INTERNATIONAL WATERSHEDS INITIATIVE

25TH ANNIVERSARY SHOWCASE REPORT
OCTOBER 2023

Building on the Achievements of the IWI as a Binational Solution to Transboundary Water Issues


25
INTERNATIONAL WATERSHEDS INITIATIVE
INTERNATIONAL JOINT COMMISSION • COMMISSION MIXTE INTERNATIONALE
INITIATIVE INTERNATIONALE SUR LES BASSINS HYDROGRAPHIQUES
1909

EXECUTIVE SUMMARY

In 1997, in response to a request from the Canadian and United States governments to look ahead to its role in the 21st Century, the International Joint Commission (IJC) made recommendations which would influence the trajectory of binational dispute prevention and watershed stewardship. The IJC proposed the creation of what became known as the International Watersheds Initiative (IWI) to assist in fulfilling the purpose of the Boundary Waters Treaty. On the 25th anniversary of the IWI in 2023, it is fitting to consider achievements and look ahead to the next 25 years.

The key innovation proposed by the IJC was the establishment of "international watershed boards" across the boundary. This proposal grew out of IJC experience with an ecosystem approach working under the various versions of the Great Lakes Water Quality Agreement since 1972. The proposal has become an ongoing or standing reference under which the IJC has issued five reports to date.

The foundation of the IWI is an integrated water resource management approach, which helps to understand, manage and develop water resources in a sustainable and balanced way, taking into account social, environmental, and economic interests.

Over time, IJC commissioners and staff have strengthened the capacity of IJC boards, provided funding for many projects, established three international watershed boards (St. Croix River, Rainy-Lake of the Woods and Red River) and a pilot watershed board (Souris River), launched a scoping exercise for possible future watershed boards, and developed and improved an IWI project management framework with guiding principles, amongst other achievements.

Other successes include improved outreach and communications, a seamless data set for each transboundary basin in which IJC works to facilitate binational projects, a binational water quality model for the Great Lakes, Rainy-Lake of the Woods, and Red-Assiniboine basins to gain a fuller picture of the sources of excess nutrients across the contributing binational watersheds, and a Climate Change Guidance Framework to address an IJC priority with the objective of supporting the boards in their management of climate-related risks.

There have been achievements responsive to needs identified by local communities in the following transboundary watersheds: St. Croix River, Rainy River-Lake of the Woods, Red River, Souris River, St. Mary-Milk Rivers, Kootenay Lake and Osoyoos Lake. These projects created new scientific information, contributed to communication of watershed issues, fostered a productive dialogue and collaboration, and built important long-term relationships amongst all the local participants.

Transboundary watershed challenges will become more complex and multiply over the next 25 years. These include the climate change emergency, threats to water quality, and habitat loss and biodiversity, among others. There is also a need and a challenge to form watershed boards in all transboundary watersheds shared by Canada and the United States. The IWI can also benefit from improved Indigenous collaboration and participation, additional resources, and strengthened agency participation. The IJC will consider a number of steps to address these challenges and will continue to be guided by the watershed approach.

The Parties are to be commended for their foresight in supporting the IWI with both funding and oversight a quarter century ago. With their continuing support, the future of transboundary watersheds is bright indeed.

INTRODUCTION

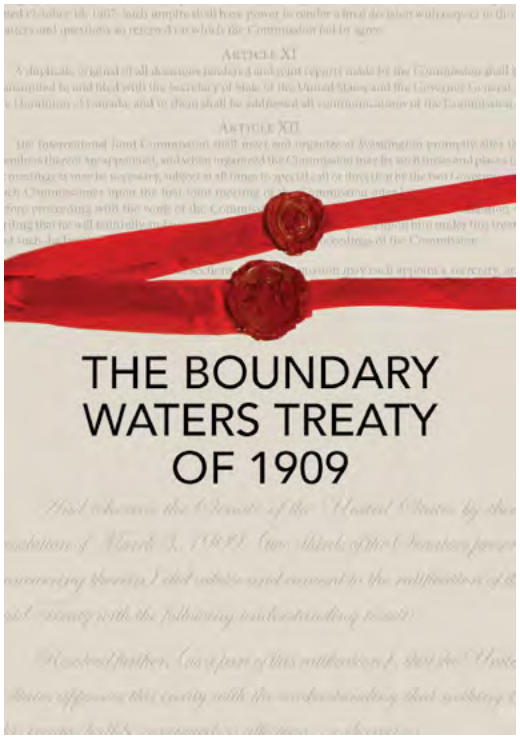
Water knows no international boundaries. Along the border between the United States and Canada, the governance challenges posed by this physical reality gave rise to the Boundary Waters Treaty of 1909 (BWT) and creation of the International Joint Commission (IJC or Commission). BWT's fundamental insight was and continues to be that disputes arising in lakes and rivers and their watersheds that straddle international boundaries are best prevented or resolved in a spirit of mutual cooperation. A commitment to joint fact finding and shared decision making are fundamental to the success of this approach, which other jurisdictions have sought to emulate.

In 1997, in response to a request from the Canadian and United States (U.S.) governments to look ahead to its role in the 21st Century, the IJC made recommendations which would influence the trajectory of binational dispute prevention and watershed stewardship. Building on what was then almost nine decades of experience under the BWT, the IJC proposed the creation of international watershed boards to assist in fulfilling the BWT's purpose. A key underlying principle was that binational watershed stewardship is best achieved in part through community engagement and expertise while taking an ecosystem approach. Over time, the International Watersheds Initiative (IWI) has come to rest on these and other key principles:

1. An integrated ecosystem approach to transboundary water issues.
2. Binational collaboration.
3. Involvement of local expertise.
4. Public engagement.
5. Balanced and inclusive board representation.
6. Open and respectful dialogue; and
7. An adaptive management perspective.

Like the Boundary Waters Treaty itself, the IWI is pioneering methods of knowledge-building towards better understanding of water management, stewardship, and diplomacy. On the 25th anniversary of the IWI in 2023, it is fitting to consider achievements and look ahead to the next 25 years. Since its inception, support from the U.S. and Canadian governments has enabled the IWI to help any interested Commission boards meet their objectives through specific watershed projects. More broadly, boards designated international watershed boards have proven valuable in contributing to shared understanding and action in communities located in transboundary watersheds. The coming quarter-century provides an opportunity for the IWI to have an even greater constructive impact on all transboundary basins shared by Canada and the United States.

This special 25th anniversary report provides an overview of the IWI's origins, development, successes and needs, and suggests ways the IWI could be calibrated to meet recurring short-term needs as well as emerging trends that will likely have significant long-term impacts.



The cover of the Boundary Waters Treaty of 1909.

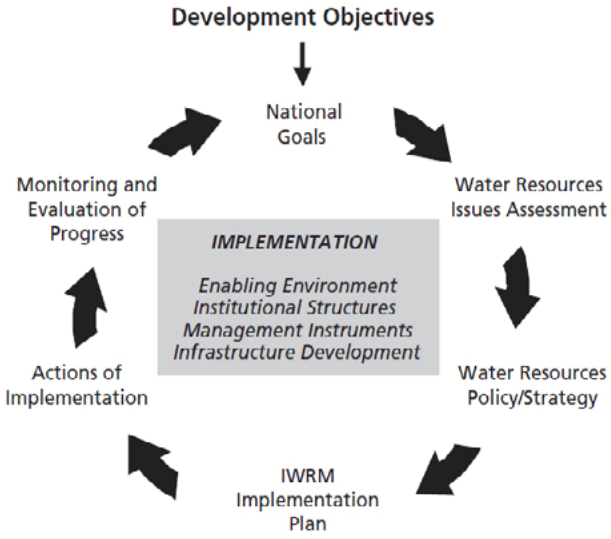
THE WATERSHED APPROACH — THE SOLUTION FOR THE 21ST CENTURY

Basic Concepts

A watershed is an "area of land within which all waters flow to a single river system" (Heathcote 2009)[1]. The watershed – also known as a drainage basin or catchment – has been recognized as a practical hydrological unit for water resources study and management. A "watershed approach" is based on an ecosystem approach to environmental management and the value of public participation in environmental decision-making. An ecosystem approach is a process framework endorsed by many researchers, planners, and managers to account for the interrelationships among land, air, water, and all living things, including humans, and to involve all user groups in comprehensive management.

The IJC believes taking a watershed approach leads to better and more effective water governance. Water management has evolved over time, from looking at the components separately to applying management strategies in an integrated fashion at the watershed scale — hence Integrated Water Resource Management, or IWRM.

The Souris River winding through the prairie. Credit: Jeremy Trombley/IJC



Stages in planning and implementing IWRM. Credit: United Nations

Simply put, IWRM helps society to understand, manage and develop water resources in a sustainable and balanced way, taking into account social, environmental, and economic interests. A major feature of IWRM and a watershed approach is overcoming institutional barriers and building effective long-term relationships between citizens living in the watershed and encouraging collaboration amongst them. This integrated approach co-ordinates water resources management across sectors and interest groups, and at different scales, from local to international.

One of the challenges in implementing IWRM is that management actions often proceed with an incomplete understanding of the watershed itself and the ways in which these actions may affect it. This need to learn from the decisions made is addressed by a concept called adaptive management (AM) as a tool for integrating learning processes into management activities. Basically, the process is one of deciding, implementing, learning, modifying and repeating. Thus, AM is now considered an important extension of IWRM and is being embraced by the IJC in its activities.

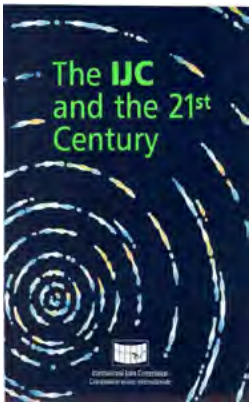
Globally, it is estimated that there are over 310 river basins shared by two or more countries and transboundary waters are found in 153 countries, accounting for an estimated 60% of global freshwater flow (McCracken & Wolf. 2019)[2]. As a result, transboundary water cooperation is an urgent IWRM issue, not just across the U.S.-Canada transboundary, but throughout the world.

[1] Heathcote, I.W., 2009. Integrated Watershed Management: Principles and Practice (2nd Ed.) John Wiley & Sons, Inc. New Jersey, US.
[2] McCracken, M. and Wolf, A.T., 2019. Updating the Register of International River Basins of the world. International Journal of Water Resources Development, 35(5), pp.732-782.

Numerous treaties and agreements around the world are intended to help countries govern and manage shared water resources effectively, and international organizations like the United Nations (UN World Water Development Report) and European Union (EU Water Framework Directive) promote IWRM or its policies as a solution to transboundary water issues. Designing and sustaining institutions and governance mechanisms in such situations is particularly important. The BWT and the IJC are a long-standing example of such a treaty and mechanism. When the Boundary Waters Treaty of 1909 was signed between these two countries, little thought was given to using IWRM to deal with then-existing and evolving transboundary issues. Water management at the turn of that century primarily focused on solving narrow technical problems, but the flexibility of the BWT and the introduction of the IWI have allowed the IJC to apply IWRM to address many issues along the transboundary and to deal with many more in the coming years.

Creating and Implementing the IWI

In April 1997 the governments of Canada and the United States asked the IJC to advise them on "how the Commission itself might best assist the parties to meet the environmental challenges of the twenty-first century within the framework of their treaty responsibilities." Strictly speaking, the request was a reference[3] under the BWT, but it was different from all previous references in the history of the IJC since it focused on the Commission itself and not on addressing a dispute. The Commission was quick to recognize the significance and unique opportunity of this request and promptly organized to consult widely and discuss options amongst themselves. Among those consulted in both countries included governmental agencies, IJC Boards and Board members, former IJC Commissioners, scientists, academics, non-government organizations and various public health and environmental associations.



The cover of the 1997 report that featured the IJC's proposal on the creation of international watershed boards.

The Commissioners considered various proposals based on ideas and suggestions raised by the many persons consulted and submitted their report in October 1997 (*The IJC and the 21st Century)*. The report contained five recommendations, the most significant being the proposal to establish "international watershed boards" across the boundary. This proposal grew out of IJC experience with an ecosystem approach working under the various versions of the Great Lakes Water Quality Agreement (GLWQA) since 1972, by offering to provide similar opportunities to other transboundary basins through the establishment of permanent IJC international watershed boards. Both governments responded positively to the watershed board recommendation and in similar letters dated November 19, 1998, the governments asked the IJC "to further define the general framework under which watershed boards would operate"; make detailed recommendations on the location, structure, and operation of the first watershed board; identify and plan for additional watershed boards and make periodic reports to governments as appropriate (See appendix I). This 1998 letter has become an ongoing or standing reference under which the IJC has issued five reports to date (IJC 2000, 2005, 2009, 2015, and 2020).The IJC's first report on international watershed boards, *Transboundary Watersheds* in 2000, concluded, amongst other things, that while the idea of watershed boards was still sound, full implementation was not yet possible because at that time, the IJC did not have the resources, or the widespread support needed. In this first report, the IJC said it would seek government agreement to expand the mandates of its Red River, Souris River and Rainy Lake Boards, and recommended governments approve, as a pre-pilot effort, the movement of its International Red River Board in the direction of its eventual establishment as an international watershed board and asked for initial funding from governments.

The Commission issued its second report in 2005, indicating that it had been working closely with existing IJC boards and their watershed partners to clarify the vision of the concept. This report introduced a "core idea" — local people, given appropriate assistance, were those best positioned to resolve local transboundary problems in their watershed. This reformulation of the international watershed board approach was named the "International Watersheds Initiative" (IWI), providing the needed spark to move forward.

The cover of the 2005 second report to governments regarding IWI.

In 2011 the governments, in responding to the 2009 IWI Third Report, formally endorsed the IWI initiative and also provided funding for its implementation. This allowed the IWI to take seed and grow.

Since 2005 the Commissioners and staff have strengthened the capacity of IJC boards, provided funding for many projects, established three international watershed boards (Rainy Lake of the Woods, St. Croix River and Red River) and a pilot watershed board (Souris River), launched a scoping exercise for possible future watershed boards, and developed and improved an IWI project management framework with

[3] Consistent with Article IX of the BWT, either government can refer to the IJC for "examination and report," any "questions or matters of difference arising between them involving the rights, obligations, or interests of either in relation to the other." When the IJC receives a "reference" under Article IX, it appoints a board with equal numbers of experts from each country to carry out the studies.

guiding principles, amongst other achievements.

In the earliest days of the initiative there was limited financial support from governments for the designation and funding of IWI projects. With the maturation of the IWI and increased government funding, the Commission announced in mid-2008 that IJC Boards themselves would be the prime initiators of project requests that fit within each Board's prioritized work plan. This decision was consistent with the "core idea" mentioned above regarding the central role of boards and the people that live in the watersheds. Since that time, calls for project ideas are sent out by the IJC twice a year and projects submitted by IJC boards are rigorously evaluated by an IJC IWI Review Committee of IJC advisers from both Section offices, against defined IWI project criteria that assures project feasibility and employ a binational perspective and collaboration. Final products, such as reports, maps, tools, and models, are made publicly available on the IJC's website.

The watershed approach as expressed through the IWI is the most effective approach to prepare for the future in the face of emerging challenges and ongoing threats, such as the climate emergency. The IWI's watershed approach is a model that is adaptive as governance and science shifts, and when employed, helps build watershed resilience. The IWI captures the existing strengths of the IJC and the BWT such as preventing and resolving disputes (anticipate rather than react), water quantity, water quality and aquatic ecosystem health responsibilities, fact-finding capabilities, sound science, public and Indigenous participation and involvement, experts working in their personal and professional capacities and building trust amongst participants from two countries. Working with the IJC under the IWI brings added value to a watershed — participants are working with a Treaty-based organization with a century-long engagement in transboundary management, as well as access to additional funding.

The IWI has changed and continues to change the way the IJC does business. Dealing effectively with the complex interplay between environmental, social and economic factors has required, and will continue to require, finding new ways of sharing information and data; a renewed commitment to involve and engage local citizens, Indigenous Nations, the private sector, academia, and government agencies at all levels for a truly integrated watershed approach; building new and effective partnerships; and finding and leveraging new human and financial resources to deliver on the mandate of the IJC.

IWI SUCCESSES

Since 2010, with increased funding for the IWI, many significant projects have been completed (For specific information, including project results and reports, please visit the IWI projects library at ijc.org/en/what/iwi/projects). Managing a binational program like the IWI brings a number of unique challenges as well as opportunities such as the goal of equal cost sharing by both governments, and balancing partnerships with public institutions, the private sector and non-government organizations in both countries. One of the most important IWI values is the IJC's emphasis on pursuing opportunities to leverage additional non-IWI resources. This helps deliver on the IWI dispute prevention and resolution mandate while reducing duplication of effort and ensuring prudent expenditure of IWI funds.

Outreach and Communication

The broad area of outreach and communications has been an integral part of the IWI since its inception. With advances in technology and increased demand by concerned citizens for greater information and involvement in decision-making in their local watershed, the IJC has expanded and improved its outreach and communications efforts over the 25-year history of the IWI.

From humble beginnings where IWI public information was primarily done through annual public meetings, written periodic reports and limited citizen involvement in IJC boards, the Commission has evolved its approach so that each watershed board can be tailored to the dynamics and interests in that particular watershed. Therefore, public involvement varies from board to board but there are some overarching priorities. The IJC encourages a broader range of non-government IJC board members' inclusiveness and diversity, greater involvement of Indigenous Nations and citizen or industry Advisory Groups. For example, the St. Croix River, Rainy Lake of the Woods, Red River watershed boards and the Souris River Board (a pilot watershed board) have been enriched through Indigenous collaboration including through projects where Traditional Knowledge is a central feature through to Indigenous membership on the boards.

Audience members engage in Syilx facilitation exercises during the 2022 Osoyoos Lake Water Science Forum. The Syilx Nation was a key partner in organizing and running the event. Credit: Corinne Jackson, Okanagan Basin Water Board.

The Commission and its boards have developed and continue to develop a wide range of tools to inform IJC's own

boards, civil society, and government officials at all levels of the existence, successes and potential of the IWI. IJC and board brochures, newsletters, improved IJC and board website design, short animations, public events including meetings, open houses, workshops, webinars, and science forums, as well as social media, all contribute to greater knowledge and understanding of the IWI.

Strategic Initiatives under the International Watersheds Initiative

The IJC has three strategic IWI initiatives: transboundary hydrographic data harmonization, binational water quality modeling, and the Climate Change Guidance Framework (CCGF). Strategic initiatives are those which are applied in and contribute to multiple transboundary basins as opposed to board projects which are carried out in one basin. IWI board projects have had a significant impact in the transboundary watershed where they were undertaken, created new scientific information, contributed to communication of watershed issues, fostered a productive dialogue and collaboration, and built important long-term relationships amongst all the local participants. This Showcase Report summarizes activities in various transboundary watersheds and, in some, projects are described in more depth to highlight the diversity and impact of the IWI.

Transboundary Hydrographic Data Harmonization

Conducting a comprehensive basin-wide hydrological or hydraulic analysis for shared basins when data sets for the two (Canadian and U.S.) portions were developed with different methodologies, interpretations, data formatting and naming conventions is challenging. This was the situation in which the IJC Boards and Task Forces continually found themselves until the IJC decided to produce one seamless data set for each transboundary basin in which it was working. This challenge became the IJC's first strategic IWI initiative, and it has achieved great success.

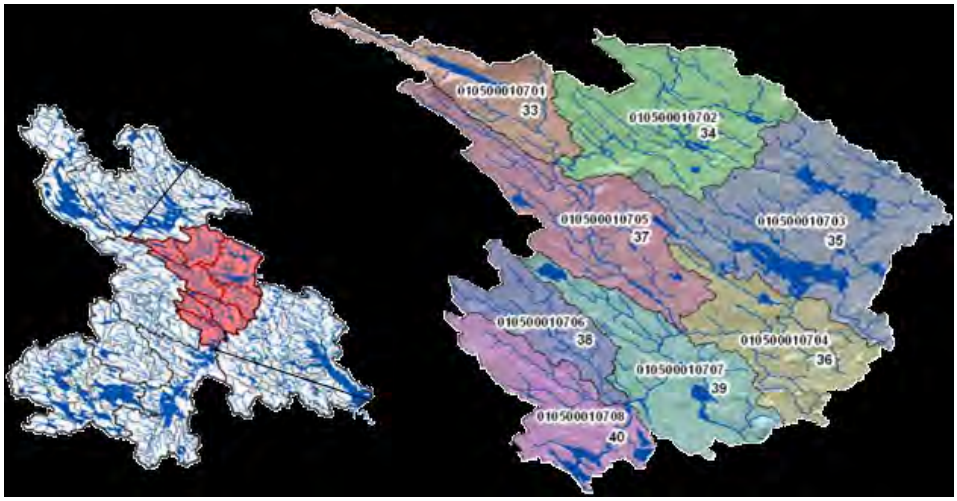
The data harmonization initiative began in 2004 with a pilot in the St. Croix River basin, followed in 2006 by a scoping and costing exercise to determine the effort needed to complete the work for all transboundary basins. In 2007, a special binational Task Force was formed, consisting of representatives from many different agencies in Canada and the U.S. to move forward using IWI funds and leveraging in-kind resources from the key federal, state and provincial agencies. Over the next five years, the Task Force delineated and approved the transboundary basins and the nested sub-basin delineations and developed a consistent naming system.

All this work required sustained leadership, funding, and perseverance, but the effort has paid off. In 2013 the Task Force completed a seamless data set for each transboundary basin, now stored and managed by USGS and Natural Resources Canada. This harmonization work, which received awards from Esri International and Esri Canada[4], is being used in myriad applications including hydraulic, hydrologic and water quality modeling to address a broad range of environmental issues. The Commission continues to foster the stewardship of this valuable data set as the work is not done. Providing a higher spatial resolution and updating new data require continued vigilance and dedication.

SPARROW Binational Water Quality Modelling

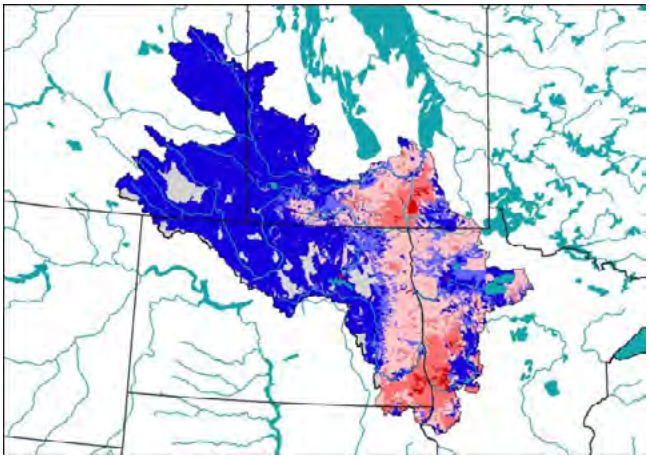
Nutrient loading has long been a serious environmental issue in many of the transboundary basins. Human land use practices and activities increase the amounts of nitrogen and phosphorus entering boundary waters with many experiencing symptoms of eutrophication, such as algal blooms and hypoxia.

In 2011, at the specific request of the IJC's International Souris River and Red River Boards, the Commission undertook the development and binational application of a numerical water quality model to estimate nutrient concentrations and loads in the Red-Assiniboine basin. The IJC decided to use the United States Geological Survey (USGS) developed SPARROW (SPAtially Referenced Regression On

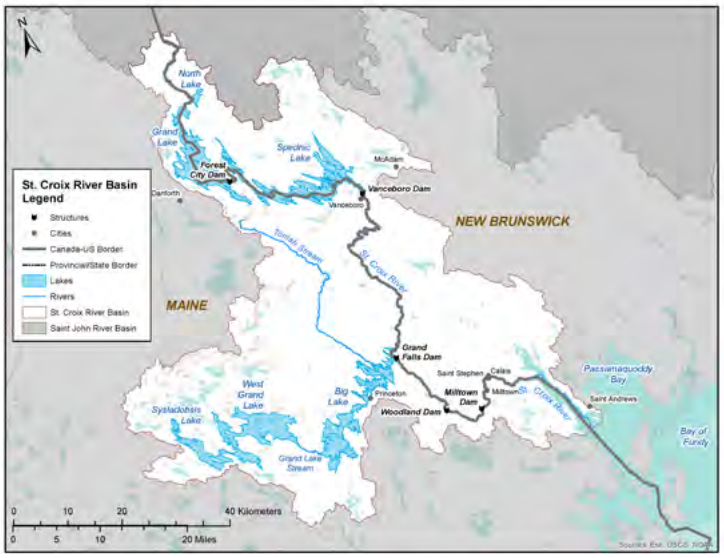


Example of Harmonized Hydrography and Drainage areas. This image shows the end product of the IJC lead Hydrographic Data Harmonization initiative, which spanned the entire U.S. — Canadian Boundary. This initiative was successfully completed with the collaboration of Environment and Climate Change Canada, US Geological Survey, National Resources Canada and state and provincial agencies. Credit: IJC

[4] Esri is an American multinational geographic information system software company and the world's leading supplier of GIS software, web GIS and geodatabase management applications



A SPARROW map of the Red and Assiniboine River basins. Credit: IJC



The St. Croix River basin. Credit: IJC

Watershed attributes) model. This calibrated SPARROW model was applied to the basin to better understand water quality dynamics and nutrient loading (Benoy et al. 2016)[5]. This multi-agency effort was led by the IJC through partnerships with USGS and the National Research Council of Canada (NRC).

Building on the approach used to develop the Red-Assiniboine SPARROW model, a mid-continent SPARROW model was developed for the Great Lakes, Rainy-Lake of the Woods, and Red-Assiniboine basins to gain a fuller picture of the sources of excess nutrients across the contributing binational watersheds (Robertson et al. 2019, IAGLR. Midcontinent SPARROW model)[6]. The work under this important IWI strategic initiative continues.

Climate Change Guidance Framework (CCGF)

Following a series of workshops with IJC boards in 2016 and 2017, the Climate Change Guidance Framework was developed to address an IJC priority regarding climate change with the objective of supporting the boards in their management of climate-related risks. The framework examines how a changing climate may affect boards and how they deliver on their mandates. For example, an initial impetus of the CCGF was to determine whether existing IJC Orders of Approval/ Regulation Plans were resilient to climate change. In other words, beyond existing ranges of variation observed in water levels and flows, would altered ranges of variation due to climate changes compromise the ability of Orders/Regulation Plans in place to meet their objectives? Are those objectives still relevant in the face of the climate emergency? Similar determinations could also be made about apportionments.

These assessments give an idea of potential future issues so that they can be prevented or mitigated rather than being addressed once they occur. The CCGF has already been used to do an initial assessment of climate-related risk linked to the mandate of the St. Croix River Board, and the initiative will continue and produce assessments for other boards.

Transboundary Watersheds

St. Croix River

The most easterly transboundary waterway under IJC jurisdiction, the 185-km (115-mile) St. Croix River, runs along the border of Maine and New Brunswick before emptying into the Passamaquoddy estuary linked through the Bay of Fundy to the Atlantic Ocean. For many years the IJC had two boards in the St. Croix River watershed, one concerned with water levels and flows and another concerned with water quality. In September 2000, as part of the initial stages of the IWI, the IJC formally combined these two boards and established the International St. Croix River Board (ISCRB). In April 2007, after extensive consultations with local interests and building on long standing IJC collaboration in the watershed, the Commission issued a new Directive establishing the International St. Croix River Watershed Board (ISCRWB) as its very first international watershed board.

A visual representation of nearly all the watersheds shared between Canada and the United States, except for those shared by Alaska, British Columbia, and Yukon. Credit: IJC

[5] Glenn A. Benoy, R. Wayne Jenkinson, Dale M. Robertson & David A. Saad. (2016). Nutrient delivery to Lake Winnipeg from the Red—Assiniboine River Basin – A binational application of the SPARROW model. Canadian Water Resources Journal / Revue canadienne des ressources hydriques, 41:3, 429-447, DOI: 10.1080/07011784.2016.1178601

[6] Robertson, D.M., Saad, D.A., Benoy, G.A., Vouk, I., Schwarz, G.E., and Laitta, M.T. (2019). Phosphorus and Nitrogen Transport in the Binational Great Lakes Basin Estimated Using SPARROW Watershed Models. Journal of the American Water Resources Association, 54 (4): 1401–1424. https://doi.org/10.1111/1752-1688.12792.

Since being established in 2007, the ISCRWB has completed numerous beneficial projects in the watershed, many of which were supported by the IWI, including but not limited to aquatic ecosystem health and invasive species, fish count and tracking, nutrients, water levels and flow monitoring to name just a few. Of particular interest for this Special Report is the work of this board and the IJC concerning a longstanding alewives dispute.

Alewives/Smallmouth Bass Fishery Dispute

In the 1980s, completion of a new fishway at Milltown Dam[7] resulted in the resurgence of the anadromous alewife population which coincided with a drastic decline of smallmouth bass in Spednic Lake. As a result of fears that the increased alewife population might be impacting smallmouth bass, Maine blocked alewives from Spednic Lake in May 1987 and then at Grand Falls in 1991. In 1995 Maine enacted legislation closing both the Woodland and Grand Falls fishways to migrating alewives, which led to a drastic decline in the alewife population. Since the Milltown Dam was not subject to this legislation, the Canadian Department of Fisheries and Oceans began trucking alewives upstream to the Woodland Flowage to spawn, which was somewhat successful.

In 2008 the Maine law was amended to open the Woodland Dam fishway but there was public opposition to opening it above Grand Falls. The Commission and its now ISCRWB wrote to the Governor of Maine calling for action. Following IJC public meetings in the watershed an adaptive plan for alewife restoration was developed. From 2009 to 2012 the IJC and its watershed board met with all parties involved to try to develop a consensus to reopen the river to alewives. In October 2012 the Passamaquoddy tribal council changed its previous opposition to alewife restoration by agreeing to reopen the entire river. In early 2013 the Maine legislature passed legislation to open the Grand Falls fishway and it became law on April 22, 2013.

Alewives are pulled from a holding area on the Milltown Dam to be counted as part of an IWI-funded project. Credit: St. Croix International Waterway Commission.

This dispute around alewives and smallmouth bass in the St. Croix River demonstrates very well the IWI and its emphasis on sound science, collaboration and building lasting relationships to prevent and resolve disputes. In order to monitor alewife recovery, the IJC continues to provide IWI funding for fish counts which have been steadily increasing.

Rainy River — Lake of the Woods

The Rainy-Lake of the Woods watershed is situated within the Canadian provinces of Ontario and Manitoba and the U.S. State of Minnesota. After much resistance by the companies regulated under IJC Orders of Approval and the local communities, the International Rainy Lake of the Woods Watershed Board (IRLWWB) was created, in January 2013 with the amalgamation of the long standing IJC's International Rainy Lake Control Board formed in 1941, and the International Rainy River Pollution Board (with water quality responsibilities in Lake of the Woods) formed in 1966. Eventually the benefits of collaboration, sound science and building long term relationships convinced the companies and the local community that an IJC watershed board would be beneficial, and the IRLWWB became the second IJC international watershed board.

The International Rainy-Lake of the Woods Watershed Board held community listening sessions in August 2022 following flooding in the basin the previous spring. Credit: IJC

The Board assists with binational coordination of water quality efforts for the entire transboundary watershed and to ensure compliance with the Commission's Order of Approval on the regulation of water levels on Rainy Lake and the Namakan Reservoir. The IJC has been particularly active in this watershed where IWI funding has supported a wide range of studies ranging from flooding, water quality, invasive species, bank erosion and sedimentation and climate change, to the impacts of water level regulation on fisheries, waterfowl and wild rice production.

In 2009, the Health Professionals Advisory Board (HPAB)[8], then the Health Professionals Task Force, contracted a review of health impacts in the Lake of the Woods and Rainy River. The completed review, *Water and Health in Lake of the Woods and Rainy*

[7] New Brunswick Power is now proceeding with the decommissioning and removal of Milltown Dam. Mobilization and site preparation began in May/June 2023 and the project should be complete by June 2024. Once Milltown Dam is removed, the next fishway is at Woodland Dam. Fishways at Woodland and Grand Falls Dams were constructed in the 1960s and require upgrades. Work is ongoing on new fishways with the input of the ISCRWB.

[8] The HPAB was established by the IJC in 1995 to provide advice to the IJC and its Boards about current and emergent clinical and public health issues in the area of transboundary environmental health. The HPAB is also responsible for developing recommendations concerning ways in which the communication of transboundary environmental health knowledge and information could be made more effective. The HPAB and the IWI interact differently than other boards. The HPAB needs to partner with another IJC board to study a human health impacts issue in the basin that is linked specifically to the partnering board's mandate.

The Rainy-Lake of the Woods basin. Credit: IJC

River, surveyed existing and emerging regional water issues having an associated human health component, identified information gaps on these issues, and made recommendations for improvements in current water and health programs as well as new initiatives. Since the original release of this review, water quality issues in the Lake of the Woods and Rainy watershed have continued to evolve[9].

Indigenous Partnership

The impact of water level regulation on fisheries and wild rice harvesting in the basin are of particular interest to Indigenous Nations. When the Rainy River First Nation raised concerns about fish spawning, the IRLWWB in collaboration with Indigenous Nations and the involvement of government agencies, used IWI funds to conduct a five-year temperature, water level and fish monitoring project which led to fish spawning protocols. IWI funded projects also looked at how the water management regime impacted wild rice production and the effects of cattail invasions. The projects were focused on Traditional Knowledge as a source of key information basis for the board's decision-making.

State of the Basin Reports

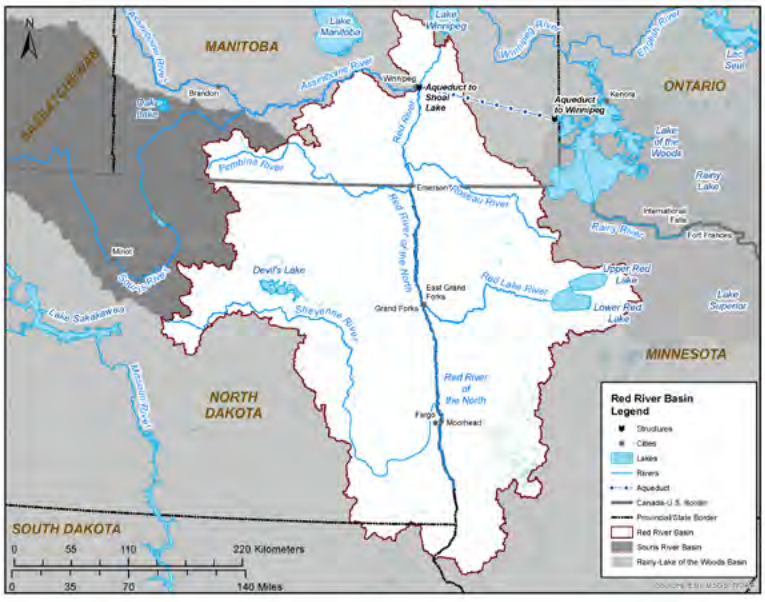
Three State of the Basin Reports (SOBR) have been issued in 2009, 2014, 2019 and 2022. They provided details on a wide range of topics, including drainage basin characteristics, water chemistry and nutrients, biotic communities, emerging threats and an overview of information gaps and monitoring needs that were identified at that time. These basin reports have contained invaluable information on the watershed and contribute to the importance of building long term relationships, sound science and collaboration under the IWI.

Red River

The Red River flows north from its headwaters in Minnesota, North Dakota and South Dakota, across the international boundary, and discharges into Lake Winnipeg in Manitoba. With the 1997 Red River flood as the key driver, the IJC established the International Red River Board (IRRB) in April 2000 as a pilot watershed board by amalgamation of two of the Commission's long standing advisory boards, the International Red River Pollution Board and the Red River portion of the International Souris-Red Rivers Engineering Board. In August 2021, after extensive consultations with local interest groups and the public, the Commission formally promoted the board from a pilot to a full watershed board — the International Red River Watershed Board (IRRWB) — making it the Commission's third international watershed board.

The Board keeps the IJC informed of basin activities that affect transboundary river flows, water quality, and ecosystem health in the Red River and its tributaries and also monitors the implementation of flood-related recommendations made by the IJC. The Board has been particularly active building foundations for Indigenous collaboration and conducting studies of fish movement, water quality trends,

Researchers catch channel catfish below the St. Andrews Lock and Dam to implant transmitter tags as part of a telemetry study. Credit: Camille Macnaughton



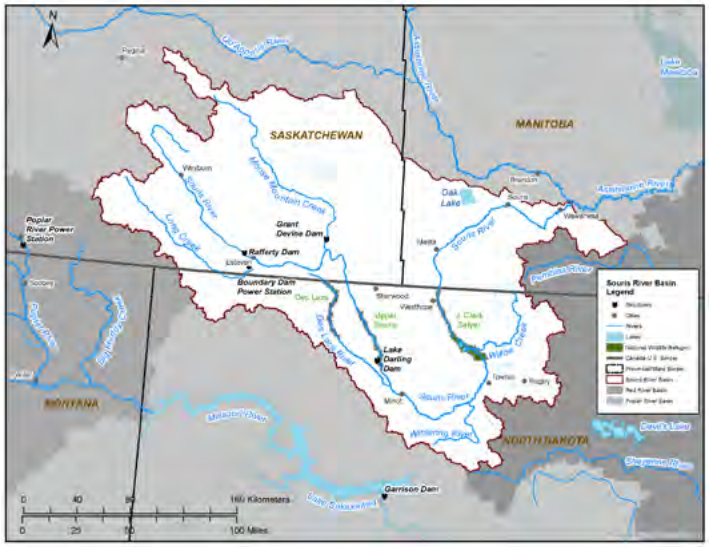
The Red River basin. Credit: IJC

[9] The IWI currently has a project that is a collaboration between the HPAB and the IRLWWB to develop a shared, accessible, bi-national understanding of the extent of historical and current mining, mineral potential, and the availability of relevant data required to assess impacts within the Lake of the Woods and Rainy River watersheds.

nutrient management, flood preparedness and mitigation, and drought planning, monitoring and preparedness. In May 2022 the Commission approved a new IJC Directive for this watershed board that includes increased Indigenous engagement, climate change considerations, and more emphasis on integrity of ecosystem health and public participation.

For several years in the 1990s and early 2000s, concerns had been raised that direct discharging of water from Devils Lake in North Dakota could introduce new pathogens and parasites into the Red River system and adversely affect downstream fish populations. Devils Lake is a closed lake system and has only overflowed once in the last 2000 years; however, recent rising lake levels threatened discharge into the Red River. In lieu of a typical IJC reference from the Canadian and U.S. governments, the governments asked the IJC (through a press release) to have its IRRB study the matter and make recommendations. This unusual request resulted in a fish pathogens and parasites sampling program (2006 – 2008) by the IRRB and a binational group of experts assembled by the IJC. The surveys found three bacteria, one parasite and several lesions were in Devils Lake fish had not been identified elsewhere in the basin. After considerable and detailed discussions, experts concluded that the risk to downstream fisheries was low and potential for causing disease was negligible. The successful resolution of this long-standing dispute was achieved building on the IJC's hallmarks of sound science, collaboration and long-standing relationships that built trust in the process If the IJC had not already had the existing relations built in the Red River, this Devils Lake dispute would not have been as effectively and efficiently managed.

Nutrient loading is a significant water quality issue in the Red River watershed. The Red River is the single largest source of nutrients to Lake Winnipeg. Changes in water quality were observed in the late 1990s with an increase in the frequency and severity of algal blooms. In 2011 the IRRB began development of a basin-wide nutrient management strategy involving several agencies in Canada and the US as well as the binational Red River Basin Commission. This was a multi-year project requiring collection and analysis of data, collaboration across jurisdictions, development of a biological stress-response model, use of the Red-Assiniboine basin SPARROW model, and sustained IWI funding from the IJC. In particular, the Red-Assiniboine SPARROW model was more generally used to inform a broader understanding of the relative sources of nutrients to Lake Winnipeg geographically and by jurisdiction, and the stress-response model was a field-based study that validated notional nitrogen and phosphorus objectives and targets through biological assessment. Many partners worked together and in October 2022 the two federal governments approved IRRWB-recommended nutrient concentration objectives and load targets for the international Red River. This eleven-year project was a major accomplishment which the IRRWB continues to report on annually.



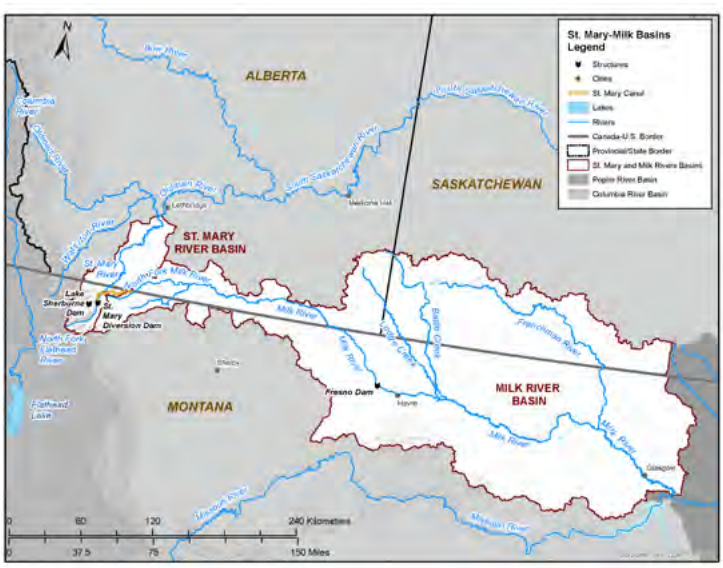
The Souris River basin. Credit: IJC

The Souris River.
Credit: Jeremy Trombley/IJC

Souris River

The Souris River originates in the Province of Saskatchewan, passes through the State of North Dakota, and then crosses into the Province of Manitoba before joining the Assiniboine River. Several binational organizations have been established over the years to address Souris River transboundary water issues. These include the IJC's International Souris River Board of Control and International Souris-Red Rivers Engineering Board, and the U.S. and Canadian governments' Souris River Bilateral Water Quality Monitoring Group. The IJC combined the ongoing responsibilities of the International Souris River Board of Control and the Souris River aspects of the International Souris-Red Rivers Engineering Board into the International Souris River Board (ISRB) in 2000 as a pilot watershed board.

Over the years the ISRB and its predecessor boards have undertaken many important studies and ongoing initiatives such as water apportionment, flood and reservoir operations, water availability and water quality studies, and monitoring existing and proposed developments in the watershed. Recently, with IWI funding, the ISRB initiated a trends analysis project, over the course of two years, on the status and trends of water quality in rivers and creeks within the Souris River Watershed in Saskatchewan, Manitoba, and North Dakota. This knowledge is fundamental to the process of updating water quality objectives at the two Souris River border crossing locations and to inform a watershed approach for identifying risks to water quality and management approaches to water delivery under the International Agreement. The IWI has enhanced



The St. Mary and Milk River basins. Credit: IJC

IJC staff and Commissioner Béland visit the St. Mary reservoir spillway near Cardston, Alberta. Credit: IJC

the ISRB's work in this watershed and there is continued interest that the pilot board will soon be approved as an international watershed board.

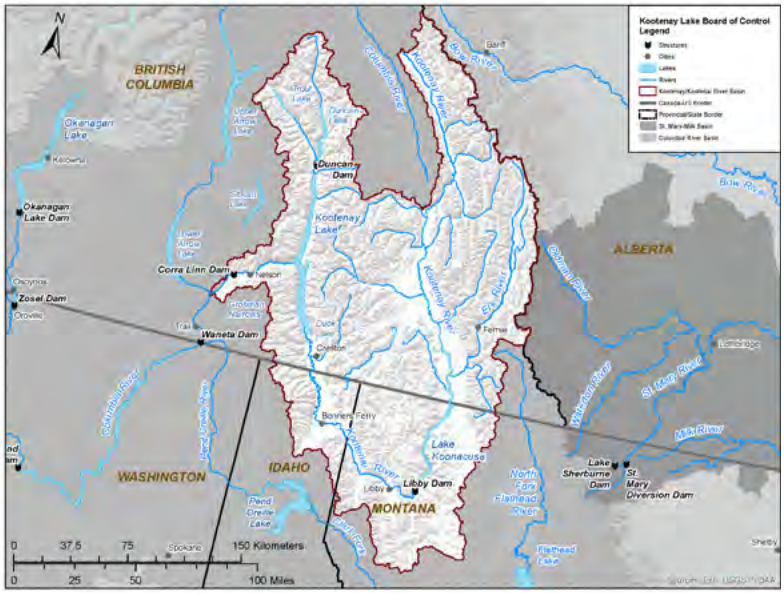
St. Mary — Milk Rivers

The St. Mary River originates in the Rocky Mountains in northwestern Montana and flows north across the international boundary into Alberta, emptying into the Oldman River near Lethbridge. The North Milk and Milk Rivers originate in the foothills of the eastern slopes of the Rocky Mountains in Montana and flow northeasterly across the international boundary into Alberta. The IJC provides direction for the measurement and apportionment, by Accredited Officers, of water that crosses the international boundary in the St. Mary and Milk River basins, in accordance with the Boundary Waters Treaty of 1909 and the IJC Order of 1921.

Recently, IWI funds have been allocated to this watershed to modernize this apportionment process to account for changes in water monitoring technologies, to implement a natural flow data warehouse, develop a tool to estimate evapotranspiration using remote sensing, and to undertake a consumptive uses study for the Milk River basin. Another IWI project analyzed existing historic isotopic data obtained for the region and previously catalogued by the proponent and contrasted these data with data collected in 2020, representing the first time in over 100 years that water isotopic signatures on the Milk River were derived solely from its headwaters. This will be instructive in determining possible future mixing models, possible in-channel evaporation, and seepage rates, and provide insights into unknown issues in water budget apportionment calculations. These are good examples of IWI-funded projects where no formal international watershed board exists, but the IWI is playing a key role[10]. The projects illustrate the importance of sound science and the benefits of long-established relationships working on apportionment matters over many years.

Kootenay Lake

On November 11, 1938, the IJC granted an Order of Approval to the West Kootenay Power and Light Company to operate Corra Linn Dam at Granite, B.C. to store six feet of water in Kootenay Lake and to excavate the outlet of the lake at Grohman Narrows. The Order stipulated that the works be operated subject to a number of conditions and established the International Kootenay Lake Board of Control to supervise the construction and subsequent operation of the works. Corra Linn Dam is 30

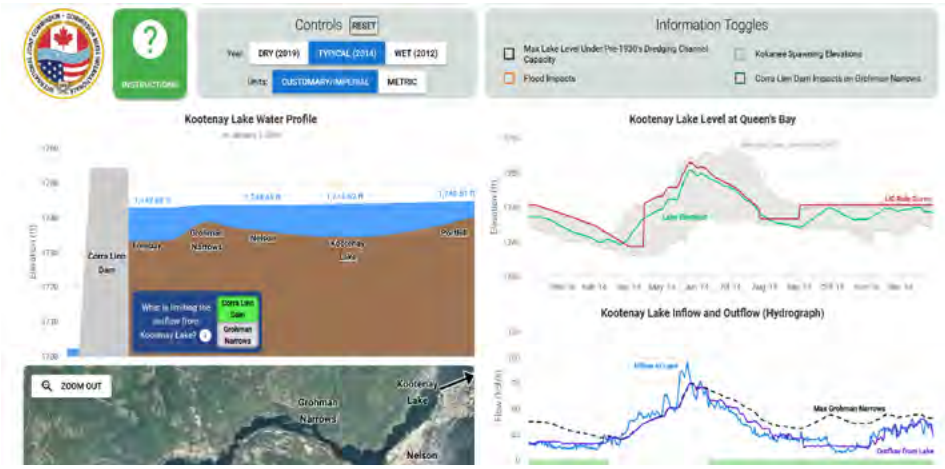


The Kootenay River sub-basin, which contains Kootenay Lake. Credit: IJC

[10] IWI funding was made available to the St Mary Milk Rivers Accredited Officers, and to other IJC non-watershed boards (for example The Kootenay and Osoyoos Control Boards and the Great Lakes Control Boards — the Lake Ontario-St. Lawrence River, Niagara and Lake Superior) provided the project fits within the Board's mandate and follows the IWI criteria and principles.

km (16 mi) up the Kootenay River from its confluence with the Columbia River. The Kootenay River is U shaped, originating in the Canadian Rocky Mountains and flows south into northwestern Montana before turning north to flow through northern Idaho back into British Columbia.

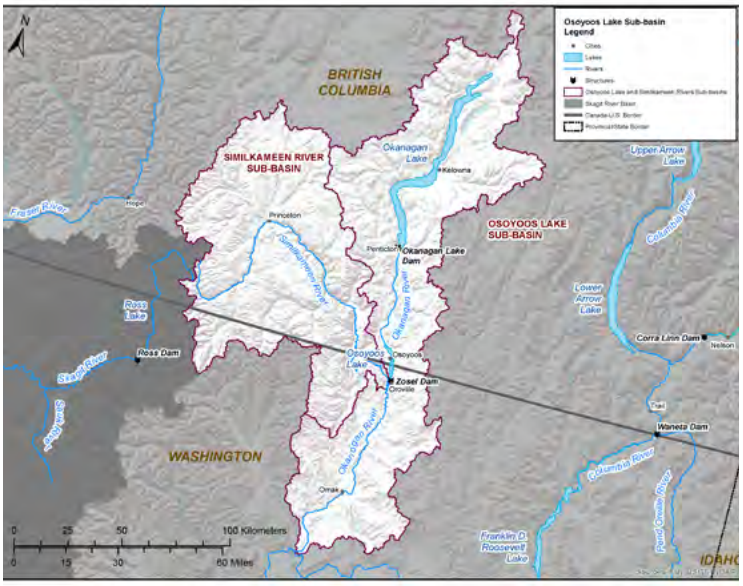
In 2020 the IWI funded the design and development of a user-friendly, web-based, interactive visualization tool to illustrate the river profile downstream of Kootenay Lake given certain water conditions. For years, citizens in the basin were confused about the narrows controlling water levels located upstream of the dam and how this happens. This tool was developed in collaboration with the local community to address and clarify this issue. In 2022 the Board used the IWI to produce an information paper summarizing changes that have occurred over the years to support further research and study, for example, impacts of climate change using the CCGF and a potential review of the 1938 Order.



A screenshot of the Kootenay Lake visualization tool funded through IWI. Credit: IJC

Osoyoos Lake

Osoyoos Lake, in the Okanagan (Okanogan) Basin, is a transboundary watershed in the northwestern region of the continent. The International Osoyoos Lake Board of Control (IOLBC) was established by IJC Order dated 12 September 1946 to ensure the implementation of the provisions of that Order relative to the operation of Zosel Dam by the Zosel Lumber Company to create a log storage pond. In 1982 the IJC approved the State of Washington's request to replace the deteriorating control structure, followed by a Supplementary Order in 1985. Construction of the new dam was completed in 1987. In January 2013, the IJC issued a further Supplementary Order of Approval renewing the State of Washington's authority to operate Zosel Dam and making minor modifications in how water levels on Osoyoos Lake will be managed.



The Okanagan River basin, which includes Osoyoos Lake at the international boundary. Credit: IJC

The IOLBC has accomplished a number of IWI-funded projects and events in the watershed including Osoyoos Lake Science Forums in 2007, 2011, 2015, and 2022[11]; traditional knowledge is a key consideration for this board and the 2022 forum focused predominantly on this topic The board has also completed a hydrological model of the Similkameen basin to analyze vulnerability to projected shifts in climate and hydrology in the watershed, installation of peak water level monuments, a webcam to monitor real-time operations at Zosel Dam, and several communication projects, including an award winning film 'A River Film'. With IWI help, the IJC is focussing on improving the information exchange between the public and the IOLBC and increasing the level of local involvement in the work of the board. The long and established relationships built up over many years of collaboration under the IJC Order are helping the IJC and the Board to be resilient when facing potential climate change threats in this watershed.

Great Lakes — St. Lawrence River

The IJC devotes considerable time working on issues related to the Great Lakes – St. Lawrence River Watershed either on water level and flow issues with its three Great Lakes control boards (Lake Superior, Niagara, and Lake Ontario-St. Lawrence) or under its mandate pursuant to the Great Lakes Water Quality Agreement (GLWQA). The IWI has been an important aspect of this work, especially in relation to regulatory

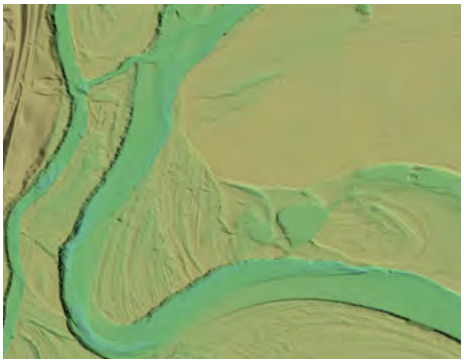
[11] Of particular relevance was the 2022 Science Forum with the theme "Bridging Indigenous and Western Approaches to Knowledge, Science and Management." The Forum was a unique opportunity for In.digenous (Syilx Okanagan) people and non-Indigenous people to come together in a collaborative manner to share values and ideas about the past, present, and future of Osoyoos Lake.

decision-making, where substantial IWI funds have been expended on technical studies related to Orders of Approval on Lake Superior and Lake Ontario-St. Lawrence River, as well as communication efforts to improve the public's understanding of the IJC and the role of its control boards.

Great Lakes — St. Lawrence River Adaptive Management (GLAM) Committee

Over the past century the IJC has approved the construction and operation of structures that affect levels and flows at Sault Ste. Marie on the St. Mary's River, at Niagara Falls on the Niagara River and at Cornwall/Massena on the St. Lawrence River. Three international boards of control (Lake Superior, Niagara, and Lake Ontario-St. Lawrence River) monitor compliance by the owners and operators of the structures with the operational requirements as set out in Orders of Approval and Directives for the construction and operation of the structures. Short-term IJC study boards have been used in the past to consider improvements to the existing regulation plans. The Lake Ontario-St. Lawrence River Study (2000-2006) reviewed regulation of levels and flows in the Lake Ontario-St. Lawrence River system and the International Upper Great Lakes Study (2007-2012) reviewed conditions in the Upper Great Lakes and the regulation plan for the outflows of Lake Superior. Both these studies recommended new regulation plans as well as introducing adaptive management. The IJC makes the information and knowledge gained during these studies available to the Lake Superior, Niagara, and Lake Ontario-St. Lawrence River boards.

To assist with the ongoing evaluation of regulation plans, a Great Lakes – St. Lawrence River Adaptive Management (GLAM) Committee was established in 2015 to report to the three above-mentioned IJC control boards. The GLAM Committee undertakes the monitoring, modeling and assessment related to the on-going evaluation of the regulation plans and addresses other questions that arise due to changing climatic and other conditions in consultation with the boards. The IWI has been instrumental in assisting the control boards with the persistent need for quality information required in its regulatory decision-making process[12].



A LIDAR-based bathymetric map of the Similkameen and Okanagan rivers south of Osoyoos Lake, developed as part of an IWI-funded project. Credit: NV5 Geospatial

A screenshot from a 2020 video highlighting the findings in an IWI-funded study looking at water levels and critical fish habitat within Lake St. Lawrence. Credit: IJC

For example, IWI funds have been used to conduct a comprehensive scientific review of the life histories and critical habitat of all known fish species inhabiting Lake St. Lawrence (Iroquois Dam to Moses-Saunders Dam). A compilation of the data and information is used to create scientifically based outreach materials that would address recent public concerns over the impacts of low water levels on fish populations and aquatic habitat in Lake St. Lawrence. This project represents an important opportunity to address public concerns about the local ecological effects of Plan 2014 on Lake St. Lawrence, while building an important dataset that can help guide water level management policies.

In Lake Superior, IWI funds were used in 2015 for flow measurements at the Compensating Works at the head of the St. Marys Rapids to establish and verify flow relationships (and ensure the conditions in the Orders of Approval for Lake Superior regulation are met) using partially open gate settings in lieu of fully open ones, to provide a number of benefits in the St. Marys Rapids. In 2023 the Lake Superior Board launched a project, with IWI funds, to re-establish their relationship with the Batchewana First Nations who are directly impacted by the board's regulation, especially on Whitefish Island.

The Great Lakes basin. Credit: IJC

[12] The GLAM Committee is an IJC Committee undertaking IWI projects, but it is currently funded separately from IWI.

TRANSBOUNDARY CHALLENGES AND IWI CAPACITY

The achievements of the first quarter-century of the IWI are many. The watershed approach, emphasis on sound science and commitment to public engagement have assured its ability to deliver results. Three strategic initiatives — Transboundary Hydrographic Data Harmonization, Binational Water Quality SPARROW modelling and the Climate Change Guidance Framework — have had a significant positive impact on the IJC boards and their partners, and similar initiatives should continue. These first successes of the IWI were made possible through the approval by the Parties of the concept, and the provision of funding to implement it.

The effectiveness of the IWI in addressing several critical transboundary challenges during its first 25 years invites consideration of its potential to address other transboundary needs in the next quarter century. It also requires analysis of the IWI's tools and capacity to address such needs. To respond constructively to these challenges, IJC partners and supporters have encouraged the Commission to maintain existing and establish new initiatives as described in this section that follows.

Challenges

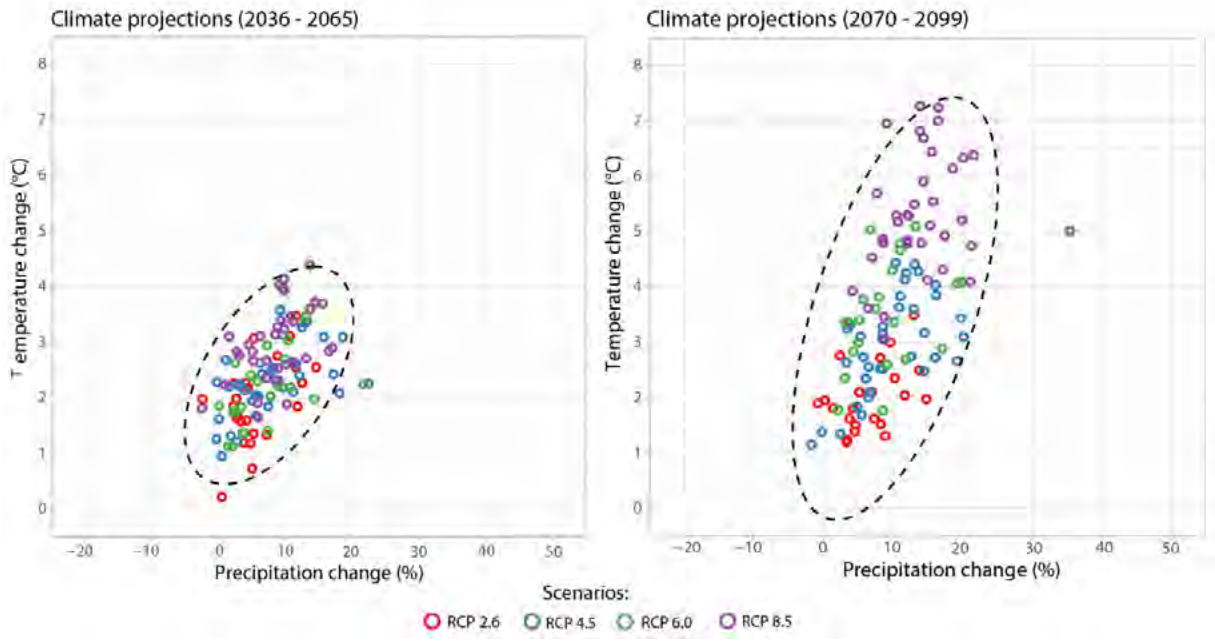
Climate change emergency

In a time of accelerating climate change, affecting precipitation and temperature patterns in every transboundary watershed, the IWI can help monitor these conditions, collaborate and coordinate binational actions inclusive of people living in the watershed, develop alternative scenarios of effects, and prepare adaptive management plans to cope with the effects. Indeed, it is hard to imagine successful conflict prevention and resolution strategies without the convening, data coordination and science and traditional knowledge resources the IJC, through the IWI, can bring to watershed stakeholders. With the IWI model, transboundary watersheds will be better prepared to mitigate climate change impacts.

Specific tasks to strengthen the IWI usefulness in addressing the climate emergency that the Commission could undertake include:

- Adapting climate change models and scenarios to local watersheds.
- Creating a climate change consultant team to support local watershed efforts.
- Encouraging international watershed boards to establish climate change committees and to integrate resilience strategies into work plans.
- Providing international watershed boards a template or guidance document to support the process of adapting climate change models and scenarios to local watersheds.

The Climate Change Guidance Framework, developed under the IWI and discussed earlier, will be valuable in assisting the IWI boards in carrying out these tasks.



A projection of how temperatures and precipitation in the St. Croix River watershed may change under different climate scenarios through the rest of the century. Credit: IJC

A satellite image showing algal blooms on Lake Winnipeg. Credit: Sentinel Hub

Water quality

Transboundary surface waters have been polluted over the years by direct discharges, runoff and air deposition and transboundary water quality will continue to be of concern from coast to coast. The IWI can assist in preventing and resolving any disputes. The presence in transboundary waters of harmful algal blooms (HABs) and algal toxins, Per- and polyfluoroalkyl substances (generally referred to by their plural acronym, PFAS) and pollutants such as microplastics and pharmaceuticals, needs to be monitored and reported. IJC Boards with water quality responsibilities may also benefit from additional guidance from the Commission on best practices and processes for addressing their responsibilities on water quality objectives and alert levels as well as tools to assess how water quality may be affected by climate change. The IWI could be used to assist with addressing these needs.

A specific example of transboundary water quality concern is the presence of selenium, mercury, and nitrates in the Elk/Kootenai River watershed. The problem is larger than one province or one mining entity. Selenium contamination is a global problem, found almost everywhere mining occurs in watersheds[13]. The IJC could not only lead a regional board to monitor the situation, but also assist in a global effort to find solutions that protect the resource, while working with the Indigenous people who depend upon it, and jobs in the mining industry. This example suggests the IJC's IWI and its role in evolving transboundary governance can be used to address these complex problems that also involve Indigenous jurisdictions that were not signatory to the BWT, and is a key value added of the Commission.

Geographic gaps

Significant gaps along the transboundary region in coverage of IWI boards leave some watersheds vulnerable to inefficiencies, a lack of binational coordination of responses to shared challenges, and a low level of stakeholder, public, and Indigenous collaboration. The IJC could, in consultation with the Parties, develop a strategic plan to form watershed boards in every watershed along the transboundary region — coast to coast to coast, from the Yukon to the St. John/Wolastoq. The support of the Parties as well as government agencies and local citizenry in each of these watersheds will be critical if such a plan is to succeed.

Watershed boards for the Taku, Unuk, and Stikine Rivers shared by Alaska and British Columbia could especially be considered. These freshwaters are among the cleanest and most productive in the world, hosting the last great wild salmon runs. There is grave concern about existing and proposed mining activity in the headwaters of all three rivers. In 2019, on a fact-finding trip to the Alaska-British Columbia transboundary region, the IJC heard support from both the general public and government officials for creation of an IWI-like board. The Canadian and U.S. governments and the IJC will need to have discussions on how best to move forward. This will mean complementary budget strategies as well as outreach to federal, provincial and state agencies as well as communities in each watershed.

The Great Lakes

The original inspiration for the application of the watershed approach to multiple transboundary watersheds in the IJC's 1997 report was the success of the ecosystem approach in the Great Lakes basin. Now, as lessons of the IWI become clear, attention can turn to whether the IWI can offer guidance to IJC's work under the Great Lakes Water Quality Agreement. The sheer size of the Great Lakes – St. Lawrence watershed and the existence of five IJC

The headwaters of the Unuk River. Credit: Dru on Flickr

[13] A July 2020 report by the HPAB reviews the health risks that humans are exposed to when they frequently consume fish with high levels of the trace element selenium. The report, *A Review of Human Health Impacts of Selenium in Aquatic Systems*, surveys the current state of scientific knowledge about selenium impacts on human health.

A container ship works its way along the St. Lawrence River near Montreal. Credit: Shutterstock

boards (three control and two water quality boards) suggest a watershed board approach may be difficult. But establishing an IWI board for individual lakes or sub-watersheds, taking into account such existing mechanisms as the Lakewide Action and Management Plans (LAMPs) created in the Great Lakes Water Quality Agreement, merits consideration and should include the role of the IJC's Great Lakes Regional Office.

The creation of the Great Lakes – St. Lawrence River Adaptive Management (GLAM) Committee has proven to be an important new institutional arrangement leading the way in the field of adaptive management. GLAM's needs are increasing as the value of its advice becomes more apparent and so continued funding is essential and may require increases. Further, IJC partners suggest the Commission should consider the possibility of applying adaptive management in other watersheds so that it can adapt its approach to such issues as water levels and flows and transboundary water quality objectives as appropriate.

Habitat loss and biological diversity

It is possible that in the next 25 years of IWI, species preservation, fisheries, wetlands, habitat integrity, and the protection of transboundary migration routes could fuel controversy and transboundary conflict and disputes. Pressures on undeveloped habitat along lakes and rivers throughout the boundary area are expected to continue and losses could accelerate. Loss of aquatic habitat is inadequately monitored in many boundary areas and there is insufficient information about the losses that are taking place. There is the alewives/bass fishery dispute in the St. Croix River watershed highlighted earlier as an example. Terrestrial habitat and irreplaceable land resources could also come under similar pressure and, at some point, habitat losses could reach a critical stage. The decline of native species could undermine biological diversity in the boundary area, and this may be especially important on the West Coast in Alaska and Yukon.

Invasive cattail being removed along the shores of the Rainy River system. Credit: IJC

IWI Tools and Capacity

Indigenous Collaboration

The success of the IWI increases in direct proportion to the trust that communities and watershed residents have in the IJC's — Commissioners, staff, and board members — commitment to on-the-ground dialogue and collaboration.

This is particularly true with respect to Indigenous Nations. Twenty-five years ago, Indigenous rights were not given the weight they are today in the IWI. IJC Commissioners have invested substantial time and effort educating themselves on Indigenous water law and rights in the U.S. and Canada. This is complicated by the different ways the two countries view, treat, and adjudicate Indigenous matters. An IJC Indigenous Collaboration Team with staff from all offices is supporting the Commission's efforts to invite the meaningful collaboration of Indigenous Peoples.

The importance of collaboration with Indigenous Nations has never been greater. Indigenous participation on IWI boards and Indigenous leadership of IWI projects and research and linkages with traditional ecological knowledge are likely to have a profound impact.

The Commission has several options to consider in strengthening Indigenous collaboration:

- Exploring the possibility of jointly developing a strategy or policy to support collaboration with Indigenous Nations and their governments, organizations and citizens as part of the permanent structure of the IWI.
- Providing resources to enhance the capacity of Indigenous Nations and their governments, organizations and citizens to collaborate with IWI boards.
- Working with Indigenous Nations to clarify how watershed boards can be more relevant and add greater value for Indigenous Nations.
- Working with Indigenous leaders in mobilizing and engaging Indigenous Nations and their governments, organizations and citizens in watershed efforts.
- Identifying opportunities for partnerships between traditional ecological knowledge and Western science.

Resources

For a relatively small investment, Canada and the U.S. have made significant strides in IWI watersheds. The impact of this investment has been increased by the IJC's commitment to leveraging additional non-IWI resources. This helps deliver on the IWI dispute prevention and resolution mandate while reducing duplication of effort and ensuring prudent expenditure of IWI funds. Further, the IWI helps the two nations and their subnational agencies better fulfill their mandates.

A further investment is needed to span the gulf from the present to the future. This is essential[14] for engagement with various partners and to draw work plans for IWI boards that are based on comprehensive consideration of all ecosystems in a watershed; how each is affected by human activities; how each is being and will be affected by climate change; and how corrective actions can be designed and applied. Specific needs include:

Agency Participation

In addition to community involvement, the participation of staff from Canadian and U.S. federal, State, Provincial and, in many cases, municipal governments is indispensable to the success of the IWI. Agency personnel contribute expertise, coordination between their various departments and the IWI and ability to assist with implementation of key tasks. But the time they devote to the IWI is limited by competing priorities from their primary assignments. A commitment of personnel time and agency priority by all levels of government will assure maximum benefits of the IWI.

IJC Commissioners and staff

To fulfill the promise of the IWI, it must scale up to embrace additional transboundary watersheds and an ever-increasing complexity of challenges. Supporting the IWI has increased the workload of IJC Commissioners and staff, as the traditional work of boards along the transboundary continues. A commensurate scaling up of support to meet the workload of IJC Commissioners and staff is critical, and the current IJC model of lead IWI staff and Commissioners has proven successful and should continue.

Specifically, the following are initiatives that should be maintained or enhanced:

IWI database of projects

The IJC currently maintains a searchable library of all IWI projects on its website that should continue and be updated regularly so all interested parties, including all IJC Boards, governments, Indigenous Nations, the public, and stakeholders can read the details of IWI projects indicating outcomes, partners, project status. Pairing this information with map-based information makes this a valuable tool; maps of all transboundary basins are also available on the IJC website in addition to an IWI project story map which highlights a number of IWI projects and includes maps and visuals. This should remain an important tool for the program to communicate successes and maintain transparency about projects and project outcomes.

Administration of the IWI including assessments of projects

The IJC has developed a management framework for administering IWI funds and an IWI Review Committee for reviewing and approving IWI project proposals. This process for submitting, reviewing, approving, and then assessing the result of IWI projects is essential for accountability and to assist IJC boards with their submissions. This framework should be assessed periodically to make sure it remains relevant, effective, and efficient for all those involved, and so necessary improvements can be made.

IWI Workshops, retreats, and other forms of cross-board communication

For the past fifteen years the IJC has organized several IWI-facilitated workshops on different themes to help boards with their project submissions, explain and discuss strategic initiatives, gather feedback on board issues and concerns, and generally encourage and facilitate cross board communication. Boards and staff have expressed appreciation for these events, which have proven to be beneficial, and want them to continue as transboundary issues likely become more complex and efforts are made by the IJC to improve Indigenous involvement in the IWI.

A breakout discussion involving IJC staff and members from various boards during the IWI workshop held at the 2023 spring semi-annual meeting. Credit: IJC

IJC staff, Commissioners and Board site visits and tours

Some of the most beneficial activities IJC Commissioners, board members and staff have engaged in over the years involve site visits and tours of the facilities under IJC Orders of Approval and watersheds in which the IJC and its boards operate. These visits bring the IJC family together in one place and often are paired with local community events demonstrating the importance of establishing and maintaining long term relationships, especially for the IWI. These site visits and tours need to continue in order to establish and maintain familiarity with the waters and communities where the Commission works and has responsibilities. Travelling to a region remains one of the best ways to truly understand the needs and challenges faced environmentally and by communities.

Periodic IJC Reports to Governments

Every five years since 2000, except the third report issued early in 2009 to coincide with the IJC centennial, the IJC has issued a report under the 1998 Watershed Reference, and a sixth report is due in 2025. These reports are a valuable compendium of

IJC Commissioner Lickers, staff and board members visit Milltown Dam in 2023 on the St. Croix River. Credit: IJC

[14] In their 1998 letter to IJC with a mandate for IWI, the governments requested the development of innovative funding mechanisms, an approach that could be pursued in future IWI implementation.

facts and figures containing historical information on the establishment of the IWI, updates on IWI board projects, strategic initiatives successes, challenges, and plans for future IWI work. As existing international watershed boards continue to mature, other basins may identify potential benefits provided by applying an ecosystem approach in their local watershed. The benefits provided by watershed boards become more apparent as transboundary issues become more complex, and the importance of public engagement and collaborations with Indigenous communities continues.

CONCLUSION

The Parties are to be commended for their foresight in supporting the IWI with both funding and oversight a quarter century ago. With their continuing support, the future of transboundary watersheds is bright indeed.

The IWI has demonstrated the value of considering watersheds and the communities within them as fundamental building blocks of transboundary water stewardship. People protect what they care about, and their caring begins close to home. By treating watersheds as "homes" within the much larger realm of water policy and practice, the IWI mobilizes communities to think holistically of threats and opportunities and to work to prevent problems, not just to address existing problems. And it knits citizens from all nations in efforts to protect transboundary watersheds.

The IWI has had success in helping boards meet their objectives and address their responsibilities through IWI-supported projects on water quantity, quality, and aquatic ecosystem health issues. These have helped the boards to generate new science and information and improve and increase dialogue and communication.

The IWI also supports governmental efforts at all levels, enabling agencies to coordinate efficiently both within their individual structures and collectively. In doing so, it conserves valuable public funding to address and prevent transboundary problems.

The IWI is built on establishing and maintaining relationships among the many Indigenous Nations, stakeholders and governmental entities engaged in particular watersheds, rather than on a top-down approach. It also is an important tool to build necessary resilience in a time of rapid environmental change, as understanding of the science evolves, allowing adaptation.

Also important is the preventative nature of the IWI. The IJC has observed over the years that the Commission and its boards are typically more successful when they can work with all those concerned to head off differences rather than reacting to them.

The next 25 years present formidable and to some extent unprecedented challenges to transboundary watersheds. The climate emergency, in particular, will have both environmental, economic and social impacts of a kind and depth not seen in human memory. The IWI positions transboundary watershed communities well to better mitigate and adapt to these changes.

Water splashes against rocks on the St. Lawrence River. Credit: Shutterstock

Appendix I — 1998 Letters from Governments

Respose IJC in 21st C

Department of Foreign Affairs and International Trade

CANADA

Ministère des Affaires étrangères et du Commerce international

3-2-1-2

125 Sussex Drive
Ottawa, Ontario
K1A 0G2

November 19, 1998

Mr. Murray Clamen
Secretary
Canadian Section
International Joint Commission
100 Metcalfe Street
Ottawa, Ontario
K1P 5M1

Dear Mr. Clamen:

The Governments of Canada and the United States of America have received from the International Joint Commission its seminal report, *The IJC and the 21st Century*, constituting the response of the Commission to the request of 16 April, 1997 of the two Governments for proposals on how the IJC might best assist the parties to meet the environmental challenges of the 21st century.

In their March 10, 1998 meeting in Ottawa, the Secretary of State and the Minister of Foreign Affairs welcomed the recommendations of the report, and accepted in principle the proposal to establish international watershed boards that would adopt an integrated, ecosystem approach to transboundary environmental issues.

I have the honour to inform you that, pursuant to Article IX of the Boundary Waters Treaty of 1909, the Governments of Canada and the United States have agreed to ask the International Joint Commission, in consultation with the two federal governments and with the relevant states and provinces, and with tribes, First Nations, and local interests, as appropriate, to carry out the following tasks:

.../2

(i) To further define the general framework under which watershed boards would operate, including, but not limited to mandate, scope of activities, and operating principles, recognizing that boards would be modified to meet the special circumstances of each watershed.

(ii) To recommend a location where the first international watershed board could be established.

(iii) To recommend the structure, composition, and terms of reference for such a board, including the priority issues that it would address.

(iv) To develop cost projections and possible sources of funding, including innovative funding mechanisms, for the task of forming the first international watershed board, and for the operation of the board, including cost projections for special studies that would be projected to be carried out by the board in the first few years of operation. In so doing the Commission and Governments shall be guided by the principle that forming and operating the new board shall entail the least possible requirement for new resources.

(v) At the same time, to pursue similar consultations with provinces and states, and the Governments of Canada and the United States of America, on the identification of locations, and the development, planning and establishment of additional international watershed boards at appropriate times.

The Governments request the Commission to pursue its activities, examinations, and consultations expeditiously, and to make periodic reports to the Governments as appropriate.

The Governments further request the Commission to initiate its work on these tasks drawing on resources from its current reference levels.

In carrying out these tasks, the Governments encourage the Commission to draw upon the expertise, data and technology available from the provinces, states and federal governments, communities, organizations, academic institutions, business, and others as appropriate to accomplish their task in a comprehensive manner.

As well, it is noted that numerous activities are underway within the international watersheds at federal, state and provincial government levels pertaining to water or land use management, environmental data gathering and

.../3

monitoring, and other matters relevant to the international watershed board proposal. The Governments urge the Commission to draw upon and complement these initiatives to the extent it deems appropriate.

An identical letter is being sent to the Secretary of the US Section of the Commission by Department of State.

Sincerely,

David Preston
Director
U.S. Transboundary Division

United States Department of State

Washington, D.C. 20520

November 19, 1998

Gerald E. Galloway
Secretary, United States Section
International Joint Commission
Suite 100
1250 23rd St., NW
Washington, D.C. 20440

Dear Dr. Galloway:

The Governments of Canada and the United States of America have received from the International Joint Commission its seminal report, The IJC and the 21st Century, constituting the response of the Commission to the request of 16 April, 1997 of the two Governments for proposals on how the IJC might best assist the parties to meet the environmental challenges of the 21st century.

In their March 10, 1998 meeting in Ottawa, the Secretary of State and the Minister of Foreign Affairs welcomed the recommendations of the report, and accepted in principle the proposal to establish international watershed boards that would adopt an integrated, ecosystem approach to transboundary environmental issues.

I have the honor to inform you that, pursuant to Article IX of the Boundary Waters Treaty of 1909, the Governments of Canada and the United States have agreed to ask the International Joint Commission, in consultation with the two federal governments and with the relevant states and provinces, and with tribes, First Nations, and local interests, as appropriate, to carry out the following tasks:

(i) To further define the general framework under which watershed boards would operate, including, but not limited to mandate, scope of activities, and operating principles, recognizing that boards would be modified to meet the special circumstances of each watershed.

(ii) To recommend a location where the first international watershed board could be established.

(iii) To recommend the structure, composition, and terms of reference for such a board, including the priority issues that it would address.

(iv) To develop cost projections and possible sources of funding, including innovative funding mechanisms, for the task of forming the first international watershed board, and for the operation of the board, including cost projections for special studies that would be projected to be carried out by the board in the first few years of operation. In so doing the Commission and Governments shall be guided by the principle that forming and operating the new board shall entail the least possible requirement for new resources.

(v) At the same time, to pursue similar consultations with provinces and states, and the Governments of Canada and the United States of America, on the identification of locations, and the development, planning and establishment of additional international watershed boards at appropriate times.

The Governments request the Commission to pursue its activities, examinations, and consultations expeditiously, and to make periodic reports to the Governments as appropriate.

The Governments further request the Commission to initiate its work on these tasks drawing on resources from its current reference levels.

In carrying out these tasks, the Governments encourage the Commission to draw upon the expertise, data and technology available from the provinces, states and federal governments, communities, organizations, academic institutions, business, and others as appropriate to accomplish their task in a comprehensive manner.

As well, it is noted that numerous activities are underway within the international watersheds at federal, state and provincial government levels pertaining to water or land use management, environmental data gathering and monitoring, and other matters relevant to the international watershed board proposal. The Governments urge the Commission to draw upon and complement these initiatives to the extent it deems appropriate.

An identical letter is being sent to the Secretary of the Canadian Section of the Commission by the Department of Foreign Affairs and International Trade.

Sincerely,

Victor D Comras

Victor Comras
Director
Office of Canadian Affairs


25
INTERNATIONAL WATERSHEDS INITIATIVE
INTERNATIONAL JOINT COMMISSION • COMMISSION MIXTE INTERNATIONALE
INITIATIVE INTERNATIONALE SUR LES BASSINS HYDROGRAPHIQUES
1909

International Watersheds Initiative

25th Anniversary Showcase Report