water and North American Free Trade: Problems and Prospects for a Viable Water Market in Mexico) presented at the CWRA May 1992 conference.

According to Leon,

...with greater trade opening and uninhibited flow of commerce in a free-trade area, the prospects for a trilateral water market become more accessible and more realistic. A future effort to frame a water market in a North American trading bloc must proceed inductively, by drawing from the empirical results obtained so far, and generalizing to a hypothetical model. Such a speculation is interesting in its own right, but adds on practical political value in light of the trilateral commitment to form a North American Free Trade Zone. Indeed, there is no economic basis to exclude items like water from the gamut of freely tradeable goods.

Leon goes on to state that

The initiative to allow substantial private sector participation in managing and allocating the national waters is co-committant with the process of trade liberalization. NAFTA, which takes trade opening to its last consequences, thereby increases the probability of contemplating a continental model of water tradings to ameliorate Mexico's water problem and eventually strengthen its hydrological potential. An all-important implication of open commerce and free-trade is the salutary effect of this policy for an efficient resource allocation and use, among the member countries which [form] the ...trade block. This factor leads inexorably toward a continental trade model for (admittedly nonstandard) goods like water. ...NAFTA and open regional trade in a North American market constitute key devices to lock in good, market-oriented policies and forgoing attractive investment climates. There is no a priori reason to exclude water and water policy from this causal logic between unrestricted trade and internal regulatory reform...

One of the areas of potential Mexican economic development drawing strong international focus is agriculture. Important steps have already been taken in this regard. In the fall of 1990, Mexican President Carlos Salinas announced radical changes to the Mexican constitution. The most significant of these changes was the unbundling of peasant-controlled land tenure systems Qejidos - which were put in place by Zapatta 80 years ago during Mexico's bloody revolution over foreign land ownership. After five years of systematically reducing the infrastructure support to agriculture, the Mexican government has told the peasant cooperatives that they can now, for the first time, take individual title to their land and, coincidentally, sell it - again for the first time to a non-national. Meanwhile, large, agri-food concerns operating contract farms in California - plagued by water shortages and poor soil conditions as the result of non-sustainable farming practices - are eyeing Mexico for relocation because of low labour rates, a favourable climate, long growing seasons and low operating costs. The trans-national food conglomerate Grand Met Foods has already purchased vast tracts of agricultural land in Mexico's border region. (Holm, May 1992).

Summary

Suggestions that continental water sharing proposals cannot be taken seriously because they do not make economic sense place public policy deliberation over the future of Canadian water supplies at grave risk. The majority of large scale U.S. water projects have proceeded with similar economics because government chose to subsidize greatly the provision of water to American farms and cities. There is no reason to believe that the U.S. will not continue to subsidize such schemes on a continental basis, particularly since new and influential interest groups have entered the equation.

More importantly, current market values for water will likely eliminate the need to pursue such projects on a highly subsidized basis in the future. Municipal contracts were let for water valued at \$2,000 per acre foot in 1991. By the year 2000, water may indeed have attained the value of oil today, a commodity for which no-one questions the economic feasibility of transport systems.

3. Myth Two: Effective Water Markets Are the Only Economic Solution

The premise that well-functioning water markets are the only way to economically ration scarce water supplies was put forward in a number of the papers commissioned by the Fraser Institute for presentation at the May 1992 Canadian Water Resources Conference.

Such beliefs are deeply rooted among neo-classic economists. Individuals use/consume goods in relation to their cost. If a good has little or no "value" in monetary terms (air and water are two examples) society is likely to be less mindful in their consumption of that good. For those goods which confer benefits in their use, consumption may become lavish when cost is nil or negligible. Such practices become considered "wasteful" if the same good

subsequently becomes scarce. In such instances, pricing mechanisms and rationing systems are often required to insure the interests of the stakeholders. When this occurs, people are often willing to pay for an additional increment or allocation of the good, particularly if it is a good which they have become biologically, economically or socially dependent upon. In the case of a good important to the economic engines of the private and public (schools, hospitals, wilderness) sectors, the value placed on an additional allocation of that good may escalate rapidly.

One example of this is the market which has sprung up for pollution credits in the United States. Firms which exceed minimum environmental standards (usually due to investments in pollution technology) can sell their annual "pollution permits" to other firms with lower emission or pollution standards. The theory behind the effectiveness of such markets is that if the government continues, over time, to tighten environmental standards, firms which continue to pollute will quickly become non-competitive with rival firms within their sector, from whom they are forced (or should be) to purchase their pollution credits. One problem with this approach is that it ignores the rights of individual communities, in the short to medium term, to expect that increasingly stringent environmental guidelines will be enforced by government in such a way that they confer equal benefits to all of its citizens, not prejudice those which live in the proximity of firms with more profits than ethics.

Another example is water. The 1990s may well be described by future historians as the true "age of Aquarius". Water is scarce, highly-valued, in demand. The profits of many firms on a national and transnational level are entirely dependent on their access to water. Additionally, there are many private investment consortiums lining up to put into place the systems required to supply that demand.

It is, of course, imperative that water to existing water users be priced in such a way as to ration more effectively the use of this resource and to recapture the funds needed to maintain and upgrade existing systems.

At the municipal level, Canadians generally have an ample supply, but municipal water services are hard pressed. Demand is expanding which calls for expensive water works. Many users receive their water at a flat rate which covers connection and maintenance costs, but neither rewards users who conserve water nor penalizes those who waste it. Furthermore, existing water charges do not reflect environmental costs of reduced natural stream flow, flooding or importing water from one watershed to another. We also fail to reward consumer and industrial behaviour which minimizes the environmental impact of water supply systems. All levels of government agree on the recommendation of the 1984 Inquiry on Federal Water Policy in Canada that beneficiaries should pay for their water by pricing and some also agree that federal participation in water projects should be conditional on pricing.

In the United States, urban and agricultural populations in the South West both require additional water supplies to sustain and grow. Water is supplied from rivers and

underground basins. Most urban water is supplied to households and businesses free and irrigation water is priced below its true cost. The result is that most water users get their water and its long distance delivery free or an a low, flat rate.

The main thrust behind water pricing proposals is that the good will only be rationed effectively (demand and supply brought into equilibrium) if individuals and firms are charged "what the market will bear" for their water supply.

This is not to say, of course, that everyone will pay the same for water. This will vary from sector to sector.

To the extent that objectives such as maintaining the market positioning of U.S. agriculture in the face of international trade competitors and the stability of rural communities are upheld as political objectives, farmers in many parts of the United States are unlikely to ever be charged rates approximating true market value for their irrigation water. Here, too, however, rates will no doubt increase and a reallocation of water supplies to higher-valued uses will be encouraged.

Assuming a short water market, sectors which will pay higher rates for water under a market pricing system are those which either a) have higher profitability or b) have access to a regulatory cost-recovery mechanism (e.g. the taxation powers of municipal governments such as Goleta, California) by which to pass on the cost of purchasing additional water supplies. In 1992, California farmers were offered \$125 per acre foot to sell all or a portion of their water rights to nearby cities. In Nevada, their counterparts were offered up to \$2,000 an acre foot from cities like Tuscon, Phoenix and Albuquerque.

The extent to which the price will be driven up is a function of both need and greed - the effect of water shortages on existing production and the value of water to the profitability of future expansion (e.g. large manufacturers and agricultural interests whose profit potential has suddenly increased with the promise of NAFTA; the continued pressure to develop residential communities in the arid deserts of south-western and central North America).

Water pricing which treats the resource with the respect appropriate to principles of sustainability and carrying capacity are essential. However, as will be more fully discussed below, an economic policy which favours water pricing markets unrelated to quantity or source is antithetical to the public interest of economic "prosperity" policy objectives.

4. Paradigms Reexamined

There is no doubt but that continental water pricing systems would allocate water, a scarce commodity, extremely efficiently in accordance with the economic needs of our present North American market economy.

However, there exist three fundamental flaws in the application of classical economics to justify water markets which were not addressed by the Fraser Institute papers presented to the 1992 Canadian Water Resources Association Conference.

The first relates to potential detriment to those stakeholders which are disenfranchised from the market voting system (the effect of water markets on current and future entitlements of market-marginalized stakeholders).

The second relates to the inability of water to reallocate itself in response to future, emerging needs (assumed mobility of factors of production).

The third relates not so much to the neo-classical economists' dependence on strongly competitive markets to achieve maximum efficiency (prosperity), but the fact that the theory does not anticipate that powerful market firms can organize around those markets (insulate themselves from competition) in such a manner as to benefit their own self interest (at the expense of the public interest).

Marginalized Stakeholders

When there exist many current and future stakeholders whose interests are not sufficiently protected by market forces, market pricing allocation systems can result in a very unethical distribution of goods. For example, many species of freshwater fish and, on a larger scale, entire ecosystems are keenly dependent upon the way water is managed, however are disenfranchised from any significant market vote. Hence, their interests are dependent upon enlightened representation by governments to ensure that their "entitlements" are upheld. Beyond environmental concerns, there are similarly future economic and social priorities whose water access rights could be greatly-prejudiced if their needs are foreclosed. The effects of global warming and climatic change make it difficult, if not impossible, to predict accurately future water needs, underscoring the importance of "keeping our options open" by maintaining sovereign control over Canada's water resources.

Allocative Problems

The economic wisdom of market pricing relies entirely on the premise that supply will reposition itself in the medium and long term in response to price (society's demands as translated in the marketplace), and that this will maximize the public interest in economic efficiency and prosperity.

According to economic theory, an efficiently-allocative (open) market system allows goods move freely in and out of production in accordance with economic need, as evidenced by market prices. Those sectors which can put goods to their highest-valued use employ them, and if the use to which they are put declines in its value to society, they will be bid away for

use by another sector of the economy.

For many commodities, this system of price signals functions efficiently, although the lag time in the responsiveness of supply to market signals varies from sector to sector. For some sectors of our economy, such as agriculture, longer lead times are required. For example, it takes less than 24 months to increase broiler chicken production because market signals must first be transmitted to the hatching egg producers, which then increase supply of hatching eggs to the hatcheries, which then increase production of chicks to supply to broiler farms, which must then grow the chicks prior to slaughter and marketing. Commodities such as apples require longer lead times (closer to 5 years).

Similarly, the market adjustment response required to shift factors of production from one commodity to another or between sectors also entails lag times. Labour mobility is a case in point. As mechanization replaces manual labour in manufacturing plants, workers who lose their jobs and do not have the skills to move readily to other sectors must be retrained for new occupations.

To policy economists, some short term shocks to the system as a result of the readjustment of factors of production are most effectively addressed by mitigation and/or compensation policies, and can be outweighed by medium term economic benefits once systems move into equilibration with demand.

But for some commodities, particularly those in the resource category for which there are no substitute goods, the neo-classical economic market model breaks down as an efficient mechanism to achieve the public good.

Water has no substitutes and in the case of major, capital-intensive diversion projects, cannot reallocate itself in response to future market signals. Once the capital infrastructure of large-scale diversions has been put in place, it is highly unlikely that any emerging need, no matter how pressing, would provide sufficient economic incentive to dismantle and re-route the water to other users. Consequently, while large water diversion proposals will undoubtedly respond to initial users' needs, their sheer size creates a "barrier to entry" for any new project requiring that water unless they are fortunate enough to exist upstream or downstream of existing water beneficiaries and can coerce or buy from them new or increased water entitlements. This can pose a particularly critical problem as it relates to unforeseen environmental damages.

Theoretically, the only way around this allocative dilemma would be to create a series of water pipelines interconnecting all areas of potential supply to all areas of potential demand - a giant, North American plumbing system - in order that taps could be opened and closed to reroute water supplies in response to emerging price information. This solution falls into the "angels on the head of a pin" class - interesting speculatively but with no relevance to reality.

Structural Adaptation Within Concentrated Industry Sectors

Failure to predict the self-defense mechanisms of powerful, concentrated, oligopolistic market players (some, whose economic clout has elevated them above the power of the state) within an otherwise-competitive economy is central to the argument that neo-classical economics cannot be applied unilaterally to all sectors of our economy, and is a particularly poignant example of why it cannot be applied to Canada's water resources.

Comparing the relative effectiveness of the self-defense mechanisms of small and large oligopolistic firms to that of environmental biota in their ability to protect and enrich in their own self-interest is perhaps the best approach to describing the karate kick world of neoclassical economics in a real market economy.

Firms at the national and international level quickly discovered the benefits of pushing neo-classical economic theory on attentive governments. Continentalism and globalization do not create privileged "winners" in competitive market sectors. Privileged "winners" under such initiatives are those firms which manage to protect and defend their highly-concentrated, non-competitive (oligopolistic) market positioning. If competitive rules are established for firms "beneath" and "above" them on the market chain, highly concentrated transnational sectors can effectively wring out of the market all of the profits/economic rents which previously went to less powerful players.

One example of this is the increase in contract integration within the agri-food sector. The majority of producers in the United States, facing declining profit margins, have sought to reduce the "risk" of global price volatility by entering into contract growing arrangements with large, transnational agri-food concerns. The majority of broiler chicken, beef, lamb, pork and vegetables produced in the U.S. are grown under contract arrangements. Normally, only two or three firms contract within a given sector. A farmer is given the choice of contracting with firm "A" or firm "B", both of whose terms are amazingly similar. The rate of increase of agricultural production contracts has increased dramatically over the past decade. Many large integrators, such as Grand Met Foods, operate in a number of countries simultaneously. As a result of contract growing arrangements, profitability in primary agricultural markets has effectively been transferred from a competitive farm sector to a highly-concentrated agri-food processing sector.

There are many examples to demonstrate the success with which oligopolistic resource sectors have and will continue to effectively organize around most attempts by the state to return to government coffers the true economic rents attributable to the sale of a publicly-owned resource.

This is neither surprising nor unanticipated. Without the (thankfully predictable) positioning behaviour of firms to maximize profits, there would be no economic growth. It becomes government's responsibility to ensure that firms operate in a competitively functioning environment and that their pursuit of profits does not run contrary to the medium-term

interests of society.

5. Market Economics vs. Prosperity Economics

Before accepting the supremacy of the invisible hand of the open market in each and every circumstance of economic deliberation, judicious public policy demands that the state know whether that hand will nurture or punish. Since water does not obey the laws of classical economics, water is a good requiring far more enlightened public policy thinking. If the standard economic paradigms are not now challenged as they apply to Canada's water resources, historians will rightly pinpoint the demise of effective democratic systems in this decade.

The purpose of economic policy is to provide a blueprint which will allow the state to deliver the maximum level of prosperity attainable by society. Prosperity is a term which includes as its components not simply strong economic growth, but also an enriched social fabric, with low unemployment, high educational and health care systems, a high standard of living and a compassionate series of safety nets for those who require them. Society is a term which includes as its components communities existing in both the present and the future. Economic theory is created, in its highest form, to deliver these benefits. Collectively, they represent the "public interest" in economic policy.

Current neo-classical economic theories derive much of their basis from the thinking of late 1800s turn-of-the century economist Adam Smith, who described the benefits of "perfectly-functioning markets". The fact (to which Smith would heartily concur) that "perfectly functioning markets" rarely, if ever, exist should be sufficient to prevent his theories from being applied in a non-judicious manner by governments whose mandate is to enhance the public interest.

However governments, even of the enlightened variety, are themselves subject to the whim of markets, and consequently often cannot "stand above them" in an objective fashion in their crafting of economic policies. Adam Smith himself likely did not envisage a time when business interests could exert so willful a rudder on ships of state.

The promise of campaign funds and political "deliverables" from national firms is persuasive enough. Transnationals which operate in a number of countries increase the potential for the carrots and sticks of job creation to influence policy-making. When transnationals evolve to supranationals (through market concentration and power attain an operating level which puts them above the authority of many nations), their power and influence to create precisely the operating environment in which they can most profitably function becomes a powerful influence governing government public policy.

6. In Defense of an Enterprise/Intervention Economy

The market distorting effects of the predictable positioning behaviour of firms to maximize profits is largely denied by vested-interest proponents of a broadly-based application of neo-classical economic theory to North American water markets.

It must be remembered that the goal of economic policy is to achieve prosperity - a combination of economic growth and social justice. The ability of governments to craft judicious economic policies capable of delivering this goal depends upon a 'two-handed' approach. The right hand - moving silently in accordance with market forces - stimulates the competitive functioning of those sectors of our economy where such an approach achieves maximum growth while at the same time does not place at risk medium term prosperity objectives. The left hand - functioning through regulatory tools - nurtures those sectors of our economy which, if run purely in response to markets, would transgress individual rights as we have come to define them. Examples of these sectors include education, health care, special-needs housing. The left hand must also exercise regulatory protections relating to concerns with sustainability, carrying capacity and the environment.

There exists a profound difference in the way Americans and Canadians have traditionally viewed the role of the state in our economy and society.

Americans live under a largely free-enterprise driven economy. Canada is fortunate to have evolved in a more enlightened direction as an enterprise-intervention economy, - based on the premise that market forces are the most efficient allocator of resources much of the time, but that in certain instances the state must intervene with regulatory instruments when the effect of short term market responses spells medium term pain on a public policy level. (This is, perhaps, one of the reasons why Canada was recently judged by the United Nations as "the top place to live in the world.")

There is a profound need to overhaul the past abuse of regulation in many sectors of Canada's economy. Meant to provide a mechanism to achieve medium term public interest objectives, regulatory instruments in Canada have too often been wrested from the hands of public servants by politicians more interested in achieving short-term political objectives, turning policy scalpels into blunt instruments at the expense of economic growth.

However, it is equally important to defend the judicious use of market regulation to deliver prosperity benefits to Canadians. The right and left hands of economic policy must function in concert. To do less is to stumble forward into the future with one hand tied behind our back.

7. Towards a Rational and Sustainable Water Policy

An increased reliance on water pricing is essential for North Americans to both value and

conserve this precious resource. However an economic policy which favours any form of water exports unrelated to quantity or source is antithetical to economic "prosperity" policy objectives.

While rational and informed public policy discussion concerning water exports may result in support for exports of small-scale quantities of water, this should only occur after the implementation of a squeaky-clean process to evaluate small scale market opportunities on a project-by-project basis. Criteria for evaluation should include effects on existing secondary and primary industry (for example fishing), ecosystems and native land claims. Any such contracts should be for a maximum of five years, and be fully terminable or renewable at Canada's option subject to our reassessment of whether "it would pass the evaluation today".

One of the problems with short term licenses would be providing sufficient inducement for capital investment. A reasonable way to get around this would be to provide assurances to the exporter that they would continue to hold any renewed licenses, and if such renewal was turned down at the periodic five year review, they would be compensated for the depreciated value of their loading facilities (reflective of the value to the public in the license rejection). This would provide the added benefit of both honest and critical government and private sector assessment of license applications.

Ideally, to capture for public benefit the true value of this publicly-owned resource (ensure that economic rents, beyond normal profits, accrue to public treasuries), water export fees for such contracts would be set such that if the government charged one dollar more for the right to export the water, the exporter would walk away from the deal. This is, of course, would be very difficult to accomplish. If pricing takes all the economic rent, the tenant will do everything possible to avoid responsibilities and lower costs. This places an additional burden on the state to monitor and enforce compliance. An auctioning or tendering system might be a better process, or a move to two part fee structure, based on part flat rate and part royalty.

On an economic and public policy level, the private sector should not be involved in this market transaction at all. The public sector would be a more efficient (and public policy-responsive) vendor. Market demand is both evident and easily sourced, market risk is minimal, facility design and on-going decision-making are not creativity-dependent, and there is little job creation after the facilities are constructed. It is also very close to the definition of a classic "natural monopoly" in that it is far more efficient for prospective purchasers to deal with one vendor (e.g. the municipal bus route example - imagine if all prospective water purchasers had just one number to call). Further, if exports from one site created a public policy risk in the future, withdrawals could be more readily sourced from another site by a one desk seller.

There should be no policy consideration whatsoever given to any form of interbasin diversion projects, be they for domestic or export benefit. The first reason for this is environmental

- such projects are massively destructive to our ecosystems. The second reason is economic - according to Scott (1992) the amount of water sold to any customer should be small enough that it can be replaced promptly on an atomistic market where one water price clears the market (a condition which can not exist on a large scale diversion basis).

In his paper to the Canadian Water Resources Association 1992 conference, Scott elaborates on the concentration and political impediments to insuring such requirements for large scale diversion projects. Although there may be customers who are satisfied to make up their requirements by buying and importing water from a number of sellers, Scott argues that the network of pipelines and canals may aggregate many small trades into a few. To take just one possibility out of many, the relatively few north-south pipelines linking Canada to American markets may force Canadian provinces to deal in large amounts, importing or exporting all. This means that a supplier may have no confidence that it can find blocks of water to import at the price at which it is exporting.

Says Scott

confidence in reversibility has also been damaged by government's propensity to get involved in water allocations. In a drought, when not only users of unpaired water, but also market buyers anxiously turn to government for relief, governments typically respond. I believe they will do in 'permanent' droughts. The American government, that is now involved in interfering with the trade in several ordinary goods and services, is surely unlikely to let foreigners withdraw high-value water from American consumers and producers. Even if there are no interferences with specific international contracts, both governments will surely intervene in water pipelines and water marketing as they did in many countries during the OPEC years." Referring to March 1992's "well-informed" Economist article urging government to adopt better water policies, Scott concludes "a potential supplier could be excused if it decided to restrict sales to amounts that need never, under any circumstances, be returned."

The destructive nature of major dam and diversion projects has been recognized at the international level. March 1992's Economist article, *The Beautiful and the Dammed* cites a recent study by British environmentalists Edward Goldsmith and Nicholas Hildyard that

irrigation schemes often created no more new land than they destroyed; that resettling people caused huge economic and cultural disruption; that dams frequently failed to control floods; that the profits from building them tended to end up in the pockets of multinationals, urban elites and the politicians who commissioned them.

The article goes on to note that such criticisms are now being accepted by the World Bank, the largest single financing agency for large dams, and by some countries that have helped pay for them.

The transnational capital interests behind "continental water sharing schemes" to "reallocate" northern water supplies by whatever means necessary have already moved into position, and have entrenched within the FTA and the NAFTA, the delivery systems to ensure this.

Chapter 7

Toward An Alternative Ecological Vision

1. Introduction

The purpose of this section is to discuss the need for an alternative to trade liberalization and take steps to develop such an alternative.

NAFTA can be seen as one step in a general drift toward increased market integration, international capital mobility, and expansion of economic scale. Along with the concentration of power in trans-national corporations, this trend results in the disempowerment of communities and acceleration of environmental destruction. (Daly and Cobb, 1989). Not just the NAFTA, but the general trend towards globalization of the economy through trade liberalization needs to be reconsidered. This will be possible only if an alternative vision is put forward that is both compelling and practical.

Water may be used to illustrate an alternative vision. In opposing water export, it is inferred that every region should try to live within its own hydrological constraints instead of "importing" water from other regions. If we accept this proposition, then it is reasonable to say that every region should also try to live within its own ecological constraints; that it should not import vast quantities of resources from other regions. The idea of living within the ecological constraints of each region suggests that inter-regional and global trade should be limited instead of expanded. Water can provide a basis for establishing these regions through the re-organization of economic activity within natural regions, or drainage basins.

The main principle in developing this alternative to trade liberalization is that every region should try to live within its own ecological constraints. If each region were to succeed in this, the net result would be global sustainability. With greater regional self-sufficiency, there would be less need for trade. This would result in a reduction in the amount of resources flowing through the economy (causing resource depletion at one end and pollution at the other) and a contraction of the distances between producer and consumer.

This vision has a number of attractions. First, it would help promote a truly environmentally sustainable society. Second, it would re-energize economic exchange at the local level, thus strengthening and making more resilient the economic base of countries and communities. Third, it would re-invest political power at a more local level instead of in trans-national corporations and undemocratic multilateral institutions (i.e., GATT, the World Bank, the International Monetary Fund) which are made more powerful and more necessary by globalization of economic relations.

2. Trade Liberalization is Unsustainable

Daly and Cobb (1989) criticize trade liberalization on the grounds that it undermines community in industrialized countries. This is because the enhanced mobility of capital that is part of modern free trade agreements like the the NAFTA inevitably have the effect of lowering wages and community standards:

Equalization of wages means the US and European and Japanese [and Canadian] wages fall to the Third World level, and that the Third World level rises hardly at all. By making the world of separate national communities into a single, common, overpopulated labour pool in the name of free trade, the United States [and Canada] would compete away the high standard of living of its working class - the majority of its citizens.

...Once community is devalued in the name of free trade there will be a generalized competing away of community standards. Social security medicare, and unemployment benefits all raise the cost of production just like high wages, and they too will not survive a general standards-lowering competition. Likewise, the environmental protection and conservation standards of the community also raise costs of production and will be competed down... (pp. 220-221).

Just as trade liberalization can undermine community as a result of enhancing capital mobility, it can harm natural communities and ecosystems as a result of increasing transfers of resources from one region to another. When seen from an ecological perspective, trade in renewable resources is an artificial transfer of products (such as wood, water, fish and grains) produced by living ecosystems (such as forests, rivers, lakes and fields) from one region to another. A certain amount of these transfers is sustainable. If too many resources are transferred, however, it can result in a loss of ecosystem integrity, which can undermine the ecological foundation upon which the human economy is based. Thus, trade can contribute to the destruction of forests, the diversion of rivers, the pollution of lakes, the depletion of fisheries and the degradation of soils.

Trade enables some countries or regions to live beyond their ecological means. A country like Japan or a region like Metro Toronto can survive and grow only by importing products and services from other ecosystems. If Japan or Toronto had to provide their own wood, energy, gravel, steel and food, they would very quickly stop growing. Moreover, if they had to absorb the waste they create after consuming these resources, they would quickly become choked with pollution. Fortunately, they have been able to import or borrow waste absorption capacity as well as resources from other regions and parts of the world.

The flip-side of this is that trade becomes a vehicle by which some regions become ecologically impoverished. There are many places where ecological damage has resulted from exporting too many resources. The rainforests of countries like Indonesia and Malaysia are well known examples, along with the temperate rainforest of Clayoquot Sound in British

Columbia, which logging companies plan to cut for export to Japan. The destruction of Canada's east coast fishery is another example. Throughout the 1980s and until the recent shut-down of the east coast industry, about 75 percent of fish caught in Canadian waters was exported, mostly to the United States. The massive quantities of fish that have been shipped out of the country have made Canada one of the world leaders in fisheries exports, but at a very high cost to the long-term health of the resource.

Most countries and regions, particularly in the industrialized or "developed" world, depend heavily on resources and ecological "services" such as the assimilation of pollution imported from other regions and countries. This concept has been expressed in terms of a country's "ecological shadow" (MacNeill et. al., 1991) or a region's "ecological footprint." (Rees, 1992) The problem is that as the economies of cities, regions and countries grow, the "footprint" that they leave on the world's ecosystems is becoming oppressive:

The reality is that the populations of all urban regions and many whole nations already exceed their territorial carrying capacities and depend on trade and natural capital depletion for survival. Such regions are running an unaccounted ecological deficit - their populations are appropriating carrying capacity from elsewhere or from future generations. (Rees and Wakernagel, 1992, p.10).

Regional ecological deficits do not necessarily pose a problem if import dependent regions are drawing on true ecological surpluses in the exporting regions. A group of trading regions remains within net carrying capacity as long as total consumption does not exceed aggregate sustainable production. The problem is that prevailing economic logic and trade agreements ignore carrying capacity and sustainability considerations. In these circumstances, the terms of trade may actually accelerate the depletion of essential natural capital, thereby undermining global carrying capacity. (Rees, 1992, p. 126).

This was recognized as a problem by Mahatma Gandhi in the early part of this century when he observed that it had required half the world's resources to bring England to its present state of development. How many worlds, he wondered, would it require for India to reach a similar state? More recently, the problem is seen in terms of global ecological degradation: acid rain; global warming; deforestation; desertification; thinning of the stratospheric ozone layer; water scarcity; soil degradation; loss of biodiversity; the accumulation of persistent toxic substances in ecosystems; etc. (Brown et. al., 1984 - 1993). Every year, scientists add to the body of research on "environmental trends that threaten to radically alter the planet, [and] that threaten the lives of many species upon it, including the human species." (WCED, 1987, p. 2).

Supporters of trade argue that given this predicament, what is required is further liberalization of trade. This is because trade can contribute to improvements in the efficiency with which resources are used. The more liberal trade, the more efficiently resources will be used and the more economic activity the earth's natural systems will be able to support:

In general, trade liberalization has an important positive role in fostering efficiency and wealth, and thus in promoting such environmental values as lower natural resource inputs per unit of output and the availability of funds for remedial clean up, technological development and other ecological purposes. (Richardson, 1992, p. 277).

Trade and environmental policies should be seen as being mutually supportive rather than in terms of conflicting interests. Trade spurs economic growth and helps provide the technical and financial resources to protect the environment, while a healthy environment provides the ecological and natural resources needed to underpin long-run growth stimulated by trade. (OECD, 1991).

While it is attractive to imagine that the solution to the world's environmental problems is enhanced economic growth through trade liberalization, this represents a case of extreme optimism. Improvements in efficiency are often initially expensive and take a long time to spread. Taking the world as a whole, the best that can be hoped for is an annual increase in energy and materials efficiency of 2% per year. (MacNeill, 1991, p. 26). Since overall economic growth rates for the world as a whole are expected to remain considerably higher than this, it seems that any efficiency gains through trade will be outstripped by growth in energy and material use:

Producing goods and services as efficiently as possible and with the most environmentally benign technologies available will move societies a long way toward sustainability, but it will not allow them to achieve it. Continuing growth in material consumption -- the number of cars and air conditioners, the amount of paper used, and the like -- will eventually overwhelm gains from efficiency, causing total resource use (and all the corresponding environmental damage) to rise. A halving of pollution emissions from individual cars, for example, will not result in much improvement in air quality if the total distance driven doubles, as it has in the United States since 1965. (From Growth to Sustainable Development, in Goodland et. al., (eds.) 1992, p. 123).

Instead of regarding trade as a tool to promote greater efficiency, trade may more accurately be seen as the means by which people -- mostly in the industrialized world -- have extended their ecological footprint all over the Earth.

As Alan Durning of the Worldwatch Institute has noted, supporting the life-style of the affluent requires resources from far away." The industrial countries include less than one-third of the world's population, but account for close to two-thirds of all use of steel, more than two-thirds of the world's aluminum copper, lead, nickel tin and zink, and three-quarters of its energy. In addition, "Their appetite for wood is a driving force behind destruction of the tropical rain forests, and the resulting extinction of countless species." (Durning, 1991, p. 156).

Overall, the approximately 25% of the world's people living in industrialized countries like

Canada consume about 75% of the world's resources and energy supplies. This imbalance, which is widely considered a major obstacle to sustainability, has been made possible by trade. Rather than expand trade, a contraction of trade in certain goods may be desirable. But how is this possible given the present world trend toward market integration and globalization of the economy?

3. Water and the Need for an Alternative Vision

The alternative to trade liberalization is the promotion of national and regional self-reliance. The principle of self-reliance has been extolled by leaders such as Ghandi as a solution to the economic and political problems affecting countries that formerly came under colonial rule. His solution was to promote economic self-reliance on the scale of the village:

India become impoverished when our cities became foreign markets and began to drain the villages dry by dumping cheap and shoddy goods from foreign lands..... Therefore we have to concentrate on the village being self-contained, manufacturing mainly for use. (quoted in Fischer, 1962, p. 291).

In industrialized countries like Canada, regional and community self-reliance is seen as a means of promoting economic security in the context of de-industrialization and the flight of capital brought on by trade liberalization (Ross and Usher, 1986; Nozick, 1992). Self-reliance can also be seen as a way of promoting ecological sustainability. This follows from a simple observation:

If all human populations were able to live within their own regional carrying capacities (i.e., on the 'interest' generated by natural capital within their home regions) the net effect would be global sustainability. (Rees, 1992, p. 31).

The promotion of economic self-reliance is an idea that stands in marked contrast to the current trend of of global economic integration. There is no reason, however, for rejecting the idea of living within our ecological constraints as a legitimate goal merely because the present state of our economic affairs deviates so drastically from it. In fact, Canadians have accepted certain aspects of this idea as legitimate. Our opposition to large-scale water exports is one example. There could hardly be a more egregious violation of the principle of living within regional ecological constraints than the diversion of water from one basin to another. If ecosystem integrity is our goal, water diversion -- damming the flow of a river and artificially transferring it to another basin -- is a radical form of disintegration. This is one of the reasons why over two-thirds of Canadians are opposed to large-scale water exports. (Clark and Gamble, 1989).

Even the Federal Government has recognized the need to prohibit large-scale water exports for ecological reasons. Noting that major inter-basin water transfers "augment flows in one watershed at the expense of another and alter, perhaps irreversibly, the hydrological and

environmental regime of both" the government is committed to take all possible measures within the limits of its constitutional authority to prohibit the export of Canadian water by inter-basin diversions; and strengthen federal legislation to the extent necessary to fully implement this policy. At the same time, recognizing that water export on a smaller scale may be permissible, the federal government promised to work with the provinces to develop a system for licensing small scale water transfers. (Environment Canada, 1987).

If we see the need to prohibit large-scale water exports, why are we more accepting of unrestricted exports of massive volumes of forest products, fish, and other resources? Like water, a certain amount of trees can be harvested without damaging essential ecological processes. But when the harvesting of trees for export reaches the point where whole forests are being destroyed, are we not justified in calling for restrictions based on the same rationale that we apply to large-scale water exports? Once we have accepted that there should be restrictions on the export of water, we might also consider the desirability of restricting exports of other resources for similar reasons.

The idea of restricting the export of resources on ecological grounds can also apply to goods that embody large quantities of resources or whose manufacture involves the degradation of ecosystems. Why, for example, do we reject water export by large-scale diversion while accepting exports of hydro-electricity generated by the same means? This question was raised by Chad Day and Frank Quinn in their study of inter-basin diversions:

A question remains whether there is any fundamental difference between committing water to export and building projects such as La Grande in Quebec for the generation of electricity which is then committed to export. (1992, p. 35).

Similarly, there may be ecological reasons for considering limits to the export of products that entail the use of large quantities of hydro-electricity, such as aluminium. It is also reasonable to consider the need for controlling exports of products that involve the direct consumption of vast quantities of water (as in irrigated agriculture) or the heavy pollution of aquatic ecosystems (such as pulp and paper).

The implications of these considerations for trade are far-reaching. They do not, however, imply that all inter-regional and international trade should cease; only that controls be placed on trade in those products which, if traded in sufficient quantity, entail the disintegration or destruction of ecosystems. This would still permit expansive trade in a wide range of goods and services.

The way our economy is structured, however, makes any contraction of trade a prospect that threatens jobs and livelihoods. This is because the economy is already heavily bound to international patterns of commerce. Because, as a rule, we no longer produce what we buy or buy what we produce, disruptions in these patterns can not be dealt with by an adjustment in the local economy. Thus, we are "trapped" in a global system of trade in which the only solution to our economic problems appears to be an expansion of trade. This is a

condition that Canada shares with many developing countries. Although it was meant to describe the extreme plight of countries in the developing world, Canadians will recognize certain similarities to their own circumstances in the following passage from Daly and Cobb:

Following the pressures of the market and the advice of the economists, they have given up their relative self-sufficiency, have specialized, and have entrusted themselves to the magic of the market. Their economies are based on the export of one or two commodities. They must export to survive, for they can no longer feed themselves, and they cannot pay for food imports without exporting... Meanwhile the terms of trade progressively deteriorate... (1989, p. 229).

Given the extent to which economies have become integrated into a global marketplace, how can we begin to disentangle ourselves from this web without causing great economic hardship? One possibility is to promote the establishment of economic activities on a smaller scale. The idea of developing economic integration on a regional scale is considered below.

4. Watersheds - Natural Regions

The idea of seeking regional self-reliance has been advanced though the concept and practice of "bioregionalism." (Sale, 1985) Bioregionalism has been described as "a teaching which helps people both to describe the bioregion where they live and then to live within its natural capacity to support life on a sustainable basis by ecological laws." (Aberly) Though by no means an easy task, the first step toward organizing the economy on a bioregional basis begins with the identification of appropriate regions. If our goal is to promote an ecological balance within each region, watersheds may be worth considering as a place to start.

The surface and groundwater conditions peculiar to a watershed constitute a set of essential parameters that govern virtually all life in the region. Other characteristics, including soils, flora, fauna, and even topography, are related in an integral way to a place's hydrological conditions. For example, watersheds that receive a small amount of runoff have evolved particular ecosystems with communities of plants and animals that are well-adapted to arid conditions. Places that receive plenty of rain, in contrast, have developed entirely differently. These factors, in turn, provide the basic circumstances governing the way humans are able to exploit regions for their own economic purposes.

Hydrological conditions do not necessarily constrain us from developing the human economy in ways that are out of proportion to the resources available. The southwestern United States is a well-known example of a region that defies its natural endowment of water by having engineered a large and complex system of water transfers. But there is concern that this empire built on impounded and redistributed water may not be sustainable:

Westerners call what they have established out here a civilization, but it would be

more accurate to call it a beachhead. And if history is any guide, the odds that we can sustain it would have to be regarded as low. (Reisner, 1986, p. 3).

Closer to home, a proposal to divert water from Georgian Bay to south-central Ontario has been criticized because it would alter development patterns in the region and encourage development on a scale that is inappropriate to local ecological constraints. As noted by John Jackson of Great Lakes United: "There are natural limits to how big these communities can be."

If living within the ecological constraints of a region is to be a key element of developing a sustainable society, a logical place to begin is by respecting the integrity of watersheds. The perceived need to divert water from one basin into another should be a signal that development in the affected regions is on an unsustainable path. Similarly, the transfer of large volumes of resources and/or goods that embody resources between watersheds may be considered unsustainable if it contributes to ecological degradation in the affected regions.

5. Governance by Watershed

One of the factors making watersheds a useful tool for identifying relevant bioregions is that they can be defined on a variety of different scales. Thus, where it is appropriate to organize economic activity on a relatively large scale, the aggregation of watershed can be expanded to comprehend a major drainage basin, such as the Great Lakes. Where it is more appropriate to organize activities on a smaller scale, a smaller watershed may be chosen.

Conservation Authorities

There is a history of watershed management and watershed planning in Ontario that could provide a basis for enhanced regional governance and the promotion of regional self-sufficiency. This has its origin in the 1942 Guelph Conference on the Conservation of the Natural Resources of Ontario, organized by several Ontario conservation and resource management groups. The Conference concluded that the waterways, soils, forests and wildlife of southern Ontario were in "an unhealthy state" requiring "far-reaching measures of restoration and conservation." The solutions proposed by the Conference anticipated resource management principles of today calling for integrated thinking on the basis of ecosystemic links:

What is needed is planning, on a provincial scale, the restoration and proper use in perpetuity of all the natural resources of southern Ontario. This planning must not consider reforestation, wild life management, soil utilization, water and erosion control as separate and uncoordinated items, but must treat them as inseparable and interlocking aspects of the one central problem. (Guelph Conference, 1942, p. 14).

It was suggested that the conservation plan put forward by the Conference could "be most usefully organized by river drainage basins, since these form natural conservation units which can be developed as convenient." (P. 13). The Report of the Guelph Conference was instrumental in bringing about the Conservation Authorities Act, first passed in 1946, which has been the legal basis for the establishment of Ontario's 38 Conservation Authorities. These autonomous corporate bodies exemplify a form governance by watershed.

Conservation Authorities are formed when the municipalities within a particular watershed decide that it is to their mutual advantage to plan resource management together according to their local needs. The provincial government, through the ministry of Natural Resources, supports them in a partnership by providing technical assistance and funding. The major activities of Conservation Authorities involve mitigating flooding and erosion, promoting public awareness of such things as regulating floodplain development, reforestation and erosion control, and providing recreational opportunities such as camping and hiking. Conservation Authorities are not part of the provincial government and they own the lands (over 100,000 hectares across the province) they administer.

The Conservation Act stresses three basic principles: local initiative and involvement in the formation and work of conservation authorities; co-operation between municipal and provincial government; the watershed as a resource management unit. The idea that the relatively small scale of these regions encourages local participation in activities that are to the benefit of all in the region is central to the working of every Conservation Authority:

The working unit of an authority is formed around a watershed. The act is designed to harness local interest in, and responsibility for, resources management. Under the act, an authority can be formed only as a result of local initiative; its projects are carried out largely as a result of local interest. (Reynolds and Ujjainwalla, 1974 p. 254).

Local interest in organizing communities around watersheds has grown in Ontario through the 1980s and resulted in novel associations. For example, people in the communities of the Grand River Basin formed the Grand River Watershed Congress (GRWC) in the late 1980s. The Congress co-ordinates the activities of Non Governmental Organizations in the region and has taken steps to develop a management plan for the River in order to have it designated a Heritage River under the Canadian Heritage Rivers System. Inhabitants of the Grand River Basin also have their own bi-monthly newspaper which covers news within and promotes awareness of the watershed as a bio-region. (Cadence Communications).

Considering watersheds as basis of governance has had a rich history in Ontario. It may also have a future. As noted by Ottawa freelance writer, Penny Sanger, "Rule by watershed might be the only truly modern way to run Canada." (1991).

The Greater Toronto Bioregion

The need for planning urban development on a bio-regional basis was addressed by the Royal Commission on the Future of the Toronto Waterfront, Chaired by the Hon. David Crombie. The Commission adopted the Greater Toronto Bioregion as the focus of its work, noting that "in order to truly understand the waterfront itself, we must gain an understanding of the biological region, or bioregion, in which it lies."¹ (1990, p. 22).

The Royal Commission adopted the "ecosystem approach," to study the Greater Toronto Bioregion. This is based on the notion that "to deal effectively with the environmental problems in any ecosystem requires a holistic or "ecosystem approach" to managing human activities..." (1992, p. 11). In defining and applying the ecosystem approach to the management of human activities, the Commission put forward a number of principles to promote economic organization on a bio-regional basis. Three principles discussed in the Commission's final report (1992) are worth noting for the purposes of this section. They are: The ecosystem as "home"; Sustainability; and Understanding Places.

The ecosystem as home: An understanding of the ecosystem as an extension of ourselves marks a departure from the traditional view of the environment as something that surrounds us:

An ecosystem is a home, with a spiritual dimension transcending its physical structures. The idea of the ecosystem as home implies that a far deeper relationship exists between people and the environment than has been generally accepted.

Sustainability: The ecosystem approach requires that human activities become environmentally sustainable. While the idea of sustainable development is supported by virtually everyone, the question of how to put it into effect is a matter of much debate. Recognizing this, the Royal Commission suggests that we consider changing our view of economic growth: Perhaps... we should strive for development that offers "qualitative change in a physically non growing economic system in dynamic equilibrium with the environment (as described by Herman Daly and John Cobb (1989) in their book, *For the Common Good*). In other words, we have to sustain natural capital -- forests, foodlands, clean air and water, minerals -- and live off the interest. While that may sound simple, it in fact means making a fundamental shift from a consumer to a conserver society, reducing consumption and learning to do more and better with less. (p. 39).

Understanding Places: This principle can be stated as: identify with your ecosystem." The Royal Commission urged that people need to place themselves conceptually and plan their activities within natural boundaries based on such characteristics as drainage patterns,

¹ The Greater Toronto bioregion is bounded by the Niagara Escarpment on the west, the Oak Ridges Moraine to the north and east, and Lake Ontario to the south.

landforms, vegetation and climate. This will help focus attention on the interdependencies and links that exist within ecosystems so as to work with natural processes instead of against them.

Identifying with ecosystems also helps to fulfil the need to feel connected with the natural world in a daily, physical way. Failure to do this has resulted in a loss of distinct regional identity. This is illustrated by the homogeneity of urban development in cities across North America. By taking advantage of the special natural characteristics of a region, the Royal Commission suggests we can create more distinct, memorable and enjoyable places. This has the added advantage of helping to develop regional economic strategies building on existing natural advantages.

While it is too early to judge the outcome of the Royal Commission's work, a number of factors suggest that its recommendations and the ideas that it has put forward are likely to have a strong impact. Even at the stage of delivering its second interim report in 1990, its 80 recommendations were endorsed by most affected municipalities as well as representatives of business, labour, environmental and community groups. The Commission's final report has received an equally favourable reception and in many cases, steps have already been taken to implement the Commission's recommendations.

That the Government of Ontario has established the Waterfront Regeneration Trust to build on the work of the Commission suggests that the Royal Commission's legacy will go beyond its final report. Moreover, as the ecosystem approach gains adherents in the Toronto region and elsewhere, the work of the Commission is bound to be recognized as both innovative and effective.

The Great Lakes

As a distinct bio-region shared between two countries, it has long been recognized that issues involving the Great Lakes must be addressed in a co-ordinated fashion. As early as 1909, the Boundary Water Treaty established common principles for natural resource use "along the common frontier" between Canada and the United States and created the International Joint Commission to oversee the implementation of these principles.

Over the past century, the Great Lakes region has developed a unique economic, regulatory and institutional culture. As well as international and inter-governmental co-operation involving both federal governments, Ontario and the eight Great Lakes States, this culture is characterized by a high degree of public involvement. Within the Great Lakes Basin, there is a strong and growing network of community, labour, environmental and citizens' groups that actively participate in and contribute to decisions that affect the whole region. Great Lakes United, a coalition of 180 such groups, has become an important participant in all decision-making processes involving the watershed.

The evolution of the Great Lakes Water Quality Agreements of 1972, 1978 and 1987 exemplify the extensive inter-governmental cooperation and public involvement that characterize the region. Citizen groups acted as observers in the 1987 renegotiation of the Agreement, prior to which, Great Lakes United held hearings around the lakes to solicit suggestions from citizens of the basin. The Agreement incorporates the idea that the Great Lakes form an "ecosystem" and recognizes that "restoration and enhancement of the boundary waters cannot be achieved independently of other parts of the Great Lakes Basin Ecosystem with which these waters interact."

Lessons drawn from co-operative efforts to manage the shared water resources of the Basin have served as "jumping off points" for further regional planning and co-operation initiatives. A number of bi-national and interstate cooperative ventures have been launched to build and promote a Great Lakes tourist industry including a region-wide system of scenic routes known as "The Great Lakes Circle Tour." (Federal Reserve Bank of Chicago, 1991, p. v.).

Governments in the Great Lakes Basin recently have begun to consider the idea of developing a Great Lakes regional economy. To this end, the governments have begun to discuss the possibility of economic co-operation in the form of enhanced joint tourism ventures, worker training and apprenticeship, information technologies and networks and the development of environmental industries. (Crane, 1993).

6. Conclusion

Neither Conservation Authorities, the work of the Royal Commission on the Future of the Toronto Waterfront nor the development of a Great Lakes regional economy are specifically intended to foster regional economic self-sufficiency. The purpose in giving these examples is to show that governance on a bio-regional basis is not just an ideal, but that it has actually been put into effect in a limited way. From this foundation, it is possible to envisage a new economy that is characterized more by regional networks of producers and consumers than by continental linkages.

In proposing an alternative to trade liberalization, it is necessary to show that economic development involving further trade liberalization is not compatible with environmental sustainability. We use water as an example of a resource that most people agree should not be exported in great quantity because of the deleterious ecological impact this would have. Other renewable resources should be considered in the same light. Rather than be expanded, trade in resources or in goods that embody resources needs to be controlled so that it does not undermine the integrity of the ecosystems from which resources are drawn or deposited (as garbage or pollution) after production.

One way to ensure that trade is carried out on a sustainable basis is to promote greater economic self-sufficiency within regions. This would relieve pressure on ecosystems that results from export-oriented economies and would encourage their sustainable use through

achieving a closer proximity between production and consumption. If each region were economically self-sufficient, the net result would be a more sustainable global economy as well as stronger and more stable local economies.

An appropriate place to begin when defining trading regions is with the natural, biological features of the land. Watersheds have been recognized by many people as natural regions within which to organize political and economic structures. To the extent that more and more people have begun to think of themselves as inhabitants of a particular watershed or bio-region, the emergence of a counter-trend towards economic decentralization and the development of regional self-sufficiency may already be discerned.

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