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Canada's International Waters

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Abstract

The Boundary Waters Treaty of 1909 is the basis of present arrangements to study and assess the utilization of the "international waters" between Canada and the United States. This report outlines the main features of the Treaty and discusses some of its effects.

The International Joint Commission (IJC), established under the Boundary Waters Treaty as a permanent tribunal, has the essential role of seeking solutions to conflicts involving boundary waters. Examples are given in this report of problems and investigations before the Commission.

The development of the Canada Centre for Inland Waters (CCIW), which is administered by the Department of the Environment, is explained and its concept and plan defined.

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"International waters" can be defined as the waters of those rivers crossing the boundary between Canada and the United States, as well as those bodies of fresh water through which the boundary passes. The total length of this international boundary is about 5,000 miles, including 2,200 miles of rivers and lakes. For the remainder of its length, the boundary intersects many rivers, some of which cross it several times. Generally, the term "international waters" tends to suggest the St. Lawrence River or the Columbia River, the Great Lakes or the Red River. Actually there are about 300 streams, rivers and lakes along the boundary common to Canada and the United States. This paper outlines the international arrangements which have been made for the study and utilization of a few of the major "international waters".

The basis for such arrangements has been the Boundary Waters Treaty of 1909. Before outlining the main features of the Boundary Waters Treaty, a brief resume of the development in the legal regime of international rivers between British North America and the United States would be of interest.

In 1783, the Treaty of Paris between Great Britain and the United States conceded territorial jurisdiction of boundary waters on their respective sides up to the line itself. The Jay Treaty in 1794 provided for freedom of passage by land or water into the respective territory of each country and freedom of navigation and trade. Armament was limited on the Great Lakes, Lake Ontario and Lake Champlain by the Rush-Bagot Agreement of 1817. The Webster-Ashburton Treaty of 1842 specified that certain sections and channels of the boundary waters from the Lake of the Woods, up to and including the international reach of the St. Lawrence River, should be equally free and open to the use of the citizens and subjects of both countries. In 1846 the Northwest Boundary Treaty gave British subjects the right to navigate the Columbia River to the ocean.

In 1871 the Treaty of Washington ruled that navigation of the St. Lawrence to the sea, from the point where it ceases to form the boundary, "should forever remain free and open for the purpose of commerce to the citizens of the United States". The Treaty provided to U.S. citizens the use of the Welland, St. Lawrence, and other Canadian canals on terms of equality with Canadian citizens in return for the United States granting of

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similar rights in the St. Clair Flats Canal and in other canals connected with the navigation of the Great Lakes. The Treaty also provided for free navigation of the Yukon, Porcupine and Stikine Rivers to the citizens and subjects of both countries. In connection with the dispute between the United States and Mexico over Rio Grande waters, the Harmon doctrine was enunciated in 1895, stating that there was no obligation on the part of the United States to deny to its inhabitants the use of water lying wholly within the United States, despite resultant reduction in volume below the boundary. It was decided that such a duty was inconsistent with Sovereign jurisdiction over national domain.

In 1907 negotiations began which led to the signing of the Boundary Waters Treaty on January 11, 1909. This Treaty was ratified by both governments in 1910. In 1912 the International Joint Commission was established with its full complement of six Commissioners — three Canadians and three Americans.

The concept of the negotiators of the Treaty was that solutions to problems in which the two countries had differing interests should be sought through joint deliberation of a permanent tribunal. The Commissioners would act, not as separate national delegations under instruction from their respective governments, but as a single body seeking common solutions. These solutions would be in the joint interest of the countries and in accordance with agreed "rules or principles" set out in the Treaty. This is the basis on which the Commission has operated over the years, reaching unanimous agreement in almost every case.

The Boundary Waters Treaty of 1909 specifically settled two international water problems that had existed between Canada and the United States — the division of water at Niagara Falls for power generation and the apportionment of waters of the St. Mary and Milk Rivers on the Prairies for irrigation. In addition to establishing the International Joint Commission and defining its jurisdiction and authority, the Treaty laid down rules of general application to be observed in future by both countries and the Commission in dealing with boundary waters and waters crossing the boundary. In brief those rules are:

- (1) Both countries shall have each on its own side of the boundary equal and similar rights in the use of "boundary waters" defined as "the waters from main shore to main shore of the lakes and rivers, connecting waterways, or the portions thereof, along which the International Boundary ... passes, including all bays, arms and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers and waterways or waters flowing from such lakes, rivers and waterways, or the waters of rivers flowing across the boundary".
- (2) Boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other.
- (3) Navigation of all navigable boundary waters shall forever continue free and open for the purposes of commerce to the inhabitants and to the ships of both countries subject to any laws or regulations of either country within its territory not inconsistent with such privilege of free navigation and so long as the Treaty remains in force this same right shall apply to the waters of Lake Michigan and to all existing and future canals connecting boundary waters.

- (4) An order of precedence for conflicting uses of boundary waters shall be observed "and no use shall be permitted which tends materially to conflict with or restrain any other use which is given preference over it in this order of precedence:
- (i) uses for domestic and sanitary purposes;
 - (ii) uses for navigation including the service of canals for the purposes of navigation;
 - (iii) uses for power and irrigation purposes".
- (5) Unless otherwise provided by special agreement between the two governments the approval of the International Joint Commission is required for any uses, constructions, or diversions of boundary waters on either side of the line which affect the natural level or flow of waters on the other side of the boundary; and for any dams or obstructions below the boundary in rivers crossing the boundary or flowing out of the boundary waters which raise the natural level of waters in the other country.
- (6) Each country has exclusive jurisdiction and control over the use and diversion of all waters on its own side of the boundary which in their natural channels would flow across the boundary or into boundary waters; provided that if, through such use or diversion in one country, injury is caused on the other side of the boundary the injured party is entitled to ... "the same legal remedies as if such injury took place in the country where such diversion or interference occurs ..." Thus, in cases of this nature the courts of the upstream country are open to the inhabitants of the other.
- (7) "Any questions or matters of difference" arising between the two countries "involving the rights, obligations or interests of the United States or of the Dominion of Canada either in relation to each other or to their respective inhabitants may be referred for decision to the International Joint Commission...", whenever either government requests such reference.

In giving the International Joint Commission jurisdiction to pass upon all cases requiring its approval pursuant to item (5) above, the Treaty provides that the Commission may make its approval conditional upon the construction of remedial or protective works to compensate so far as possible for the particular use or diversion proposed.

The Commission does not maintain a large technical staff to carry out its investigations. It is authorized by the governments in each case to consult the best qualified experts in the public services of the two countries. By taking full advantage of this authority, the Commission has developed a novel and effective mechanism and procedure for assembling and coordinating the information and advice it requires. The Commission selects the appropriate experts and assembles them into "International Boards". There are 28 of these Boards at work, some engaged in investigatory work preliminary to Commission Reports, others in a supervisory role in situations already the subject of Commission action. On the whole, this system of joint international boards has proved an effective means of mobilizing the variety of talent and experience required for the Commission's business.

When the Commission issues an Order approving an application subject to certain conditions designed to ensure protection and indemnity of interests that might be injured, it usually appoints an International Board of Control to ensure that the applicant complies with all the terms of its Order of Approval.

Problems currently before the Commission are in three categories. There are problems still under investigation pursuant to a reference from the governments, e.g., Great Lakes Water Levels Reference of October 6, 1964. There are studies on which the Commission has reported and made recommendations and the governments, in accepting them, have given the Commission a continuing role in implementation. In addition cases exist where the Commission, having issued an order, must keep in touch with the situation to ensure that operation of the approved works meets with the terms of such an order.

Illustrative of the latter type of situation is the Order of Approval issued by the Commission in 1914 for the regulation of the levels of Lake Superior by a dam at Sault Ste. Marie. The Order requires that levels be maintained, as nearly as possible, within a range of $1\frac{1}{2}$ feet instead of the natural range of $3\frac{1}{2}$ feet. The International Lake Superior Board of Control, consisting of one Canadian and one American, was created to ensure compliance and to formulate the rules of operation needed to maintain the prescribed levels. Through the agencies of these members, studies have been and continue to be carried out to prepare and improve the operating rules. Changes in gate settings to regulate the flows are made by the owners of the works or by federal agencies with facilities near the works, in accordance with instructions issued by the Board. These operating rules are sometimes waived with the approval of the Commission if the Board decides that any such departure from the rules would either provide beneficial effects or would provide relief from adverse effects to a particular interest, without appreciable adverse effects to any of the other interests. For example, during 1964 and 1965 when the Lower Great Lakes were at or near record low levels, supplies to Lake Superior were such as to permit the release of additional water to improve conditions downstream. By the end of August 1965, the additional flows released by the Board with Commission approval had raised the levels of Lakes Huron and Michigan by about 4 inches, with a concomitant lowering of Lake Superior levels by about 5 inches.

An example of an investigation which has been completed is that pertaining to the Pembina River for which the recommendations of the Commission are under consideration by the governments. The Pembina River is a tributary of the Red River, flowing from Manitoba into North Dakota. In 1962, the Commission was requested to determine a plan or plans of cooperative development of the waters of this basin that would be practicable, economically feasible and to the mutual advantage of the two countries. Factors to be considered were domestic water supply and sanitation, flood-control, irrigation, and other beneficial uses. The Commission set up an International Pembina River Engineering Board, three members from each country, to carry out the technical investigations and studies necessary to enable the Commission to prepare and submit its report and recommendations to the two governments. The Board established an Engineering Committee composed of representatives of federal-provincial and state agencies to carry out the detailed studies and investigations. In the main, the work was apportioned and carried out by the agencies represented on the Committee. The report, prepared by the Board and the Committee, was submitted to the Commission in December 1964. The Board considered 15 plans of improvement of which only three met the requirements of the Reference. The Commission,

in October 1967, recommended to the governments a multi-purpose plan of development involving two reservoirs, one in Canada and one in the United States. These reservoirs would incorporate flood control, irrigation, municipal and industrial water supply, recreation, and fish and wildlife features. Also included in the plan was an apportionment of waters of the Pembina to achieve the benefits from the recommended plan. A division of the costs between the two countries in implementing the plan was recommended so that the ratio of total separable economic gains to the total annual costs of the joint project works would be the same for each country.

One of the major investigations currently underway concerns the regulation of the levels of the Great Lakes. Recognizing the problems created by the record or near-record low levels experienced in the lower lakes in 1964, and recalling the extreme high levels of 1952, the two governments forwarded a Reference to the Commission requesting a study of the various factors which affect the fluctuations of the water levels of the Great Lakes and their connecting waters. The Commission was also asked to determine whether, in its judgement, action would be practicable and in the public interest to regulate further the levels of the Great Lakes or any of them and their connecting waters to bring about a more beneficial range of stage for such uses as domestic and industrial water supply, navigation, power generation and recreation. In other words, is it feasible to extend to all of the Great Lakes the sort of regulation that is now in effect on Lakes Superior and Ontario? Only measures within the basin are to be considered. The Commission's studies do not include the possibility of introducing additional waters by diversion from other watersheds. This assignment involves one of the most extensive hydrological studies ever undertaken anywhere.

The Commission created an International Great Lakes Levels Board to coordinate necessary investigations and studies. The Board established a Working Committee to direct the detailed operations and to coordinate the great many activities involved in these studies. Realizing the extensiveness of the study and its multiple aspects, the Working Committee set up five subcommittees responsible for different phases of the work — shore property, navigation, power, regulatory works and regulation studies. There are perhaps 25 federal, state, and provincial agencies involved in the study and their work is coordinated at the field level by the subcommittees. The work of the subcommittees is coordinated and directed by the Working Committee. The Board sets the overall policy and provides general guidance in the studies. Although this investigation is being pressed forward with all deliberate speed, it is not anticipated that the report will be completed before 1973. The total cost of the investigation is estimated to be about \$5,000,000.

One of the most interesting investigations of international waters was undertaken in 1944. The governments of Canada and the United States requested the International Joint Commission to undertake investigations to determine whether further developments in the water resources of the Columbia River Basin would be practical and advantageous to both countries. The International Columbia River Engineering Board was created by the Commission to undertake the necessary investigations. The Board reported in 1959, indicating that there were a number of sites in Canada suitable for the construction of large storage reservoirs that could be used to regulate the Columbia River for the benefit of both the United States and Canada. The Board presented three development plans of almost equal merit but did not attempt to indicate how these plans could be developed in a step by step approach, or how the benefits of those plans should be divided between the

two countries. In January 1959 the two governments requested the Commission to make a special report on principles for the calculation and apportionment of the benefits that would result from a cooperative development of the Columbia River Basin. The Commission submitted its recommendations to the governments in December 1959. The next phase began in February 1960 with the commencement of direct negotiations between representatives of Canada and the United States concerning the selection, construction and cooperative use of specific projects. These negotiations led to the signing of the Columbia River Treaty on January 17, 1961 in Washington.

In March 1961 the United States Senate adopted a resolution approving the Treaty. However, since ratification did not take place in Canada, formal negotiations were resumed between the two countries. Meetings between President Kennedy and Prime Minister Pearson took place in the Spring of 1963. At the same time the first of a new series of meetings between representatives of British Columbia and Canada were held in Ottawa in June 1963. A draft agreement was produced, outlining respective responsibilities of the two governments in the development of the Columbia River. The main Agreement was signed on July 8, 1963 and a Supplementary Agreement on January 13, 1964.

Canada-United States negotiators held their initial meetings in Ottawa in August 1963. Consideration was given to a Canadian draft of an Exchange of Notes and Protocol. These negotiations continued until January 1964 when agreement was reached on the final substance of the documents. On January 22, 1964 the Protocol and other documents relating to the Treaty were signed at Washington and the development of the Columbia River was begun. The Treaty provides each country with substantially greater benefits than if each country had independently undertaken separate plans of development.

Under the terms of the Treaty a Permanent Engineering Board was created, consisting of two members to be appointed by Canada and two members by the United States. The Board is to report to Canada and the United States whenever there is substantial deviation from the hydro-electric and flood control operating plans and if appropriate, to include in the report recommendations for remedial action and compensatory adjustments to assist in reconciling differences concerning technical or operational matters that may arise between the Entities provided for under the Treaty by which they are empowered and charged with the duty of formulating and executing the operating arrangement necessary to implement the Treaty; and to make reports to Canada and the United States, at least once a year, on the results being achieved under the Treaty and special reports concerning any matter which it considers should be brought to their attention.

To enable the International Boards to carry out their investigatory or supervisory responsibilities, the Inland Waters Branch of the Department of the Environment operates 90 international streamflow and water level stations cooperatively with the Water Resources Division of the United States Geological Survey. These stations are located close to the boundary on the more important streams crossing the boundary. More than twice that number of stations are maintained by the Inland Waters Branch on the main stem of rivers in Canada or on boundary waters in connection with its responsibilities for collecting data on Canada's water resources.

Probably the most important of Canada's "international waters" in terms of their scale and potential consequences — economic, social and political — are those of the Great Lakes-St. Lawrence River system. Here

the most urgent problem is water pollution. Polluted lakes and rivers which straddle or cross the border may affect health and property on both sides of the line. Reports of increasing pollution of North America's water resources and the prospect of critical regional shortages of clean water has dramatically alerted the public to the dangers of pollution.

The Great Lakes are absolutely vital to Canada. One third of our people live in the Great Lakes-St. Lawrence Basin where fully half of our industrial productivity is generated. Because of their size the Great Lakes can absorb a great deal of abuse from many users. However, in the past decade or so burgeoning populations have artificially hastened pollution, including eutrophication problems, to the danger level in parts of the Lakes. At the same time, an unprecedented demand has been created for clean water for domestic and recreational use. On both sides of the border there has been increased navigational use of the St. Lawrence Seaway, increased demand for cooling water for nuclear and conventional thermal power plants, expanding water-hungry industrial developments, a growing demand for recreational facilities and many other requirements for use of these waters. Municipal, state, provincial and federal statutes, regulations and agencies of the two countries have significant importance in managing the water resources of the Great Lakes Basin.

In October 1964, the two governments requested the International Joint Commission, in addition to a study of the regulation of the levels of the lakes, to investigate the pollution of Lake Erie and Lake Ontario and the International Section of the St. Lawrence River. The governments stated that they would be agreeable to extending the Reference to other boundary waters in the Great Lakes Basin at an appropriate time. The Commission created two Water Pollution Boards for Lake Erie, and for Lake Ontario and the International Section of the St. Lawrence River. Key questions were put to the Commission. Are these waters being polluted on either side of the boundary to an extent that is causing injury to health or property on the other side? If so, in what localities, by what causes, and what remedial measures would be most practicable in the Commission's judgement? It was obvious that an answer to these questions within a reasonable length of time would require very intensive efforts. Up until the mid-sixties, research efforts on the Great Lakes had been generally sporadic on both sides of the border. Thus, the Reference posed questions for which available data and studies could not provide answers. In Canada, both federal and provincial governments responded. The Ontario Water Resources Commission established extensive survey and monitoring programs of near-shore waters and interconnecting rivers.

The Government of Canada assumed responsibility for major lake surveys and established the Canada Centre for Inland Waters (CCIW) at Burlington, Ontario, at the western end of Lake Ontario. The Prime Minister had designated the Department of Energy, Mines and Resources as the coordinating agency for federal water programs. The capital costs of the Centre and the coordination role were assumed by the Inland Waters Branch (IWB). The Inland Waters Branch, now of the newly-created Department of the Environment, will continue this role. The Fisheries Research Board (FRB) and the Department of National Health and Welfare undertook complementary studies and surveys for the IJC Pollution Reference and became actively involved in the work of the Centre. The reports of the Pollution Boards have been submitted to the Commission which has held public hearings to obtain the views of interested persons and agencies.

While the Reference to the International Joint Commission provided an impetus for the development of CCIW, the concept of the Centre is a much broader and more comprehensive one than that initiated for the Commission's studies. The plan for CCIW is to develop a complete comprehensive interdisciplinary centre of excellence in water resources research, which will embrace activities of the Department of the Environment, major university involvement and extensive cooperative programs with industry.

Initially, in 1967, CCIW was housed in interim accommodation — a trailer complex of 25,000 square feet (2,325 square meters). In 1970 the workshop, warehouse, heating plant, and Research and Development Building were completed and occupied by CCIW. It is expected that the main laboratory and administration building will be available for occupancy in February 1972.

The work of CCIW so far has been largely concentrated on the Great Lakes, although initial studies on other Canadian lakes are underway and future plans call for application of expertise gained on the Great Lakes to be applied to other Canadian lakes and reservoirs as needed. The establishment of a government Great Lakes monitoring function is permitting the University community, especially the Great Lakes Institute at the University of Toronto, to concentrate more on teaching and special research projects.

The tremendous advantage of a Centre such as CCIW is the opportunity to tackle problems from comprehensive multi-disciplinary points of view. For example, a major objective of the pollution aspects of the Great Lakes research program at CCIW is to be able to predict accurately the effects on the lake environment of increases or decreases in the input of pollutants at various locations on each of the four Great Lakes bordering on Canada.

To develop a comprehensive mathematical model which would permit such predictions, involves physical studies of circulation, diffusion, and thermal budgets; investigations of chemical interactions; studies of interactions between sediments and overlying waters, and biological processes in the lakes. In addition to this "natural sciences" system model, work has been completed on socio-economic inputs to a comprehensive basin model of the Saint John River System, by another group in the Department of the Environment.

The organization of CCIW also permits rapid input of information from other agency research programs in Canada to help solve Great Lakes problems. For example, information gained from FRB's experimental lake eutrophication studies in the Kenora area will be an important input. The compilation of an atlas is another comprehensive type of project made possible by such an organization as CCIW. The aim was to depict and summarize such parameters as temperature, dissolved oxygen, currents and other Great Lakes data; to aid in design of lake structures, location of water intakes and sewage outfalls, and in other engineering problems. The atlas project was conducted in collaboration with the University of Toronto, the Ontario Water Resources Commission, and the Atmospheric Environment Service, Department of the Environment.

The Canada Water Act was enacted to provide where there is significant national interest, the framework for a cooperative management approach to effective conservation, multiple-purpose development and efficient use of water resources. The Department of the Environment is the agency responsible for administering the Act. It is the intention of the Act that such programs will be undertaken in concert with one or more provincial governments having

an interest in the management of those waters. Where an agreement with a provincial government for such a program cannot be reached and there is significant national interest in the resource, the Department may undertake the program independently.

New products and industrial processes have engendered a major threat to the quality of the environment; new technology and its prospects have brought with it a wider range of technical alternatives; and new uses or modifications in existing ones, such as water-based recreation, have expanded rapidly. The current and emerging water resources problems and opportunities across Canada are probably more complex than those which may have been envisaged by the architects of the Boundary Waters Treaty.

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