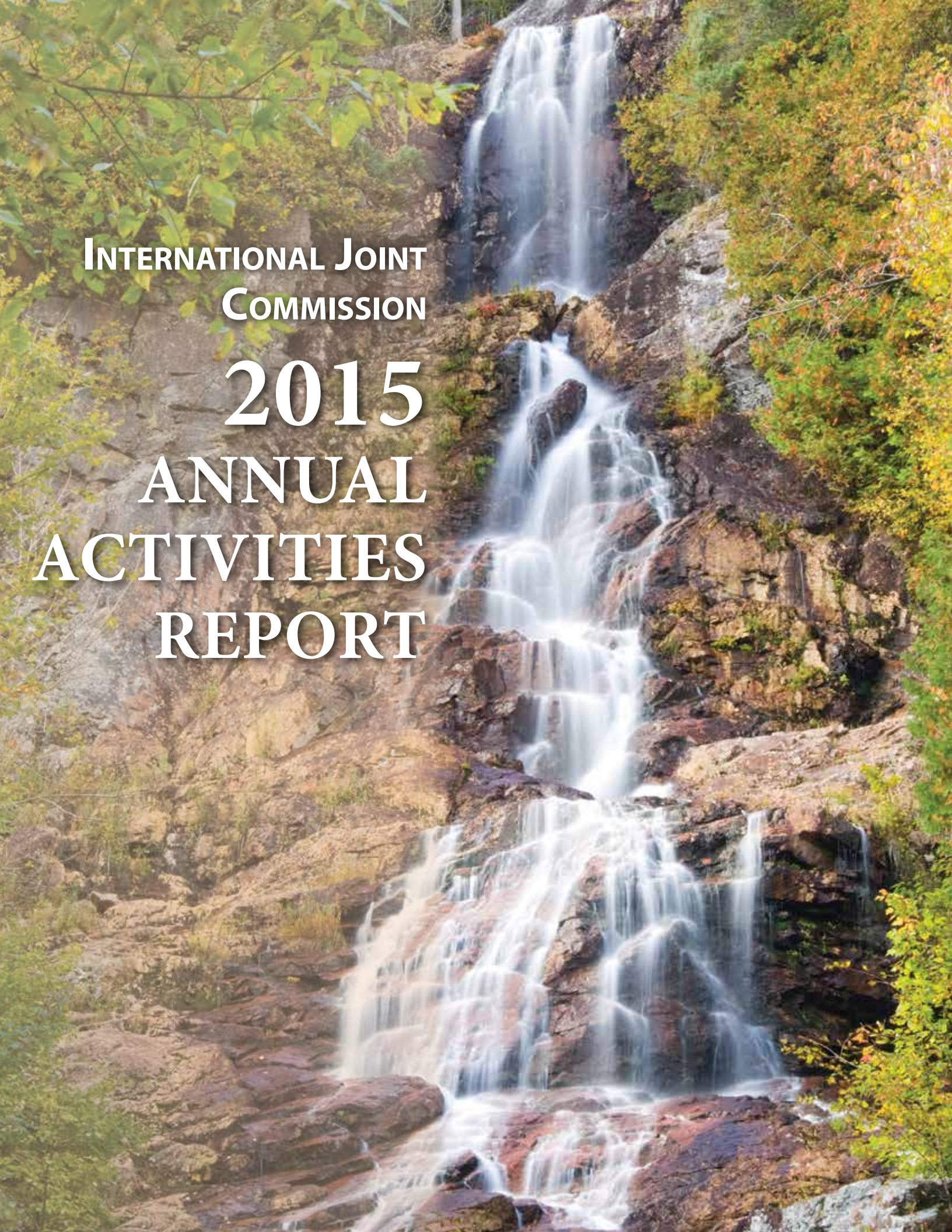

International Joint Commission

2015 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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On the cover: South Black Beaver Falls in Lake Superior Provincial Park, Ontario, Canada. Credit: Billy Wilson

All images contained in this report are from IJC files unless otherwise noted.

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INTERNATIONAL JOINT COMMISSION

2015 Annual Activities Report

Commissioners

Canadian Section

Gordon Walker
Canadian Section Chair

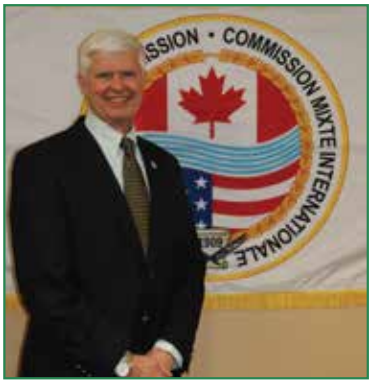
Benoît Bouchard

Richard Morgan

United States Section

Lana Pollack
United States Section Chair

Dereth Glance



Rich Moy

2015 in Review: Warming Water and the Work of Friendship

One hundred and six years after Canada and the United States signed the Boundary Waters Treaty, the International Joint Commission is recognized as a preeminent instrument for binational cooperation. The six-member Commission is focused on water flows and water quality — and on needs of the users and interests dependent on these waters — matters that remind us daily that that we are all in this together. The Commissioners are pleased to be well-supported by outstanding boards and staff that possess excellent engineering, science, policy and management capacities. The Commission deeply appreciates the support of the Governments of Canada and the United States. All of this promotes the honest, informed binational dialogue that underpins the Commission's advice to the Parties and supports its management of the flow of waters across the boundary.

Binational cooperation forged by well-cultivated relationships is even more essential in the face of climate challenges that are already being felt by users in both countries. Transboundary waters are trending increasingly warmer and the timing of freshets and high and low water flows also are reflecting a changing climate. With increasing uncertainties associated with climate change, the Commission's binational, science-based work is even more important.

As the IJC and its boards grapple with the health and the flow of boundary waters, in western basins our attention was particularly drawn to the impacts of 2015's minimal snowpack. One case in point is the Osoyoos Board, which invoked drought provisions to enable optimizing for low-flow conditions.

Despite extensive ice cover on the Great Lakes in 2013-2014 and early 2015, these waters also continue to trend warmer. Intense June rains and minimal rainfall in July and August left warm, slow waters perfectly primed for promoting algal growth. The year's Lake Erie bloom reached Cleveland and closed Maumee Bay State Park beaches, joining the ranks of 2011 and 2014 among the largest recorded blooms. In Northwest Minnesota and Northwest Ontario, satellites captured algae overtaking the iconic Lake of the Woods.

Consistent with the IJC's 2014 recommendations, Governments have proposed 40 percent reductions in Great Lakes phosphorus loadings. While the Parties and Great Lakes states and provinces are promising action, the IJC continues to be concerned about the need for adequate monitoring, more sophisticated water quality modeling and continuing research to support better policies and agricultural practices. Without any regulatory or policymaking authority of its own, the Commission is urging governments at all levels to implement policies and align funding to achieve essential, deep phosphorous loading reductions as swiftly as possible.

Warming waters, worsening algal blooms, drought, and metrics that reveal poor water quality all underscore the benefit of convening a common table to support collective problem-solving and better governance of shared waters. In its 18th year, the International Watersheds Initiative (IWI) embodies this approach as the Commission continues to strengthen this work by the inclusion of greater diversity among its boards. Among the IJC's notable achievements through the IWI, a binational, multi-agency team continues to harmonize hydrographic data and maps. These products continue to be some of the most tangible and valued outcomes of the Commission's IWI work. In 2015, IWI funding further supported binational water quality models to identify pollution at its source and support strengthened cross-border relationships among scientists, regulators and engaged citizens.

The Commission recognizes the value of supplementing its traditional strong science-oriented board appointees with the perspectives of more local residents, including indigenous people and women. In 2015, several of its new appointees reflected the emerging recognition that a diverse representation of local voices can contribute to better outcomes.

The longstanding friendship between Canada and the United States is renewed and strengthened through the continuity of IJC's work. Commissioners invite people, institutions and agencies across the boundary to join us in discussions on the flow and quality of Canada-U.S. transboundary waters. You can be part of the conversation by subscribing to IJC's newsletter, following us on Twitter, Instagram, Facebook and LinkedIn, and perusing through more than 100 years of transboundary watershed information at www.ijc.org.

Credit: istockphoto

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Credit: istockphoto

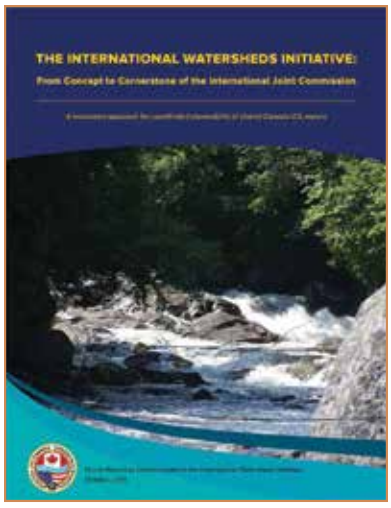
Chapter I: International Watersheds Initiative (IWI)

Introduction

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

The history of IWI dates back to 1998, when the governments of Canada and the United States endorsed the IJC proposal for it 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.



The cover of "From Concept to Cornerstone."

The IJC released its fourth report to governments on the IWI in 2015. The report, "From Concept to Cornerstone," highlights recent successes and challenges, and identifies three additional priorities, focused on studying and adapting to man-made changes to ecosystems.

These new priorities, which were arrived at following a series of meetings and feedback from IJC boards include: impacts on water quantity and quality in transboundary basins from climate change; impacts on water quality in transboundary basins from nutrient loading and harmful algae blooms; and impacts on the quality of transboundary waters from heavy metals and associated contaminants. They complement the existing priorities which are transboundary hydrographic data harmonization and binational water quality modeling.

In order to make this approach into a reality, International Joint Commission (IJC) boards in watersheds along the Canada-U.S. border carry out IWI projects to help manage resources, promote communication, and conduct scientific studies. In the 17 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. Key watershed issues are identified by the IJC's various water management boards. A project proposal that addresses one or more of these issues is then developed by a board and submitted to the Commission for funding support consideration. These projects are reviewed by Commission staff and upon approval are funded.

Since 2010, the governments of Canada and the United States have invested a total of approximately $5 million in the IWI. By funding studies, decision-support tools and other work, this investment has provided the capacity to address a number of binational water-related issues.


From the IWI workshop at the IJC's Fall Semi-Annual Meeting.

In 2015, projects included several adaptive management projects on the effects of water regulation in the Great Lakes; the effects

of the compensating works in the St. Marys rapids; the effects of water regulation on wild rice production and sturgeon spawning in the Rainy River basin; modeling projects of the Rainy River and Lake of the Woods basin; consumptive use in the Milk River; and the development of a documentary explaining water-management issues and practices in the Okanagan basin. Summaries of all the projects are available in the 2015 IWI Project Summary Report.

Data harmonization is essential to create a common set of data for binational collaboration on water management issues in watersheds along the Canada-U.S. boundary. The water quality model developed for the Red-Assiniboine River basin will support efforts to encourage basin-wide reductions in nutrient loading. The IJC is now focusing on supporting the binational application of water quality models being developed for the Rainy-Lake of the Woods and Great Lakes basins.

Rainy-Lake of the Woods

The Rainy-Lake of the Woods basin encompasses portions of Ontario and Manitoba in Canada, and Minnesota in the U.S.

In January 2015, the IJC recommended that the governments of Canada and the United States undertake 32 projects identified in a final Water Quality Plan of Study to address complex water quality challenges facing the basin.

The Plan was prepared by a binational Study Team at the direction of the IJC and based on extensive engagement with government agencies; scientific and technical experts; community groups; First Nations, Métis and Tribes; and the general public.

Todd Sellers, of the Rainy-Lake of the Woods board, discusses algae in the basin.

The Plan of Study identifies five themes of concern, and strongly recommends funding projects and activities to support a balanced approach to water quality management, in response to concerns by governments, researchers, local residents and indigenous peoples about the basin's ecosystem health.

The five themes point to challenges involving long-term monitoring, nutrient enrichment and harmful algal blooms, aquatic invasive species, surface and groundwater contamination, and capacity building.

At a total estimated cost of $8.4 million, the projects would support a broadly-based and coordinated binational approach to address specific challenges facing the basin. The Plan also recommends four projects for immediate action to address significant, pressing risks to the basin's ecosystem health.

In March 2015, along with diverse partners, the IJC co-sponsored the 12th annual International Rainy-Lake of the Woods Watershed Forum in International Falls, Minnesota, bringing together a record number of attendees—more than 150 academics; municipal, provincial state and federal agency staff; and members of the public.

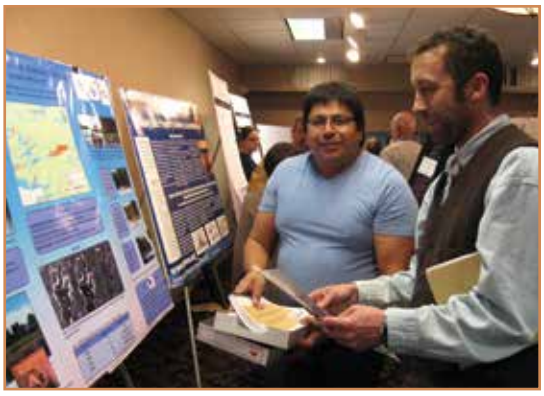
A main focus was a 15-year review of IJC 2000 Rule Curves for Rainy and Namakan lakes. The lakes are each controlled by a rule curve which sets a band of levels that rises and falls according to the time of year.

The Water Levels Committee of the International Rainy-Lake of the Woods Watershed Board also produced and sought public comment on a report on 2014 high water levels in the watershed, which reviewed conditions

that led to high water in June and July of 2014 and responded to a number of questions posed by the IJC regarding water quantity management.

Public outreach by the Board included August meetings in Kenora, Ontario; Fort Frances, Ontario and Crane Lake, Minnesota, as well as a first-ever binational lake association network event for the shared watershed.

In August 2015, the IJC launched the International Rainy and Namakan Lakes Rule Curves Study Board to make scientifically-supported recommendations for modifying or retaining the 2000 Rule Curves after reviewing hydrologic, hydraulic, cultural and environmental factors.



John Kabatay (at left), with Seine River First Nation, and O'Neill Tedrow, from Lakehead University, presenting a poster on wild rice studies at the Forum. Credit: LOWWSF

Work also began to establish a Rule Curve Public Advisory Group to include representatives from groups including lake property owners' associations; navigation interests; environmental organizations; First Nations, Metis and Tribes; tourism and recreation interests; and hydropower companies.

St. Croix River

The St. Croix River runs along the international boundary between New Brunswick in Canada and Maine in the United States. The International St. Croix River Watershed Board was designated as the IJC's first international watershed board in 2007.

In 2015, the IJC continued to fund counts of alewives at the Milltown Dam through its IWI project. The year saw a total of 93,470 alewives counted at the Dam, the largest recorded run since 1998.

Alewives. Credit: Atlantic Salmon Federation

Improvements in alewife population still have a long way to go on the river to reach the 1987 recorded high of 2.9 million fish, but the increased numbers are seen as a positive sign of restoration.

The St. Croix was reopened to alewives, also known as gaspereau, in 2013 after being closed for 18 years due to misplaced concerns that the native fish were harming populations of smallmouth bass. Studies later showed that other factors impacted the decline.

Experts say having more fish return, with greater access to new habitats, improves the biological productivity of the system.

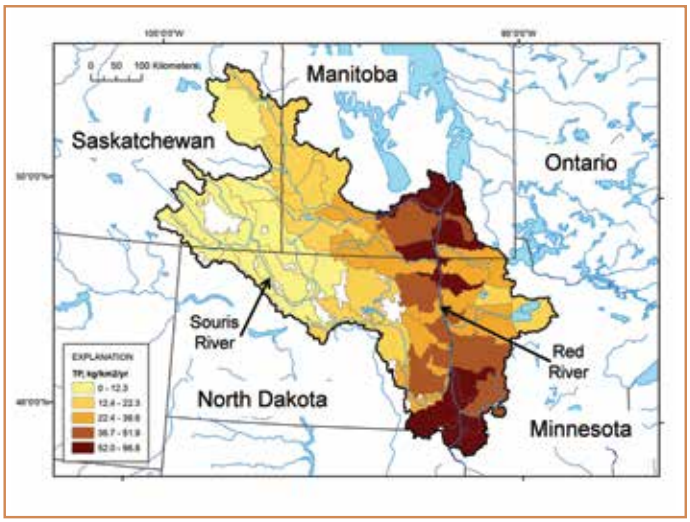
The St. Croix board held its annual public meeting in June 2015 in St. Stephen, New Brunswick, with Canadian IJC Chair Walker, Canadian commissioners Bouchard and Morgan and U.S. Commissioner Moy, and local speakers from Nature Trust New Brunswick, St. Croix International Waterway Commission, and the Atlantic Salmon Federation participating. Two leaders from local Passamaquoddy tribes also attended the meeting, Chief Hugh Akagi and Vice Chief Vera Francis.

In 2015, the process of U.S. Federal Energy Regulatory Commission (FERC) relicensing continued on two dams owned by Woodland Pulp LLC. The license for Forest City dam was issued in November 2015 and the final environmental assessment for the Vanceboro dam was issued in September 2015.

Red and Souris Rivers

The Red River basin includes Manitoba in Canada and North Dakota and Minnesota in the United States. The Souris River originates in the province of Saskatchewan, passes through North Dakota, and crosses into the province of Manitoba before joining the Assiniboine River.

Under the IWI, a SPARROW model developed by the U.S. Geological Survey (USGS) was applied to the binational Red and Assiniboine River basins. The impetus for this application was to better understand and quantify the sources of phosphorus and other nutrients that contribute to the eutrophication of Lake Winnipeg. SPARROW stands for SPAtially Referenced Regressions On Watershed attributes.



Output from SPARROW model showing phosphorus loads in the Red River basin.

An international team, led by IJC, was assembled for the project. The team included researchers from the National Research Council of Canada, Environment Canada, Agriculture and Agri-Food Canada, Manitoba Conservation and Water Stewardship, the Saskatchewan Watershed Authority (Saskatchewan Water Security Agency), and the USGS.

The model builds on and benefits from the USGS application of SPARROW for the Great Lakes basin, as well as the Ohio, Upper Mississippi, Souris, Red, and Rainy river basins in the United States.

It also takes advantage of the products of the IWI Data Harmonization Project, which pioneered the development of interoperable hydrographic and geospatial datasets for basins along the international border.

When the binational model is complete, results will be made available to key stakeholders such as the International Red and Souris River boards, provincial and state agencies, and to the public through user-friendly online tools.

The International Red River Board has identified excess nutrients and the formation of algae blooms as an issue in some areas of the Red River watershed and Lake Winnipeg. In an effort to establish a nutrient management strategy, the Red River Board, in cooperation with the IJC, has established an IWI-funded project to develop a stressor-response model to better understand biological sensitivity in the Red River from nutrient loading.

Osoyoos Lake

Osoyoos Lake straddles the international boundary between Osoyoos, British Columbia, and Oroville, Washington.

The region was the site of the Osoyoos Lake Water Science Forum in October 2015, which was held for the third time in eight years and titled "A Watershed Beyond Boundaries: Stewardship of our Shared Waters."

The Forum, sponsored in part by the IJC and its International Osoyoos Lake Board of Control, provided an opportunity for a wide range of participants, including First Nations, scientists, decision-makers, and

stakeholders to gather, raise concerns, and share ideas on how to shape the future of their watershed.

The western drought and the restoration and management of salmon stocks topped the agenda.

Sockeye salmon suffered massive die-offs in 2015 in the lower end of the Columbia River. Those that managed to reach Canada couldn't migrate up the Okanagan River because the water was too warm. Farmers in Washington who depend on Okanagan water also had supplies cut off for weeks and had to stop irrigating their crops.

The year held some unusual water management challenges for the International Osoyoos Lake Board of Control, which sets maximum and minimum water level limits in the transboundary lake in accordance with the IJC's Order of Approval for Zosel Dam.

During a break at the 2015 Osoyoos Lake Water Science Forum, IJC Canadian Chair Gordon Walker (left) and U.S. Commissioner Rich Moy (right) obtain historical context on water management in the Okanagan Basin from long-time International Osoyoos Lake Board of Control member Kris Kaufmann. In the background are (left) Gwyn Graham, Canadian Board secretary, and (right) David Fay, liaison to the Osoyoos board.

In response to worsening drought conditions on both sides of the border as the summer progressed, the Board recommended that the IJC approve a request that the Board be allowed to control water levels in Osoyoos Lake in the manner prescribed under drought provisions. This was done at the end of July and provided additional flexibility to the operator of Zosel Dam.

Lake Champlain-Richelieu River

A 2015 plan for Lake Champlain and the Richelieu River was developed to enable improved flood preparedness and advanced warning systems for the benefit of the public.

The effort is the result of a request by Canada and the U.S. to address issues associated with system-wide flooding in 2011, and includes work toward a real-time flood forecasting system and flood inundation maps.

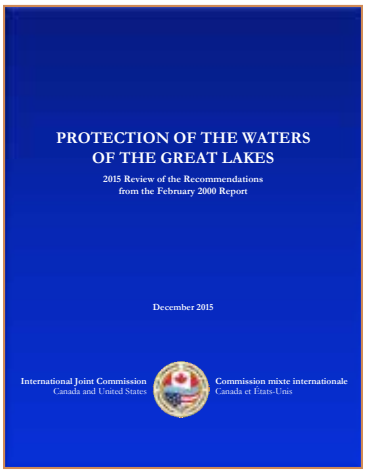
In December 2015, the IJC released the final report after receiving public comments on a draft plan. The final report builds on the work of an International Lake Champlain-Richelieu River Technical Working Group of experts appointed by the IJC from governments of the United States, Canada, Quebec, Vermont, and New York.

The Commission endorsed the Working Group's report and recommends that the governments of Canada and the United States focus on completing an operational, real-time flood forecasting and flood inundation mapping system for the entire Lake Champlain-Richelieu River watershed. This is consistent with current efforts by governments to have the most current and credible scientific information in hand to mitigate flood risks and to properly plan emergency responses.

In coordination with the Technical Working Group, the IJC developed a Web-based application that displays each of the flood inundation scenarios outlined in the draft report. The web-based application is available for public use and may be especially useful for emergency responders, community planners, municipalities, and public security organizations.

Protection of the Waters

In 2000, the IJC issued a report titled "Protection of the Waters of the Great Lakes" in response to a request from the Canadian and U.S. governments following a controversial proposal by a private company to export Lake Superior water in tankers to Asia in 1998. The report made major recommendations – largely directed at states and provinces – to conserve water and protect the lakes.



The cover of "Protection of the Waters of the Great Lakes," December 2015.

The IJC conducted an initial review of its recommendations in 2004. The IJC undertook a second review in 2015, analyzing the progress Great Lakes states and provinces have made over the last 10 years in defending the lakes from diversions, bulk exports and large-scale withdrawals within the basin.

The 2015 review was prepared by two consultants who called their findings "for the most part a good news story."

Their key findings include: the policy gaps identified in 2000 have largely been filled; the Great Lake states and provinces have made significant progress in implementing water conservation measures, primarily through the adoption of the eight-state Great Lakes Compact and a parallel agreement including Ontario and Quebec; consumptive water uses of Great Lakes water have declined in the last decade; and ongoing vigilance and additional scientific advances are required to maintain the positive momentum of the past 10 years.

The IJC sought public comment on the review in late 2015, and after considering public input, will present the findings to the governments in early 2016.

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.

To this end, the IJC established a new Great Lakes-St. Lawrence River Adaptive Management Committee (GLAM) in 2015 in consultation with the Lake Superior, Niagara and St. Lawrence River boards of control to apply adaptive management practices to the ongoing management of water levels and flows.

Regulation of water levels and flows can affect a number of interests including recreational boating. Credit: Ray Dumas

The overall objective of the GLAM effort is to provide information to the boards on the effects that various structures have on levels and flows in boundary waters and the impacts these have on affected interests. While water levels and flows are mainly determined by

natural factors, plans for dams that regulate outflows from lakes Superior and Ontario help moderate extreme high and low levels, and provide other benefits.

The Committee will undertake the monitoring, modeling and assessment necessary for evaluating regulation plans and address other questions that may arise due to changing conditions.

The Committee also will monitor the performance of the plans to regulate outflows on an ongoing basis and how the system may be changing over time to determine if any modifications to the plans may be warranted.

Lake Superior— Plan 2012

Following recommendations from the International Upper Great Lakes Study, the IJC issued a new Supplementary Order of Approval for the regulation of outflows from Lake Superior in 2014. The new Order, fully implemented in 2015, enables the International Lake Superior Board of Control to adopt Regulation Plan 2012 as the means for regulating Lake Superior outflows.

An information booth on Plan 2012 at Engineer's Day. Credit: International Lake Superior Board of Control

Plan 2012 was designed to deliver robust performance under a wide range of possible hydrological conditions, compared to the previous plan. Plan 2012 continues to consider the water levels of both Lake Superior and Lake Michigan-Huron and provides modest benefits for commercial navigation, hydroelectric generation, and coastal zone interests under a broad range of water supply conditions.

It will avoid infrequent but serious adverse effects on the spawning habitat of lake sturgeon (an endangered species) in the St. Marys River and allow for more natural flows in the river overall, as Plan 2012 will provide smaller month-to-month changes in flows compared to the previous regulation plan. This is an important factor in the sustainability of the river's ecosystem.

Lake Ontario-St. Lawrence River—Plan 2014

The IJC continued to provide information on Plan 2014 to the interested public and Canadian and U.S. federal interagency review teams.

After 14 years of scientific study and public engagement, the IJC provided Plan 2014 to the governments of Canada and the United States in June 2014 as the preferred option for regulating water levels and flows on Lake Ontario and the St. Lawrence River. The current regulation plan has substantially degraded fish and wildlife habitat, including 26,000 hectares (64,000 acres) of coastal wetlands. After exhaustive consideration of alternative plans, the IJC concluded that Plan 2014 offers the best opportunity to reverse some of this harm while continuing to moderate extreme high and low water levels. The IJC awaits the response of the two federal governments.

Lake Erie Ecosystem Priority

Conditions in Lake Erie continued to be a priority in 2015, with governments, states and provinces responding to algal blooms in the basin.

Annex 4 of the Great Lakes Water Quality Agreement between Canada and the U.S. commits the governments to adopt targets for Lake Erie phosphorus concentrations and loads by February 2016.

Draft phosphorus reduction targets of 40 percent were released for public review in June by the U.S. Environmental Protection Agency (EPA) and Environment Canada. Those numbers are in line with the IJC's Lake Erie Ecosystem Priority (LEEP) report, issued by the IJC in February 2014.

The algal bloom in western Lake Erie on July 28, 2015, captured by the Landsat 8 satellite. Credit: NOAA

The states of Ohio, Michigan, and the province of Ontario also declared their intent to accelerate the slashing of algal-fueling pollution, setting targets of 20 percent reduction by 2020 and a total 40 percent reduction by 2025.

The Toledo, Ohio, water system was able to keep Lake Erie water drinkable for customers during 2015 through more-extensive and expensive treatment methods. In August 2014, residents and businesses served by the Toledo, Ohio, water supply were hit by a harmful algal bloom, forcing hundreds of thousands of people to stop drinking tap water for two days. In Canada, the smaller community of Pelee Island was similarly affected.

The National Oceanic and Atmospheric Administration (NOAA) said in late 2015 that the bloom in western Lake Erie was "the most severe this century." Fortunately, the bloom moved into the central basin, NOAA noted, rather than along the shore, resulting in less impact along both central basin coasts.

In late 2015, a consultant's report titled "Economic Benefits of Reducing Harmful Algal Blooms in Lake Erie" found significant economic impacts from harmful algal blooms on Lake Erie in 2011 and 2014.

Health Professionals Advisory Board

The Board initiated follow-up activities related to its report "Recommended Human Health Indicators for Assessment of Progress on the Great Lakes Water Quality Agreement," which was sent to governments in December 2014. Two reports were initiated in 2015 as part of this effort and they are intended to support IJC's Triennial Assessment of Progress. The first report evaluates the various health risks associated with swimming, drinking water and fish consumption. The second report, which will be available in 2016, is a Board collaboration with the Lake Erie Ecosystem Priority on an assessment of risk for harmful algal blooms and human health, with a focus on the microcystin and three other cyanotoxins.

The Board responded to a request from Commissioners to investigate human health risks associated with elevated selenium in aquatic environments. A report drafted in 2015 summarizes the current knowledge on human health and selenium in aquatic systems generally, outlines average population levels and exposure pathways for selenium and summarizes case studies, focusing on watersheds where the IJC has water quality responsibilities.

The Board aims to learn more about public health concerns by identifying trends and other indicators from social media.

Social media platforms like Facebook, Twitter and Instagram have been shown to be an indicator of emerging issues, when it comes to incidents like the harmful algal bloom in August 2014 that caused "do not drink" advisories for users of the water system in Toledo, Ohio. In 2015, there were ongoing concerns expressed via social media about blooms in Lake Erie and other water bodies, with people sharing anecdotal as well as media updates.

The Board posted a Request for Information in May, looking to tap into this field of research, regarding "how data from social media might be used to help characterize individuals' and populations' relationships with nearby lakes and streams; how they perceive changes in these dynamic water systems; and how such changes affect their health and sense of well-being."

Great Lakes Water Quality Board

"Unexpected Voices of the Great Lakes" were heard in May at an event held in Buffalo, N.Y., by the Board and Buffalo Niagara Riverkeeper.

A presentation featured Edward Burtynsky, an internationally acclaimed Canadian photographer, who specializes in images of nature transformed through industry.

A panel discussion further highlighted the connection between the lakes and quality of life for the millions who rely on them for recreation, commerce, drinking water and spiritual fulfillment.

Attendees also heard from Allan Jamieson, a member of the Wolf Clan of the Cayuga People; Sandy Smith Cunningham, an educator from Nichols School in Buffalo; and Jill Jedlicka, executive director of Buffalo Niagara Riverkeeper.

Edward Burtynsky speaks during the event.

Great Lakes Science Advisory Board

The Board, which was revamped in 2014, continued work in 2015 with its Research Coordination and Science Priority committees.

The Science Priority Committee used a scientific ranking method to select six indicators that will help communicate progress made toward achieving the objectives of the Great Lakes Water Quality Agreement.

The Research Coordination Committee is leading projects that include identifying emerging monitoring technologies through an online survey and evaluating data gaps for ecosystem and human health indicators.

Chairs of the Science Priority Committee during a presentation to Commissioners and IJC staff at the Fall-Semi-Annual Meeting in Ottawa, Ontario.

Chapter III: Additional Highlights

New Great Lakes Regional Office Director

Patricia A. "Trish" Morris, a U.S. Army veteran, who started in December 2014, served her first full year as director of the IJC's Great Lakes Regional Office (GLRO) in Windsor, Ontario, in 2015.

Morris last worked at the Pentagon as an attorney and adviser to the assistant secretary of the Army-Civil Works.

She spent 20 years working for the U.S. Army Corps of Engineers and Army headquarters, helping the Army navigate complex legal and policy matters related to the U.S. Clean Water Act, Great Lakes invasive species eradication, restoration of the Everglades and remediation and revitalization of the Gulf of Mexico after the Deepwater Horizon oil well fire and spill.

A licensed attorney, Morris also holds a Master's of Science in Peace Operations from George Mason University.

She will serve a four-year term designated for the U.S. director of the binational GLRO under a rotating Canada-U.S. leadership agreement designed for equal representation between the two nations.

Public Outreach

Representatives from the IJC spent time throughout the year talking with citizens and groups in both countries about projects and priorities. The outreach included attending and speaking at events to provide updates and answer questions from the public.

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.

There were informational booths at World Water Day and Earth Day events in Ontario and Michigan, and a display by the Lake Superior Board of Control at the annual Soo Locks Engineer's Day in Sault Ste. Marie, Michigan. Members of the IJC's Canadian Section Office in Ottawa also commuted to work via canoe to raise money to help publish French and English water resource education materials for classrooms across Canada.

Among U.S. commissioners, Section Chair Lana Pollack presented at events including the Red River Basin Land & Water International Summit Conference in Winnipeg, the University of Illinois at Chicago "Water After Borders" summit, an Ohio Farm Bureau Meeting in Columbus, and a "Food, Energy, Water and Abundance" conference at Michigan State University.

U.S. Commissioner Rich Moy spoke at the Annual General Meeting of Lake of the Woods District Property Owners Association in Winnipeg, Manitoba; to the Pacific Northwest Economic Region (PNWER) in Big Sky, Montana; and at the Osoyoos Lake Water Science Forum in Osoyoos, British Columbia.

U.S. Commissioner Dereth Glance spoke at the Healing Our Waters Great Lakes Restoration Conference in Chicago, to the Toledo Municipal Area Council of Governments, at the International Association for Great Lakes Research conference in Vermont, and the Great Lakes Legislative Caucus annual meeting in Buffalo, N.Y.

Among Canadian commissioners, Section Chair Gordon Walker spoke at events including the Osoyoos Lake Water Science Forum in British Columbia; the Niagara International Moot Court Competition at the Canada-United States Law Institute in Washington, D.C.; and at a webinar organized by the Restore Our Water International (ROWI).

Canadian Commissioner Rick Morgan participated in the annual meeting of the Canadian Shipowners Association in Ottawa, Ontario, and the International Rainy-Lake of the Woods Watershed Forum in International Falls, Minnesota.

Canadian Commissioners Benoît Bouchard and Rick Morgan both participated in the 32nd Annual Red River Basin Land & Water International Summit Conference in Winnipeg, Manitoba.

All three Canadian commissioners also met with a large group of McGill University graduate students from a course titled "Integrated Water Resource Management."

Beyond in-person meetings and interactions, outreach continued online, with improvements and updates to the IJC.org website that included a new page on Great Lakes Areas of Concern and sharing of information on additional social media platforms and via a blog and newsletter digest.

The website at IJC.org received more than 250,000 hits in 2015. Facebook followers grew by almost 83 percent during the year to more than 900, and followers of the IJC's Twitter feed @IJCSharedWaters grew by almost 56 percent, topping 2,000.

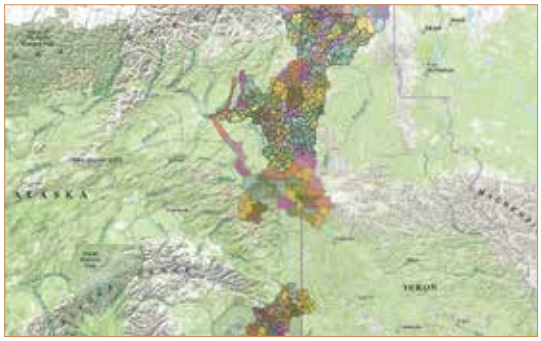
The IJC blog was a particularly notable area of successful collaboration, as guest blogs were invited from various organizations including the Vancouver Aquarium, U.S. Geological Survey, U.S. Department of Agriculture, U.S. and Canadian Coast Guards, International Water Institute, Great Lakes Fishery Commission, U.S. Environmental Protection Agency, New York State Environmental Facilities Corp. and Parks Canada. The blog was visited close to 16,000 times, and a newsletter digest of blog posts was sent out monthly to more than 500 subscribers by year's end.

Data Harmonization

An IJC hydrographic data harmonization team has been working to integrate and improve hydrographic data for the U.S.-Canada international basins.

The data harmonization team has focused its efforts along the international waters covering the lower 48 states, and in 2015 tackled the watersheds of Yukon and Alaska, hosting a first-ever harmonization workshop at Yukon College in Whitehorse.

Representatives from almost a dozen agencies in the two countries came together to examine the Yukon River basin without the artificial line of the international border. The Yukon River basin spans the geographies of the province of British Columbia at its headwaters, to the Yukon Territory in Canada, and then downstream to the state of Alaska.



Concept delineations for harmonized basins along the Alaska/Yukon border. Credit: IJC Maps

The goal of the workshop was to collectively create seamless watershed and sub-watershed data which could be jointly used by agencies on both sides of the border. With this information, any water resource scientist or practitioner working in the international Yukon River Basin will be able to download and access information on the harmonized watersheds and sub-watersheds in the future.

The IJC also continued to expand resources on an online mapping portal at ijc.maps.arcgis.com.

Reports to Governments

Throughout the year, the IJC issued reports to governments on various topics, many of which were covered in previous sections of this report. Below, find reports and letters issued in 2015.

- Synthesis of Public Comment on the 2014 Progress Report under the Canada-United States Air Quality Agreement - Under Article VIII of the 1991 Canada-United States Air Quality Agreement, the Governments of Canada and the United States established a bilateral Air Quality Committee to assist with implementation of the Agreement, to review progress made, and to prepare Progress Reports at least every two years. Environment Canada and the U.S. Environmental Protection Agency are the lead agencies on the Committee. Under Article IX of the Agreement, the International Joint Commission (IJC) is assigned responsibility to invite comments on each Progress Report prepared by the Air Quality Committee, to submit a synthesis of the comments received to the Governments, and to release the synthesis of comments to the public. This report provides a synthesis of the comments received on the 2014 Progress Report for the years 2012-2014.
- A Real-Time Flood Forecasting and Flood Inundation Mapping System for the Lake Champlain-Richelieu River Watershed – In the one year from Oct. 1, 2014, to Sept. 30, 2015, a number of federal, state and provincial agencies worked together to enhance flood preparedness and warnings for Lake Champlain and the Richelieu River (LCRR). This effort was the result of a Directive of the Canadian and United States governments led by the International Joint Commission (IJC) in response to severe flooding in the area in 2011 and a subsequent 2013 Plan of Study (PoS) that identified measures to mitigate flooding and flood impacts in the LCRR watershed. On July 24 and July 31, 2014, the governments of the U.S. and Canada, in accordance with Article IX of the Boundary Waters Treaty, requested that the IJC assist the two governments in the implementation of two components of the July 2013 LCRR PoS.
- Input on Lake Superior Binational Program - On Nov. 4, 2015, U.S. EPA and Environment Canada corresponded with the International Joint Commission (IJC) and others inviting input on the status of the Lake Superior Binational Program (LSBP), which the Parties are reviewing in light of the 2012 Great Lakes Water Quality Agreement. The IJC offered observations and suggestions by letter.
- Atmospheric Deposition of Mercury in the Great Lakes Basin - After several decades of effective action by Canada and the United States to address sources of mercury within the Great Lakes basin, the need to address atmospheric deposition of this toxic substance from out-of-basin regional and global sources is increasingly evident. Achieving the general objective of the Great Lakes Water Quality Agreement that human consumption of fish should be unrestricted by concerns due to harmful pollutants will require reductions in atmospheric loadings of mercury from distant as well as regional and local sources.
- 2014 Activities Report - This report summarizes activities performed by the International Joint Commission (IJC) and associated boards and task forces during the 2014 calendar year.
- A Water Quality Plan of Study for the Lake of the Woods Basin - January 2015: The Plan of Study identifies 32 projects and activities under five major challenge areas needed to improve understanding

of the ecosystem health of the basin and support a balanced, international approach to water quality management. For each recommended project, the Plan of Study outlines the objectives, description of work, possible lead and participating organizations, and timing and cost considerations.

Board and Staff Members Completing Service

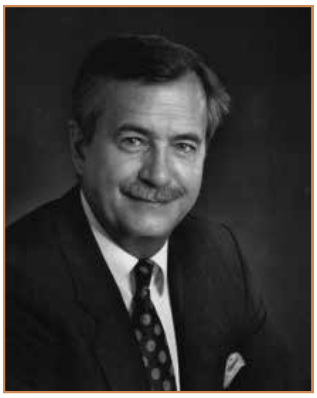
Several board members completed their service in 2015, leaving a legacy of volunteer service and expertise:

- Marg Sanborn, a member of the Health Professionals Advisory Board, who served for 20 years
- Ann Neary, Great Lakes Science Advisory Board: Feb. 27, 2014-Feb. 28, 2015
- Carl Richards, Great Lakes Science Advisory Board: Sept. 19, 2008-March 20, 2015
- John Bratton, Great Lakes Science Advisory Board: Feb. 27, 2014-Jan. 30, 2015

Commissioners wish to recognize with appreciation the staff members who completed their service in 2015:

- Joseph R. Babb, Senior Adviser, U.S. Section
- Bernard Beckhoff, Public Affairs Adviser, Canadian Section

In Memoriam, Claude Lanthier



Claude Lanthier served as the Canadian Section chair of the Commission from 1992-1995.

Lanthier, also an engineer, professor, and Member of Parliament, was first appointed to the Commission in 1990. He served as chair of the Canadian Section from July 16, 1992, through July 28, 1995.

During that time, the IJC produced a highly influential Seventh Biennial Report in 1994, which called for "a clear and comprehensive action plan to virtually eliminate persistent toxic substances that are threatening human health and the future of the Great Lakes ecosystem."

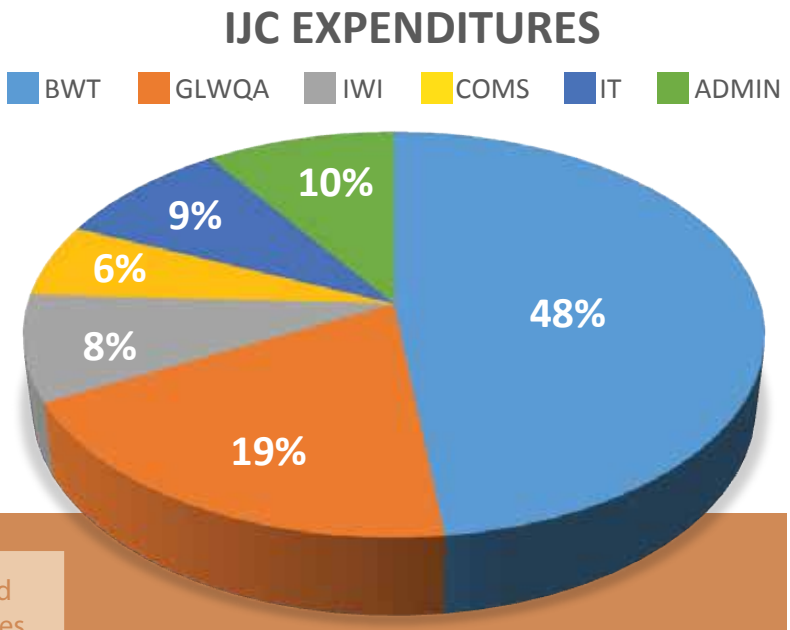
Previous to the report, in October 1993, a record 1,900 people attended an IJC Biennial Meeting on Great Lakes Water Quality in Windsor, Ontario.

Lanthier was born on Jan. 24, 1933, in Montreal, Quebec, graduated from Polytechnique, served as an engineering professor at the University of Montreal, and took on a number of roles in public service.

Lanthier died on April 12, 2015, after a long illness. He was 82.

Financial Summary

The IJC is funded by the United States and Canada directly through the U.S. and Canadian IJC section offices in Washington, D.C., and Ottawa, Ontario, as called for in the Boundary Waters Treaty. IJC expenditures in 2015 reflect U.S. Fiscal Year Oct. 1, 2014-Sept. 30, 2015, and the Canadian Fiscal Year April 1, 2014-March 31, 2015, and are reported in U.S. and Canadian dollars with no adjustment for the exchange rate. IJC expenditures are made in six categories:



Expense Area	Combined Expenditures
BWT	$6,038,000
GLWQA	$2,407,000
IWI	$1,059,000
COMS	$732,000
IT	$1,115,000
ADMIN	$1,196,000
Total	**$12,547,000**

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

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 • St. Lawrence River Board of Control • Great Lakes-St. Lawrence River Adaptive Management Committee	• Lake Champlain-Richelieu River Technical Working Group	• St. Croix River Watershed Board
10. St. Croix River	**Transboundary Boards**	
• St. Croix River Watershed Board	• Health Professionals Advisory Board	