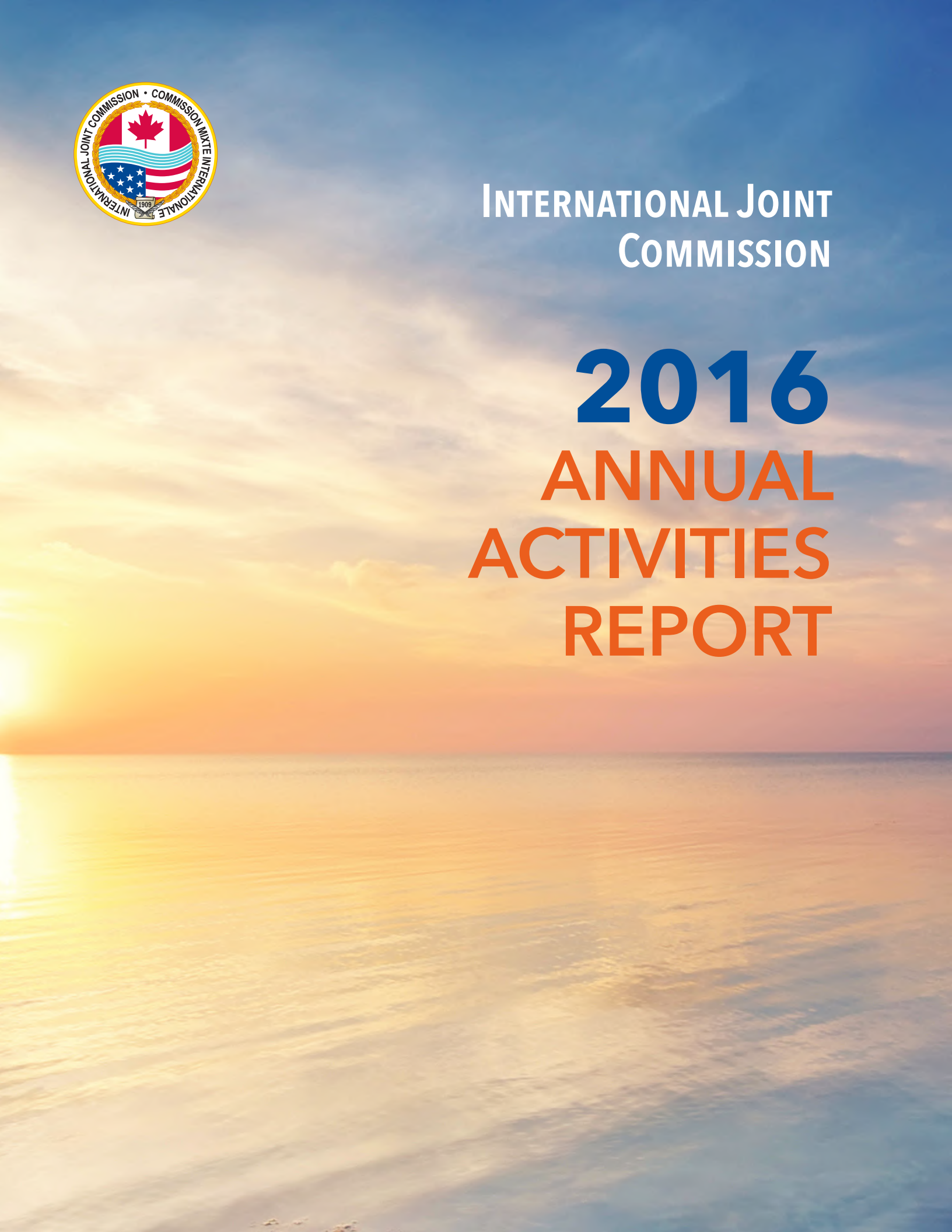

International Joint Commission

2016 Annual Activities Report

INTERNATIONAL JOINT COMMISSION

Canada and United States

About Us

Canada and the United States created the International Joint Commission (IJC) as they recognized that each country is affected by the other's actions in lake and river systems along the border. The IJC helps the two countries manage these waters wisely and protect them for the benefit of today's citizens and future generations.

The IJC is guided by the Boundary Waters Treaty, signed by Canada and the United States in 1909. The treaty provides general principles for preventing and resolving disputes over waters shared between the two countries and for settling other transboundary issues. The specific application of these principles is decided on a case-by-case basis.

The IJC has two main responsibilities: regulating projects that affect water levels and flows across the boundary, and investigating transboundary issues and recommending solutions. The IJC's recommendations and decisions take into account the needs of a wide range of water uses, including sanitation and drinking water, commercial shipping, hydroelectric power generation, agriculture, industry, fish and wildlife, recreational boating and shoreline property.

The IJC is funded by the governments of Canada and the United States.

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INTERNATIONAL JOINT COMMISSION

2016 Annual Activities Report

Commissioners

Rich Moy | **Dereth Glance** | **Gordon Walker Canadian Section Chair** | **Lana Pollack United States Section Chair** | **Benoît Bouchard** | **Richard Morgan**

2016 in Review

Binational cooperation has been a boon to the United States and Canada on transboundary water issues in the one hundred and seven years since the two countries signed the Boundary Waters Treaty and formed the International Joint Commission (Commission). The six-member Commission focuses on matters of water flows and water quality, and in turn on the needs of water users and interests who are affected. Assisting the Commission in this effort are an array of boards and staff from both countries that bring expertise in engineering, science, policy, management and local knowledge.

That knowledge and science-based approach has been vital as the Commission works on policies and recommendations in the face of climate change. With trends showing droughts, shifting precipitation patterns, and rising temperatures across the basins, waterways are seeing changes in the timing of spring runoff and impacts on water flows. The Commission and its staff have been working on a climate change framework to serve as guide to local boards and decision-makers as they use the best science to maintain the resiliency of the ecosystems and economic and social benefits of these basins as best they can. Individual boards have also undertaken their own studies – or are partnering with local groups - to see what the impacts of climate change could be in the coming years to help form new contingency plans.

The Commission moved forward with Plan 2014, a modern plan for Lake Ontario and St. Lawrence River water levels and flows after the two federal governments gave their assent. This new plan modifies how water outflows from Lake Ontario will be managed to better address the needs of a healthy environment while maintaining protections for residents on the lake and the St. Lawrence River. The plan is expected to restore approximately 26,000 hectares (64,000 acres) of wetlands that have degraded under the previous plan, initially adopted in the 1950s, while not adding an appreciable risk of flooding or erosion to the shoreline. Lake Ontario shoreline property owners may see some increase in the amount of money needed for shoreline protection, but overall the plan will improve the ecosystem and continue to provide favorable conditions for commercial navigation, recreational boating and hydropower production.

Work is underway to review how water levels and flows are managed in other basins as well. In the Rainy River basin, a study has been taking place to see if the rule curves adopted in 2000 – which set out ranges for dam operators to try and keep water levels within throughout the year – need to be tweaked further, based on scientific studies and input from residents, First Nations and businesses. A list of recommendations is on course to come before the Commission in 2017. In the Souris River basin, the board is continuing to deal with dry weather while working on new adaptive plans in case of another major flood, such as the one that occurred in 2011. And the Commission is setting up a new board in the Lake Champlain-Richelieu River basin to study measures to mitigate flood concerns there as well.

Microplastics are increasingly becoming a concern on the Great Lakes, as these tiny objects can be mistaken for food by fish and other aquatic life – creating potential health concerns for wildlife and the people who may eat them. The Commission held a workshop in Windsor in April 2016 to gain input from community members and scientists, and released recommendations for the governments to address this issue early in 2017.

The Commission's continuing work and success has been a testament to the friendship and bonds between the United States and Canada. People, organizations, institutions and agencies have worked together across the national boundary to solve problems, do research and manage precious, shared natural resources together.

Credit: istockphoto

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Credit: istockphoto

Chapter I: International Watersheds Initiative (IWI) and coast-to-coast

Introduction

The International Watersheds Initiative (IWI) is an approach that operates with an ecosystem focus to address transboundary water issues. It recognizes that ecosystems function as whole entities and should be managed as such. It is also grounded in the belief that local communities, given appropriate assistance, are best placed to address issues in a basin and achieve results.

The history of IWI dates back to 1998, when the governments of Canada and the United States endorsed the Commission's proposal to establish international watershed boards that would adopt an integrated, ecosystem approach to transboundary environmental issues.

In the years since its inception, IWI has helped inform, engage, and provide tools for decision-makers at all levels to better address a broad range of contentious water-related issues along the border.

Rainy-Lake of the Woods

The Rainy-Lake of the Woods basin encompasses parts of Ontario, Manitoba and Minnesota. The basin responds quickly to changes in water supply conditions, such as extreme rainfall events, and lakes can often go above and below the prescribed levels in the rule curve laid out by governments.

The Lake of the Woods. Credit: J. Stephen Conn

In one such instance over the past year, the Commission issued a temporary supplementary order on March 18 that set the Rainy and Namakan lake water levels higher than the current rule curves until April 15 due to above-normal rainfall and warm weather, as a way to ensure that water levels didn't get too low during the summer season.

The Rule Curve Study Board is in the middle of a process to see if any tweaks to the 2000 Rule Curves are necessary at this time. The board held public meetings in July and in the fall as part of an effort to obtain public input on their preliminary findings and study evaluation methods. Final recommendations are due in 2017. An additional public meeting was held in the fall to discuss the "practice decision" (i.e., trial rule curve changes based on preliminary results).

As part of that study process, the Commission released population assessments for Lake Sturgeon in the Rainy River and reports on Rainy Lake whitefish and walleye. It also released reports on water bathymetry, water temperature impacts on fish spawning and economic impacts from the 2000 rule curves.

Finally, the board released its first water quality report for the basin. It found that nutrient levels, mainly phosphorus, exceed Commission alert levels and other jurisdictional standards in the water and sediment.

St. Croix River

The St. Croix River runs along the international boundary between New Brunswick and Maine. Commission responsibilities in the basin are managed by the International St. Croix River Watershed Board.

The St. Croix River in springtime. Credit: Ann

The number of alewives and blueback herring passing the Milltown Dam fishway totaled 33,016 in 2016, counting only fish passing through between May 11 and July 7. This is well below 2015's incredible 95,503 alewives and blueback herring passing through the fishway in the same time frame, but is still a greater number than 2014's 27,312 fish and 2013's 16,677.

The drop from 2015's numbers could be attributed to a lack of rain, which led to reduced river flows and increased water temperatures. This in turn made it difficult for fish to get into the fishway, though brief periods when precipitation and water releases raised the water levels to near-normal researchers saw runs of alewife at the fishway.

A handful of freshwater fish also passed the Milltown dam during the recording period, including 24 smallmouth bass, 14 white suckers, 13 brook trout and three common shiners.

Red and Souris Rivers

The Red River basin encompasses an area that includes parts of Manitoba, North Dakota and Minnesota, while the Souris River originates in Sasketchewan before winding its way through North Dakota and Manitoba to join the Assiniboine River.

The International Souris River Board held a public meeting June 13 to discuss issues facing the basin, like drought and flood risks.

An IWI-funded SPARROW binational hydrological model was completed for the Souris River. This model will help officials track down the source of nutrient pollution – such as phosphorus and nitrogen – across the basin, and scientists have already determined that agricultural usage of these is the primary driver in the watershed. These pollutants are linked to algal blooms in rivers and lakes across the basin, especially in Lake Winnipeg. A similar project based on this one for the Great Lakes basin is underway and should be completed by March 2017.

The Souris River Board worked on revising the 2013 Plan of Study to account for already-completed studies and updated water management needs.

A fifth IWI study examining flooding in the lower Pembina River watershed – and how different potential flood mitigation strategies might work out – was completed in 2016. A user-friendly interactive online tool and website to help decision-makers and the public see the results for themselves is being developed into 2017.

The Souris River flowing through Saskatchewan, where it initially rises. Credit: Waferboard

Osoyoos Lake-Columbia River Basin

Osoyoos Lake is located at the international boundary between Osoyoos, British Columbia and Oroville, Washington.

Osoyoos board member John Arterburn shows a group of people the constructed rock weir installed near Zosel Dam to provide better fish spawning habitat. Credit: Commission

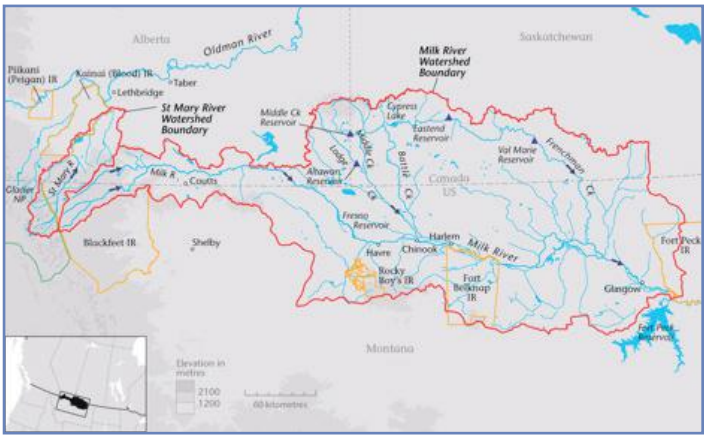
Transboundary cooperation between Canada and the United States helped conditions for sockeye salmon in the Okanagan River, upstream of Osoyoos Lake. In 2016 216,036 salmon were counted crossing the Wells Dam, located on the Columbia River downstream of the Okanagan. Previously shut out of suitable spawning habitat due to dams along the river, the sockeye have bounced back in the river system thanks to these efforts. Studies are underway in British Columbia to see how sockeye could interact with the food web in Skaha and Okanagan Lakes before any changes to the dam keeping sockeye out of the latter lake are made, as well as how they could impact the invasive mysis shrimp in these locations.

As part of the board's task of regulating water flows to Osoyoos Lake, low flows on the Okanagan River in late summer were pumped up thanks to "pulse" flows from British Columbia dam operators, which helped maintain Osoyoos Lake water levels into September.

The board has also started work on a documentary highlighting cooperative transboundary water management in the Okanagan basin. The Washington Department of Ecology received IWI funding for the project, and Ascent Films received the contract to put it together. Filming started in winter 2016, and a final version should be completed by fall 2017.

St. Mary and Milk River Basins

A study supported through the IWI updating consumptive use of water from the watershed is underway in Alberta and Montana, with a final report expected in 2017. Water consumption in the rivers has been studied going back to the 1980s, but the specific consumption and evaporation values used to apportion water supplies for irrigation have been disputed by water users, government officials and commissioners. This project will update and validate those numbers.



A map of the St. Mary-Milk basin. Credit: Commission

Lake Champlain-Richelieu River

Commissioners visited the river and lake in July to get a better handle on conditions in the basin following the 2011 floods, as they gathered information for a possible Lake Champlain-Richelieu River flooding study board. In September the governments released a reference providing funds for the Commission to begin researching flood causes and control measures. The commission established the Lake Champlain-Richelieu River Study Board to lead the study. The study board is tasked with providing recommendations on how to deal with future major flooding events.


A new study board is working on recommendations on how to mitigate or prepare for future flooding along the Richelieu River, pictured here, and around Lake Champlain. Credit: Márcio Cabral de Moura

The study board's research will expand on work already completed in 2015 that provides real-time flood forecasting and flood inundation tools. Once the work is complete, officials should be able to consider a suite of mitigation solutions reviewed as part of the study, along with climactic projections, wind, wave and ice models and a digital terrain model. These could be used to help decision-makers plan the most effective paths forward for the basin to mitigate the damage from future flood events. Work is expected to take five years, concluding in 2021.

Data Harmonization

The process of harmonizing watershed data across the border water regions of the United States and Canada has entered its third phase – harmonizing sub-watersheds at a highly detailed level -- which should run into 2017. Once completed, this data will be made available to researchers on both sides of the border, and will be helpful in building more accurate models of how these basins interact and handle obstacles like pollution and different flow rates. A phase two workshop in Quebec was also held in 2016.

Climate Change Framework

The IWI Climate Change Framework Working Group, established in June by the Commission, held a workshop in Ottawa November 9-10. The workshop was set up to map out what the framework should contain to help control and watershed boards get ready for climate change. Attendees agreed the framework should provide step-by-step guidelines for decision-making to help boards implement it.

The current proposed policy elements include a vulnerability assessment flexible enough to accommodate the various board mandates, a Commission-wide adaptive management initiative to address uncertainties in the future climate, and a Commission policy with pooled resources on potential climate change effects in each basin. A white paper contains these tentative findings and suggestions. The St. Croix board provided a trial run of the framework at its November 29 meeting to determine which board responsibilities are most-tested by climate change.

Once completed, boards should be able to consider how climate change will impact water level and flow management, water apportionment, water quality, aquatic ecosystems and other board-specific responsibilities.

The proposed approaches Commission boards can take to consider climate change in their work include overarching policies to consider climate change, knowledge transfer mechanisms (best practices), and adaptive management reports on how local decision-makers can best prepare for a changing climate.

Chapter II: Great Lakes

Lake Ontario-St. Lawrence River – Plan 2014

In December the governments formally accepted Plan 2014 as a way forward on water level and flow regulation in Lake Ontario and the St. Lawrence River.

IJC Commissioners sign off on Plan 2014 on December 8. Back row: Benoît Bouchard, Rich Moy, Richard Morgan. Front row: Co-chairs Gordon Walker and Lana Pollack. Credit: Commission

Since 1960, the flow of water from Lake Ontario has been regulated at the Moses-Saunders Dam, located at Cornwall, Ontario and Massena, New York, under the Commission's order of approval. The need for an update became evident in the 1990s when property owners, recreational boaters and others voiced increasing dissatisfaction with the regulation plan. The IJC initiated a study in 2000, funded by the Governments of Canada and the United States that directly involved more than 200 technical experts and stakeholders to evaluate hundreds of alternatives. Following the study, the IJC continued to seek a solution that addressed public concerns and balanced the diverse interests.

Plan 2014 strikes a balance between allowing more natural fluctuations to restore ecosystem health while moderating the severity and duration of extreme high and low water levels to meet the increased demands

of a range of user groups in both countries.

On Lake Ontario and the upper St. Lawrence River, Plan 2014 will allow for more natural variations in levels to foster the conditions needed to restore 26,000 hectares, or 64,000 acres, of coastal wetlands. Thriving wetland habitats support highly valued recreational opportunities, filter polluted run-off, and provide nurseries for fisheries and wildlife. Production of hydropower will increase by a modest amount and there will be a modest increase in coastal impacts. Modest improvements for recreational boating downstream of the dam are expected and levels will be better in the fall in most years for boating upstream of the dam. Minimum water levels needed for commercial navigation will be delivered with greater certainty in most years.

The process to update the regulation of water levels and flows began with the realization that the current plan no longer meets the needs of the people and environment of Lake Ontario and St. Lawrence River. Now that the governments of Canada and the United States have concurred with the proposal, the IJC looks forward to better serving our two countries under Plan 2014. The IJC will also monitor and assess conditions on an ongoing basis to track whether Plan 2014 performs as expected.

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

Adaptive management is a structured, iterative process for applying knowledge gained from experience. It aims to continually improve management by learning from the outcomes of previous policies and practices. The Commission established the GLAM Committee in 2015 to apply these adaptive management practices towards management of water levels and flows for which the Lake Superior, Niagara and Lake Ontario-St. Lawrence River boards have responsibility.

The GLAM committee gives an update during the Commission's fall semi-annual meeting. Credit: Commission

In 2016, the GLAM committee began an ongoing assessment of the performance of the new Lake Superior (Plan 2012) and Lake Ontario-St. Lawrence River (Plan 2014) regulation plans to see how closely they are performing to the expected results. The GLAM committee is also revalidating the baseline status of coastal wetlands and the vulnerability of shore protection structures in Lake Ontario and the St. Lawrence River: two key things affected by the LOSLR regulation plan.

GLAM has a study underway that takes 30 years of water data (precipitation rates, evaporation, runoff) from Lake Ontario and breaks it down in five year segments, which will help determine how recent precipitation and runoff estimates fall within long-term averages. The results should be ready to publish by March 2017.

GLAM members are reviewing results of an IWI study conducted by the Canadian Wildlife Service to learn about a link between *Phragmites* range and water level regulation, the final report of which is due in January 2017. So far it has found that the lack of prolonged low water levels in regulated wetlands around Lake Ontario seem to be related to a low number of *Phragmites* in those areas, and future adaptive management around Lake Ontario and the St. Lawrence River should include screening for new *Phragmites* stands, particularly after low water supply periods.

Microplastics

The IJC held a workshop in April in Windsor on the issue of microplastics in the Great Lakes. Microplastics are tiny pieces of plastic that can result from plastic debris breaking down in the water, from microbeads used in body care products, or from microfibers when synthetic fabrics are washed. The workshop brought together 33 experts, who developed a list of 10 recommendations for the Commission to consider for its own recommendations that will go to the governments in 2017. A few of these recommendations include additional ecological impact research, making research into the topic more available to the public, and encouraging the prevention of plastic entering the lakes through education, outreach and policy such as producer responsibility for products throughout their life cycle.

Attendees at the Commission microplastics workshop in Windsor work on coming up with solutions. Credit: Commission

A public comment period on draft recommendations opened in October. The Commission made recommendations to the governments in January 2017 based on the workshop's findings.

Communications Strategy

The Great Lakes Water Quality Agreement gives responsibility to the Commission to raise public "awareness of the inherent value of the Waters of the Great Lakes, of the issues related to the quality of these waters, and the benefit of taking individual and collective action to restore and protect these waters."

Based on a new communications strategy approved in late 2015 for its Agreement work, the Commission initiated several new projects to expand the message and reach of its work on Great Lakes water quality. A new monthly *Great Lakes Connection* newsletter was launched in May, in addition to the Commission's quarterly newsletter called *Water Matters* that covers activities and issues in other transboundary watersheds. The Great Lakes newsletter's goal is to connect science and people for action, and thus includes the latest scientific findings in addition to articles on Commission programs and activities. Since its unveiling subscriptions have already increased by 500 percent, and partnerships with other organizations – including universities and colleges with Great Lakes research departments, nongovernment organizations, recreation organizations and others directly involved in Great Lakes restoration and protection efforts have been initiated to ensure that the newsletter reaches even more Great Lakes residents.

Interactive public information meetings were held to learn about and share current scientific work on Great Lakes issues, including a meeting in conjunction with the microplastics workshop in Windsor in April. The Commission held public meetings in Toronto and Milwaukee in October regarding the Progress Report of the Parties and innovative approaches to deal with relevant Great Lakes issues in each community.

The Commission partnered with Lake Ontario Waterkeeper to create a Great Lakes-specific element to its Watermarks project. The project allows people to provide their memories and connections with the Great Lakes through videos, written statements or voice recordings. As of January 2017, 51 watermarks have been produced and added to the Lake Ontario Waterkeeper collection in a unique section for Great Lakes watermarks.

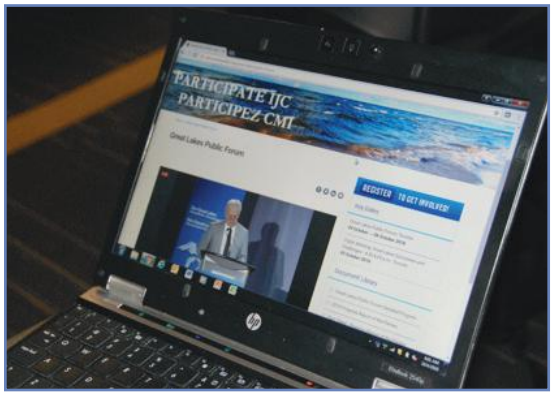
Significant efforts in 2016 to expand the Commission's communications via social media platforms yielded impressive results in followers and interaction on a variety of platforms. The primary Twitter account, @IJCSharedWaters, gained 900 new followers, a 44 percent increase over 2015. The Commission Facebook account grew by 90 percent, with an increase of 800 followers. The two accounts saw year-end follower totals

of 2,900 and 1,700, respectively. The Commission's LinkedIn and Instagram accounts also grew by 100 new followers, each.

Connections to raise public awareness of the Great Lakes also were developed through the use of short videos, infographics, speeches at conferences such as the International Association of Great Lakes Research's annual meeting, and participation in a variety of regional water festivals and educational programs.

Public Consultation on PROP

In October, the Commission live streamed the governments' Great Lakes Public Forum from Toronto to ensure that citizens throughout the region could watch the conference. More than 21,350 people viewed segments of the conference by the end of the year, either through the Commission's or other online streaming avenues, with a total reach of 142,000 in 14 countries from all social media platforms.



The Commission streamed the Great Lakes Public Forum conference, which took place in Toronto at the start of October. Credit: Commission

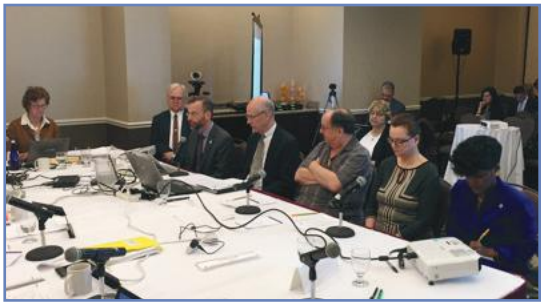
The Commission also held a public comment session at the forum to receive input from conference attendees on the governments' progress, as well as a community-based public discussion at Toronto City Hall in conjunction with the forum, and another in mid-October at the University of Wisconsin's College of Freshwater Studies in Milwaukee. Participants shared local initiatives, goals and challenges to restore their part of the lakes, and summaries of their discussions will be included in the draft triennial assessment of progress report.

The Commission launched ParticipateIJC, an online democracy website dedicated to giving the public another avenue to comment on the governments' progress to restore and protect the lakes, as well as discuss Great Lakes topics of interest as a result of monthly or weekly questions posted to the website.

Public input on the progress report of the parties and the Commission's draft assessment report will continue in 2017 through ParticipateIJC, the Great Lakes Connection newsletter, social media and six public meetings in communities throughout the Great Lakes region.

Great Lakes Water Quality Board

The Great Lakes Water Quality Board's Legacy Issues Work Group assessed the adequacy of actions by governments and other groups in minimizing the release and consequent presence of a class of flame retardant chemicals known as polybrominated diphenyl ethers (PBDEs) in the Great Lakes, particularly the management of PBDE-containing products. The work group is also exploring how possible approaches to addressing PBDEs may be applied to action plans on other Chemical of Mutual Concerns, a matter addressed in the Great Lakes Water Quality Agreement.


The Water Quality Board gives an update during the spring semi-annual meeting in Washington, DC. Credit: Commission.

The Legacy Issues Work Group released recommendations on watershed management plans to deal with nutrient pollution in its Evaluating Watershed Management Plans – Nutrient Management Approaches in the Lake Erie Basin and Key Locations Outside of the Lake Erie Basin report. The work group recommended the Canadian and US federal, provincial and state governments ensure management plans include nutrient management, and to make sure funding is available for planning activities and implementation.

In a report entitled, Summary Report on Climate Change Adaptation in the Great Lakes, the Water Quality Board reported that climate change is already influencing Great Lakes water quality, and that further changes will likely have significant impacts. The board believes that greater information sharing and unified planning is needed. It recommended that the federal governments should jointly develop – along with other governments, First Nations, Metis, Tribes, and organizations around the Great Lakes – a unified adaptation and resiliency plan that includes sharing information and knowledge. It also recommended additional investments in research and information sharing to do a vulnerability assessment for the lakes.

The Commission participated in a November Water Quality Board meeting in Thunder Bay with First Nations and Métis to explore how the Commission could more effectively engage with indigenous communities and see how the board could best incorporate traditional knowledge into its recommendations to the Commission.

In April, the Public Engagement Work Group held a panel discussion in Washington, DC regarding its Binational Great Lakes Basin Poll Report released in March. The polls measured public perceptions on a range of key environmental issues, threats and opportunities within the basin. They found majorities believing it is important to protect the Great Lakes, but more uncertainty on what condition the lakes are in well as where wastewater is ending up.

Great Lakes Science Advisory Board

Considering the need to communicate key aspects of Great Lakes status and trends more clearly and concisely, the Commission's Science Advisory Board Science Priority Committee (SAB-SPC) developed a process for selecting a smaller set of indicators and metrics that can tell meaningful and compelling stories to the public.

The Science Advisory Board gives an update during the Commission's semi-annual meeting in October. Credit: Commission

The SAB-SPC selected eight indicators and metrics for communicating the status and trends of the Great Lakes to the public. The SAB-SPC recommended that this process be repeated on a regular basis as lake conditions, public interest and data availability change over time, perhaps every six to nine years, and that for the next triennial report the process be applied to human health indicators.

Based on the SAB report on communication indicators, the Commission identified eight sub-indicators dubbed Great Lakes Vital Signs that should be used to communicate lake conditions to the public and stakeholders. These include algal blooms, phosphorus concentrations in the lakes, sea lamprey abundance, maximum ice cover, long-term water variability, mercury and atrazine concentrations in water, persistent bioaccumulative toxic substances in fish, and lake trout/lake whitefish abundance.

The SAB-SPC had two other continuing projects in 2016, which are expected to be completed in 2017. The Information Coordination and Flow project will identify and assess programs and platforms that collect, deliver and use data and information in the Great Lakes to support water quality management and policy decisions. The Fertilizer Application project will assess the relative contribution of major sources

of phosphorus to the western basin of Lake Erie, including commercial fertilizers, manure, greenhouses and other sources.

The IJC's Science Advisory Board Research Coordination Committee (SAB-RCC) spent its effort in improving the assessment of progress for answering the questions whether the Great Lakes are getting better in providing safe, high quality drinking water, swim, and fish without health concerns and the fishes and other aquatic species are thriving or declining. The SAB-RCC thoroughly assessed data availability and accessibility and identified potential improvement for indicators used to report progress on these questions and in meeting the Great Lakes Water Quality Agreement objectives.

In its Future Improvements to Great Lakes Indicators report submitted to the Commission in October, the committee made several key recommendations for the Commission and Parties to consider for future improvements in achieving the objectives of the Great Lakes Water Quality Agreement. Recommendations include assessing the condition of drinking water sources in addition to the treated drinking water, measuring loadings of total phosphorus and dissolved phosphorus from major tributaries, and measuring nearshore predators' abundance to help assess the health of food webs.

The Committee also proposes that binational efforts are needed to develop a long-term, focused sampling program that collects adequate indicator data and synthesizes, integrates and harmonizes the data to make it accessible and easy to interpret. The Committee suggests that publicly accessible data at a centralized location would not only increase the efficiency, consistency and transparency of the assessment of progress, but also enhance the effectiveness of information delivery for public awareness and science based policy and management decision making.

Health Professionals Advisory Board

The Health Professionals Advisory Board has undertaken a science and monitoring assessment for the cyanobacteria and associated toxins common to the Great Lakes basin, and the human health impacts arising from those toxins. This report, expected in 2017, describes challenges for the region in maintaining safe aquatic environments for recreation and the production of potable drinking water due to cyanobacterial harmful algal blooms.

A second continuing project seeks to map gastrointestinal illness in four Great Lakes cities (Toronto and Hamilton, ON; Milwaukee and Green Bay, WI) as a proof-of-concept for environment and health data harmonization activities in a human health context. The project seeks to investigate if an association can be made between transboundary gastrointestinal illness, source water in the Great Lakes region, and the environmental factors affecting source water conditions.

Chapter III: Additional Highlights

Commissioner completing service

US Commissioner Dereth Glance

US Commissioner Dereth Glance resigned effective Labor Day 2016, after serving on the Commission for five years. During her tenure with the Commission, Glance was a strong supporter of addressing water quality and water quantity as a unified management issue, making sure that local boards, government agencies and other organizations have the right tools to look at both issues together when making decisions. She also advocated for continuing to harmonize US and Canadian data and research to give water managers the best information to continue their complex tasks in watersheds from coast-to-coast.

Glance is now the executive director of the Onondaga County Resource Recovery Agency, which handles waste management and reduction for Syracuse, New York.

Dereth Glance served as a US commissioner from July 2011 until September 2016. Credit: Commission

Board and Staff members completing service

Several board members completed their service in 2016, leaving a legacy of volunteer service and expertise:

- Todd Sando, co-chair of the International Souris River Board
- Megan Estep, International Red River Board and International Souris River Board
- Dr. Matthew Keifer, Health Professionals Advisory Board
- William Allerton, International Niagara Board of Control
- Brigadier General Richard Kaiser, US Chair of the International St. Lawrence River, Lake Superior and Niagara Boards of Control
- Jaymie Gadal, International Lake Superior Board of Control since 2012
- Phillippe Morel, International St. Lawrence River Board of Control, since 2011
- Andrew Muir, Science Advisory Board-RCC
- Matthew Thompson, Water Quality Board since 2014
- Robyn Wilson, Water Quality Board since 2014

A shot of the Ottawa office canoe commute to raise funds for Project Wet. From left to right (background), Wayne Jenkinson and Shane Zurbrigg; (foreground) Glenn Benoy and Sarah Lobrichon.

- Bill Creal, Water Quality Board since 2014
- Susan Hedman, Water Quality Board since 2011
- Sue McCormick, Water Quality Board since 2014
- Caroline Gravel, Water Quality Board since 2014
- Jean Painchaud, Water Quality Board since 2014

Commissioners wish to recognize with appreciation the staff members who completed their service in 2016:

- Ankita Mandelia, IJC Sea Grant Fellow, Great Lakes Regional Office
- Michael Toope, Public Affairs Adviser, Canadian Section

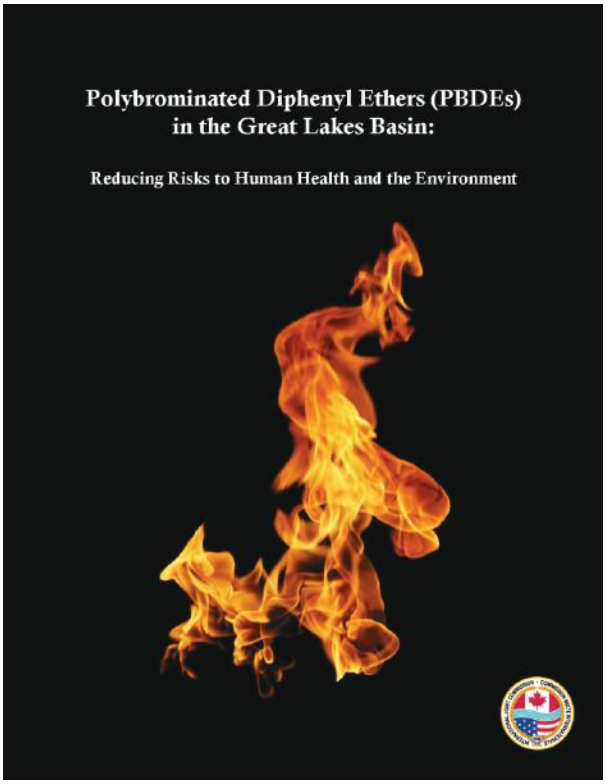
Reports to Governments

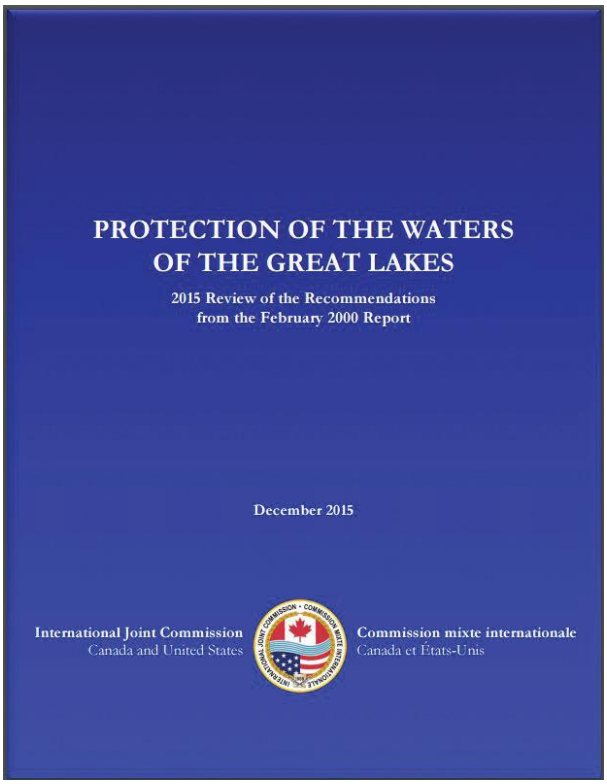
Throughout the year, the Commission issued reports to governments on a variety of topics, several of which were covered in previous sections of this report.

Protection of the Waters of the Great Lakes: 2015 Review of the Recommendations from the February 2000 Report – This report summarized the Commission's findings and recommendations on the protection of Great Lakes waters from potentially harmful consumptive uses and diversions, resulting from consultants' review of recommendations issued by the Commission in 2000 under the title Protection of the Waters of the Great Lakes. For the most part, the report found good news – policy gaps identified by the Commission in 2000 have been largely filled, and no new diversions that would have significant negative impacts on the ecological integrity of the lakes were approved. Consumptive usage growth also appears to have been halted, at least temporarily. The Commission recommended that Great Lakes states and provinces develop, harmonize and implement a binational public trust framework as a bulwark to the Great Lakes Water Quality Agreement, improve accuracy of water use and consumptive use estimates with new methods, fully factor in groundwater withdrawal impacts, improve water stewardship with infrastructure repairs and incorporate climate change resiliency plans into decision-making.

Polybrominated Diphenyl Ethers (PBDEs) in the Great Lakes Basin: Reducing Risks to Human Health and the Environment – A strategy to address PBDEs in the Great Lakes is necessary to contend with this pollutant under the Great Lakes Water Quality Agreement, which declares that lake waters should be "free from pollutants in quantities or concentrations that could be harmful to human health, wildlife or aquatic organisms, through direct exposure or indirect exposure through the food chain." The report makes several recommendations to the United States and Canada to address these chemicals, including that the governments should develop and implement a binational strategy to reduce the chemicals by the end of 2017; put in place basinwide effective restrictions on the manufacture, use and sale of PBDEs and products containing them; develop plans to reduce and eliminate potential releases during the recycling and disposal stages, build a product registry of what contains PBDEs and in what amounts; and work with industry to assess PBDE substitutes and encourage methods for addressing flammability concerns that are not reliant on chemicals or avoid them altogether.

2015 Activities Report – This report summarizes activities performed by the Commission and associated boards and task forces during the 2015 calendar year.


Polybrominated Diphenyl Ethers (PBDEs)
in the Great Lakes Basin:
Reducing Risks to Human Health and the Environment


PROTECTION OF THE WATERS
OF THE GREAT LAKES
2015 Review of the Recommendations
from the February 2000 Report
December 2015
International Joint Commission
Canada and United States
Commission mixte internationale
Canada et États-Unis

Financial Summary

The Commission is funded by the United States and Canada directly through the US and Canadian IJC section offices in Washington, D.C., and Ottawa, Ontario, as called for in the Boundary Waters Treaty. Commission expenditures in 2016 reflect US Fiscal Year Oct. 1, 2015-Sept. 30, 2016, and the Canadian Fiscal Year April 1, 2015-March 31, 2016, and are reported in U.S. and Canadian dollars with no adjustment for the exchange rate. Commission expenditures are made in six categories:

Expense Area	Combined Expenditures
BWT	$6,666,000
GLWQA	$2,205,000
IWI	$835,000
COMS	$938,000
IT	$755,000
ADMIN	$1,386,000
Total	**$12,785,000**

BWT: Work under Boundary Waters Treaty references and applications

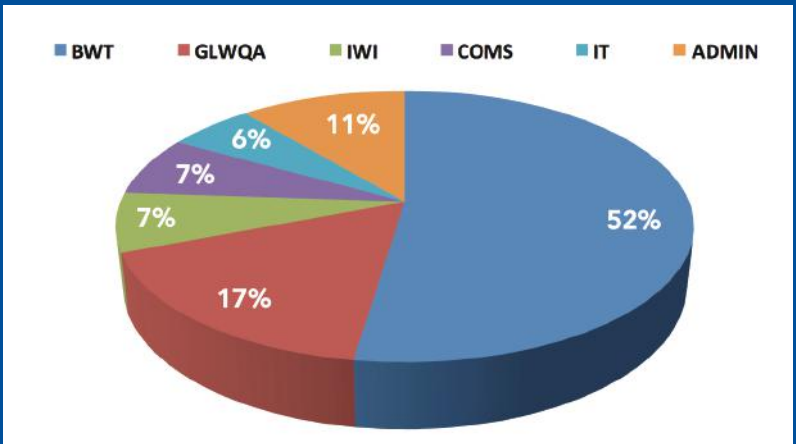
GLWQA: Work under Great Lakes Water Quality Agreement

IWI: International Watersheds Initiative project funding

COMS: Communication activities

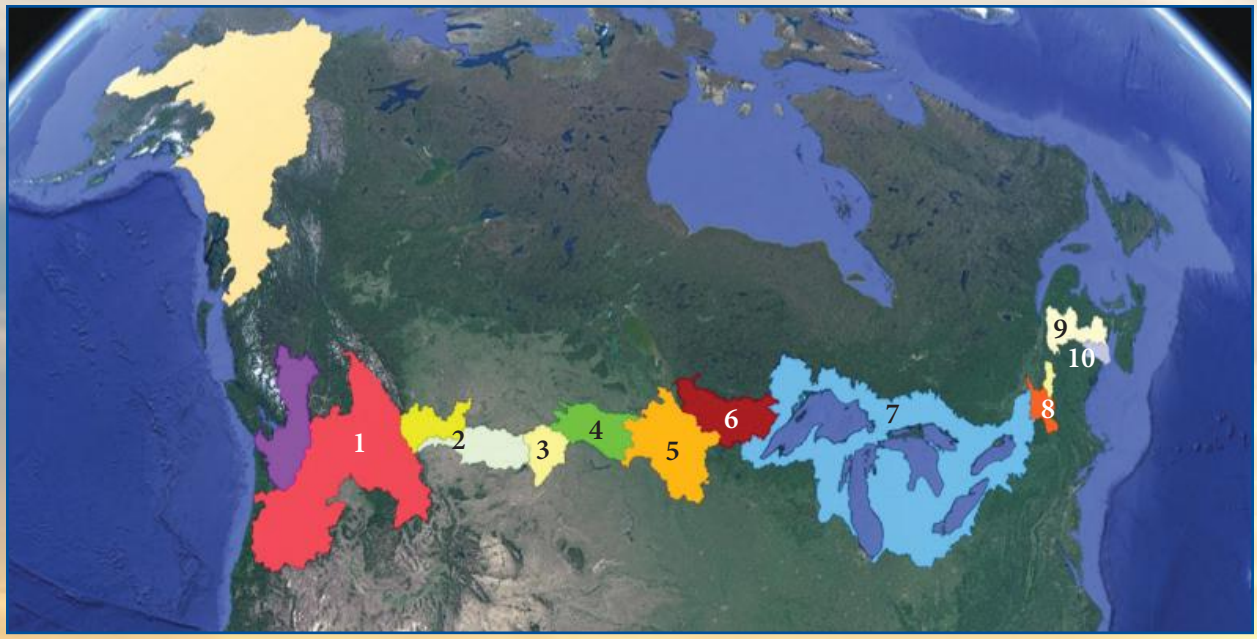
IT: Information technology and support

ADMIN: Administrative costs



Credit: istockphoto

IJC Boards and Task Forces



The IJC has established boards and task forces that work in transboundary basins along the Canadian-U.S. border.

1. Columbia River	2. St. Mary and Milk Rivers	3. Poplar River
• Osoyoos Lake Board of Control • Kootenay Lake Board of Control • Columbia River Board of Control	• Accredited Officers for the St. Mary-Milk Rivers	• Red River Board
4. Souris River	**5. Red River**	**6. Lake of the Woods and Rainy River**
• Souris River Board	• Red River Board	• Lake of the Woods Board of Control • Rainy-Lake of the Woods Watershed Board • International Rainy and Namakan Lakes Rule Curves Study Board
7. Great Lakes	**8. Lake Champlain and Richelieu River**	**9. St. John River**
• Great Lakes Water Quality Board • Great Lakes Science Advisory Board • Lake Superior Board of Control • Niagara Board of Control • Lake Ontario-St. Lawrence River Board of Control • Great Lakes-St. Lawrence River Adaptive Management Committee	• Lake Champlain-Richelieu River Study Board	• St. Croix River Watershed Board
10. St. Croix River	**Transboundary Boards**	
• St. Croix River Watershed Board	• Health Professionals Advisory Board	

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