One Hundred and Twenty-fifth Progress Report

to the

International Joint Commission

by the

International St. Lawrence River Board of Control

Covering the Period

1 September 2015 through 29 February 2016

29 February 2016

Cover Photo: Lake St. Lawrence during extreme southwest winds and record high temperatures on 24December 2015 (Credit: Jacob Bruxer)

Executive Summary

Regulation Strategy and Results

Lake Ontario ended the month of August at its highest level since 1992. Above-average water supplies, fluctuating water levels on Lake St. Lawrence, the first spill event since 1998 at the Long Sault Dam spillway, excess water stored on Lake Ontario from the August tug salvage operation, and ice management all presented challenges to regulation during the reporting period.

The Board followed plan-prescribed outflows for most of September. However, outflows were reduced late that month due to Lake St. Lawrence falling below the Seaway low alert level. Outflows were reduced twice in October, first to raise levels of Lake St. Lawrence and assist residents with recreational boat haul-outs, and later to reduce the amount of water spilled at the Long Sault Dam spillway. Flows were increased from 23 October to 10 November to remove stored water on Lake Ontario. Outflows were then reduced to increase levels in Lake St. Lawrence once again. Over-discharges then continued into December to continue removal of stored water. All remaining stored water was removed by 25 December. Incremental reductions were undertaken thereafter in late January and early February to facilitate the formation of stable ice covers in the St. Lawrence River. This stored water was then partially removed during a series of further over-discharges. On 29 February, 4.9 cm (1.9 in) of water remained stored on Lake Ontario.

Lake Ontario received above-average water supplies throughout the entire reporting period. All were within the range of those used in the design of the regulation plan, Plan 1958-D. Lake Ontario levels began the month of September at 19 cm (7.5 in) above average, fell below average from the end of November through December, then rose above average through February. No violations of criterion h, j, or k occurred during the reporting period. Thus water levels on Lake Ontario and in the St. Lawrence River were maintained within the criteria specified in the 1956 Amended Orders of Approval of the International Joint Commission (IJC).

On 29 February 2016, the level of Lake Ontario was 30 cm (11.8 in) above average.

Board Activities

The Board met in person twice during the reporting period to conduct business, assess conditions, and affirm its outflow strategy. Regulation representatives continued to provide the Board with weekly

information on conditions in the system, monthly assessments of hydrologic conditions and forecasts, and risk assessments. The Board reviewed the information each month through emails. The Operations Advisory Group continued its weekly teleconference to apprise the regulation representatives of operational requirements and constraints. The Great Lakes - St. Lawrence River Adaptive Management Committee presented its first annual work plan and communication strategy to the Board, and gained approval of these items in October. In December, Canadian Co-Chair Morel accepted a position at the Department of Fisheries and Oceans Canada (DFO). Mr. Morel will continue as co-chair until the IJC appoints a replacement from Environment and Climate Change Canada (ECCC). Mr. Arun Heer was officially appointed US secretary on 9 December following his temporary appointment which began 20 April 2015. A Board membership vacancy remains for the US section.

Communication Activities

The communication committee was very active in 2015, and completed its strategic communication plan in support of IJC 2015-2020 strategic communication goals. A comprehensive summary of annual activities is provided in Appendix A.

Board members presented the standard presentation to three separate stakeholder groups during this reporting period, and held a teleconference/webinar on 15 September. The Board also posted the presentation materials on its website beforehand for public access. The joint Board-IJC communications committee continues to provide advice and assistance on a variety of issues, including a standard Board presentation and the opening of a Flickr account to allow for online photo sharing, and is currently in the process of developing short educational video segments to be shared online. ECCC supported the Board's communications efforts by providing additional staff to assist the Board's communication efforts, with their responses to a number of public inquiries and requests for information, and improving its communications effectiveness through the use of its Facebook site.

Appendix B provides the same background material as was in the semi-annual reports of the Board to the IJC prior to 2010. Providing the material in this manner allows this report to be focused on the issues and conditions of the current reporting period, allowing the interested reader to refer to this appendix for the background information.

Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICIES

1 Hydrological Conditions

1.1 Lake Ontario basin - net basin supply

The local net basin supplies (NBS) to Lake Ontario (see Appendix B for definition) were near average from September through January and above average in February. Monthly NBS values for September through February and for the total six-month period are provided in Table 1. Over the six-month period, local net basin supplies were above average, having been exceeded 30 percent of the time.

1.2 Precipitation

Monthly precipitation amounts for the Lake Ontario and Great Lakes basins, and the average for the total six-month period are provided in Table 2. Precipitation over the Lake Ontario basin was above average in September, October and February, near average in December and well-below average in November and January. The six-month average amount of this basin's precipitation was 71 mm (2.8 in.) per month, which was below average, having been exceeded 62 percent of the time. The six-month average precipitation for the entire Great Lakes basin was 63 mm (2.5 in.) per month, which was also below average, having been exceeded 60 percent of the time.

1.3 Supply from Lake Erie

The inflows to Lake Ontario from Lake Erie during the reporting period are provided in Table 1. With Lake Erie's level above average from September through February, monthly means flows to Lake Ontario were above average throughout the reporting period. Based on the historical record, the six-month average outflow would be expected to be exceeded only 14 percent of the time.

1.4 Lake Ontario – net total supply

The monthly net total supplies to Lake Ontario are provided in Table 1 and shown graphically in Figure 1. The six-month net total supplies for the past ten years are provided in Table 3 for comparison purposes. The monthly net total supplies were above average from September through February. Overall, the total supply was 113 percent of the long-term average during this reporting period and has been exceeded only 16 percent of the time.

1.5 Ottawa River basin

Figure 2 shows the Ottawa River flows. Ottawa River outflows started the reporting period near the September average, and quickly fell in October to near record minimums for that month. Outflows then sharply rose, approaching the maximum for the last week in December, remaining well-above average for the months of January and February.

2 Regulation of Flows and Levels

2.1 Board's regulation strategy and resulting actions

In order to be responsive to the conditions and needs of interests in the Lake Ontario – St. Lawrence River system, the Board assessed conditions throughout the period: in meetings twice and through numerous email exchanges, and developed outflow strategies with the aid of regular monthly reports from the regulation representatives that reviewed conditions.

In summary, the Board's strategy in September was to release outflows according to the plan-prescribed values, permit under discharges to assist in the haul-out of recreational vessels on Lake St. Lawrence, promptly remove water stored on Lake Ontario prior to the end of December 2015, and allow additional under- or over-discharges that would be necessary to address unforeseen critical conditions. Incremental reductions were undertaken in late January and early February to facilitate the formation of stable ice covers. This stored water was then partially removed during a series of over-discharges. Figure 3 shows the actual Lake Ontario outflows for the period 1 September 2015 to 29 February 2016, in comparison to the long-term average, calculated preproject and 1958-D Plan-specified outflows. Fluctuating water levels in Lake St. Lawrence, as shown in Figure 4, and other factors resulted in many deviations throughout the reporting period. These deviations are discussed in further detail in the following section.

2.2 Deviations from Regulation Plan 1958-D

Table 4 summarizes the Board's discretionary deviations during the reporting period. As seen in the table, deviations were made throughout the reporting period consistent with the regulation strategy. The Board followed plan-prescribed outflows for most of September. However, outflows were reduced on 25 September and 30 September due to Lake St. Lawrence falling below the Seaway low alert level due to temporary water level fluctuations during periods of strong northeast winds. In October, outflow was first reduced on 10 and 11 October to raise water levels on Lake St. Lawrence to assist residents with recreational boat haul-outs. On 13 and 14 October, transmission congestion issues in the New York

Control Area temporarily limited the amount of water that could be passed by the New York Power Authority through the Moses Generating Station. To achieve plan-flow during this time, NYPA spilled water through the Long Sault Dam spillway starting on 13 October. On 14 October, the total outflow was reduced below the plan-prescribed amount to avoid further spillage through the spillway. Plan-prescribed flow resumed until 23 October, and flows were increased thereafter to remove stored water on Lake Ontario. Over-discharges continued until 10 November, when outflows were reduced to increase levels in Lake St. Lawrence once again due to that lake reaching the Seaway low alert level during strong northeast winds. Over-discharges resumed 12 November to continue removal of stored water. Removal of stored water continued in December. All remaining stored water was removed by 25 December. Incremental reductions were undertaken thereafter in late January and early February to facilitate the formation of stable ice covers in the St. Lawrence River. This stored water was then partially removed during a series of further over-discharges. As of 29 February, 4.9 cm (1.9 in) of water remained stored on Lake Ontario.

2.3 Iroquois Dam operations

From 14 to 16 September, Iroquois Dam gates 8-11 were fully closed to permit repairs to the equipment that monitors the eel passage. Additionally, gates 8-13 were fully closed from 14 to 16 October to permit the removal of this equipment.

2.4 Results of regulation

2.4.1 Upstream

Lake Ontario

The effects of Regulation Plan 1958-D and the Board's outflow strategy on the levels of Lake Ontario are shown in Figure 5. For comparison purposes, the daily levels of 2014, 2015 and 2016 through the reporting period are shown. During this period, levels started above average and remained above average until November, when they dropped below average through the end of December. Levels quickly rose to above average entering January and continued to rise through February. At the end of the period, the level was at 74.91 m (245.76 ft.), 30 cm (11.8 in) above the long-term average.

As a means of determining the impact of regulation activities on levels and outflows, the Board provides the IJC with a comparison of Lake Ontario's actual monthly levels and outflows to those that would have occurred under preproject conditions (that is, the levels and outflows that would have occurred had regulation not been undertaken). A summary of this comparison for the reporting period is given in Table 5.

This shows that Lake Ontario ranged from 33 cm (13.0 in) to 57 cm (22.4 in) lower than it would have been without regulation. A comparison of the daily levels to long-term average, and weekly computed Plan 1958-D levels is also shown in Figure 6.

Lake St. Lawrence

As shown in Figure 4, the water levels of Lake St. Lawrence started the reporting period well below average due to relatively high Lake Ontario outflows, and temporarily approached record lows near the end of September during sustained northeast winds. High Lake Ontario outflows continued to draw down Lake St. Lawrence, keeping levels generally below average through November, and, again, briefly approaching record lows several times. Levels climbed above average towards the end of December and continued above average through February, temporarily approaching record highs in both January and February. On 29 February, the water level was 72.95 m (239.33 ft), 42 cm (16.5 in) above the long-term average.

2.4.2 Downstream

Lake St. Francis

Daily water levels at Summerstown on Lake St. Francis fluctuated near average until late December, then fell below average as flows were decreased for ice formation, and remained below average through mid-February. Levels then rose as flows were increased and finished the reporting period near average.

Lake St. Louis

Lake St. Louis water levels began September above average and fell to average by the end of the month, where they fluctuated near average until January. From January through mid-February, levels were below average, and then rose sharply to above average as a result of increased outflows from Lake Ontario combined with relatively high Ottawa River flows. As shown on Figure 7, the water levels on Lake St. Louis were above the Seaway low alert level of 20.6 m (67.6 ft) throughout the reporting period.

Port of Montreal

The daily levels at the port began September near average, and fell to below average by the end of the month. Levels generally remained below average through mid-February, before rising sharply above average. Water levels remained above chart datum throughout the reporting period. Figure 8 indicates the daily water levels in the port.

3 Board Activities

3.1 Board meetings & conference calls

The Board continued to oversee the operations of the hydropower project in the international reach of the St. Lawrence River. The Board, primarily through the offices of the regulation representatives, monitored conditions throughout the Lake Ontario-St. Lawrence River system. Regulation representatives provided the Board with: weekly regulation data; monthly reviews of hydrological conditions; risk analyses using water level outlooks; and advised the Board on regulation strategy options and their potential impacts on water levels and interests throughout the system. The Board's Operations Advisory Group (OAG) held weekly teleconferences to review conditions and advise regulation representatives on weekly operational requirements and constraints. The St. Lawrence River Committee on River Gaging continued to monitor the power entities' program for operation and maintenance of the gaging system required for Board operations, hold teleconferences and report annually.

The Board continued to assess conditions in the basin and adjust or affirm its regulation strategy accordingly. Conditions were such that the Board used email exchanges monthly, since more in-depth consultation to revise or affirm the regulation strategy was unnecessary. During the reporting period, the Board held face-to-face meetings on 23 September in Montreal, QC, and 28 October in Ottawa, ON. Table 6 provides a list of board members in attendance at the meetings.

3.2 Meetings with the public and input from the public

The Board conducted a public teleconference/webinar the evening of 15 September 2015 to allow the public direct access to the Board. The Board provided toll-free telephone access in French and English with simultaneous translation and remote access via webinar and prior posting of the slides on its website. Twelve people participated in the teleconference/webinar.

During the reporting period, the communications committee, individual board members, the secretaries and the regulation representatives were actively engaged in outreach, information exchange and liaison with stakeholders throughout the Lake Ontario-St. Lawrence River system, including through presentations to stakeholder groups as referenced in Appendix A and the Board's strategic communications plan. Board members and staff responded to a number of inquiries and requests for interviews from the media and the general public concerning water level conditions and the effectiveness of the board's strategies. Weekly postings on the Board's Facebook pages occur in both French and English, with total "likes" at 34 for the French page and over 655 for the English page. The Board's posts reached 475 people on average in a single week, with more interest after posting the monthly hydrologic summary.

3.3 Board and committee membership changes

In December, Canadian Co-Chair Morel accepted a position at Fisheries and Oceans Canada (DFO). Mr. Morel will continue as co-chair until the IJC appoints a replacement from ECCC. Mr. Arun Heer was officially appointed US secretary on 9 December 2016 following his temporary appointment which began on 20 April 2015. A US section Board membership vacancy remains.

4 Communications Committee Report

The Board continued to work with the IJC through the Communications Committee, to seek opportunities to improve communications with the public. The regulation representatives joined the committee to assist with the explanations of technical details. ECCC provided communications assistance to the Board. A complete annual summary of the committee's activities can be found at the end of this report in Appendix A.

Communication activities during the reporting period included:

- Preparation of media releases: The Board issued media releases after each board regulation decision and on an as-needed basis to provide the public with up-to-date information on basin conditions and noteworthy activities;
- Held a public meeting via teleconference/webinar on 15 September;
- Continued operation of the Board's website on the internet, http://www.ijc.org/en_/islrbc/home . The website includes:
    - Slider photos indicating interests in the Lake Ontario – St. Lawrence River system
    - Weekly updates on water levels, outflows and water supply information;

  - General information about the Board, its activities and its structure;
  - Announcements about the Board's outflow strategies and "related media" releases;
  - A list of frequently asked questions and responses; and
  - A posting of the Board's semi-annual progress reports, meeting minutes, teleconference summaries and data updates;
- Weekly and monthly updates of the Board's English (www.Facebook.com/ISLRBC) and French (www.Facebook.com/CICFSL) Facebook pages, and frequent interaction with the public through the Facebook page; and
- Flickr account set up to provide publicly accessible photos.

The regulation representatives also sent weekly updates on Lake Ontario regulation and water level and outflow conditions to almost 300 e-mail subscribers. Stakeholders are encouraged to subscribe to this free service.

5 Adaptive Management Committee

The IJC established the St. Lawrence River - Great Lakes Adaptive Management Committee (GLAM) of technical experts in early 2015 to adopt adaptive management methods as part of an ongoing review and evaluation of regulation plans, as well as to implement the outstanding science of past studies. The Board plans to utilize GLAM to evaluate regulation plan performance over time with regard to a broad range of environmental and economic indicators.

The GLAM presented its first annual work plan and communication strategy to the Boards at the 23 September meeting and later to the IJC on 28 October during the semi-annual meeting. The Boards and IJC approved GLAM's annual work plan and communication strategy, which can be found in Appendix C.

6 Gaging Committee

The Board's St. Lawrence Committee on River Gaging monitors the power entities' program for maintaining gages required for the Board to monitor water levels and flows.

6.1 Overview

The Board's committee on river gaging ensures the accuracy of flow estimates and water level measurements. This includes inspections of computational methods at each of the eight outflow structures

and the 15 water level gages used by the board to monitor river conditions. Audits of the power entities' data processing are also conducted by an inspection team under the direction of the committee. The inspection team prepares an annual report to the gaging committee. Operation and maintenance of the water level gages are performed by the power entities and the Canadian Hydrographic Service. The gauging committee's (inspections) guidelines document was presented to the Board for review and approval on 23 September.

6.2 Gage network inspection

The committee is responsible for annual inspections of the water level gaging network and provides the Board with an annual report on inspection results. The 2013 Gaging Report was approved by the Board and posted on the SharePoint site. The seventy-eighth (2014) report is currently in progress and is expected to be distributed for review during the April board meeting in Washington DC. The gaging committee conducted the 2015 water level gage inspection in October with financial assistance from the IJC for NOAA members. Discussions on future funding and agency responsibilities are still ongoing.

6.3 Raisin River diversion

The Raisin River diversion remained open from the beginning of the reporting period until 24 September. Flow rates ranged from 0 to 0.02 m^3/s (0.7 cfs) during this period.

7 St. Lawrence Seaway Report

The Seaway navigation season for the Montreal-Lake Ontario Section officially closed Wednesday, 30 December 2015 with the last vessel, the Baie St. Paul, transiting the St. Lambert Lock at 20:41.

8 Hydropower Peaking & Ponding

By letter dated 13 October 1983, the IJC authorized OPG and NYPA to continue to carry out peaking and ponding operations at the St. Lawrence project. The conditions governing peaking and ponding operations are specified in Addendum No. 3 to the *Operational Guides for Regulation Plan 1958-D*. On 28 November 2011, the IJC renewed the approval for a five-year period, dated 1 December 2011 to 30 November 2016

Peaking operations were conducted throughout the reporting period. No ponding operations were conducted. A specific request to be able to peak when daily flows were over 7930 m^3/s to allow switching transfers from OPG to Hydro Quebec was approved by the IJC during the previous reporting period.

Respectfully submitted,

Members for the United States	**Members for Canada**
_____	_____
BG Kaiser, Chair	**P. Morel, Chair**
_____	_____
T. Brown	**J. Aubry-Morin**
_____	_____
R. Campany	**P. Clavet**
_____	_____
F. Sciremammano	**J. Frain**
	_____
	M. Hudon

Table 1: Monthly Mean Supplies to Lake Ontario

Month	Inflow from Lake Erie				Local Net Basin Supplies			Total Supplies			
	m^3/s	tcfs	Exceed. Prob.(1)	Percent of LTA (1)	m^3/s	tcfs	Exceed. Prob. (1)	m^3/s	tcfs	Exceed. Prob. (1)	Percent of LTA (1)
Sep 15	6,620	234	15	111	260	9	32	6,880	243	13	114
Oct 15	6,390	226	20	109	170	6	51	6,560	232	28	108
Nov 15	6,440	227	17	110	460	16	58	6,900	244	31	107
Dec 15	6,270	221	25	107	950	34	41	7,220	255	30	108
Jan 16	6,560	232	11	115	1,100	39	39	7,660	271	19	115
Feb 16	6,510	230	10	117	1,940	69	7	8,450	298	4	127
6-month Average	6,470	230	14	112	810	30	30	7,280	260	16	113

(1) Based on period of record 1900-2015

Table 2: Provisional Precipitation over Great Lakes & Lake Ontario Basins

Month	Great Lakes Basin			Lake Ontario Basin		
	mm (inches)(1)	Percent of LTA(2)	Exceed. Prob.(3)	mm (inches)(1)	Percent of LTA(2)	Exceed. Prob.(3)
Sep 15	74 (2.91)	85	70	93 (3.66)	112	35
Oct 15	70 (2.76)	95	56	86 (3.39)	108	39
Nov 15	61 (2.40)	87	66	39 (1.54)	49	95
Dec 15	86 (3.39)	141	6	76 (2.99)	101	46
Jan 16	41 (1.61)	73	82	45 (1.77)	65	89
Feb 16	45 (1.77)	100	48	88 (3.46)	147	9
6-month Average	63 (2.47)	97	60	71 (2.80)	96	62

(1) Provisional
(2) Based on period of record 1900-2015
(3) Based on period of record 1900-2013

Table 3: Average & Recorded Six-Month Total Supplies (Sep-Feb)

	Long-Term Average [1]		Recorded			Recorded Below (-) or Above Average (+)		
	(m^3/s)	(tcfs)	(m^3/s)	(tcfs)	Exceed. Prob. [1]	(m^3/s)	(tcfs)	Percent
Sep 06 – Feb 07	6,430	227	7,590	268	9	1,160	41	18
Sep 07 – Feb 08	6,430	227	6,540	231	43	110	4	2
Sep 08 - Feb 09	6,430	227	6,910	244	28	480	17	7
Sep 09 - Feb 10	6,430	227	6,500	230	45	70	2	1
Sep 10 – Feb 11	6,430	227	6,270	221	56	-160	-6	-2
Sep 11 – Feb 12	6,430	227	7,540	266	10	1,110	39	17
Sep 12 - Feb 13	6,430	227	6,130	216	62	-300	-11	-5
Sep 13 - Feb 14	6,430	227	6,520	230	44	90	3	1
Sep 14 - Feb 15	6,430	227	6,470	228	46	40	1	1
Sep 15 – Feb 16	6,430	227	7,280	257	16	850	30	13

[1] Based on period of record 1900-2015

Table 4: Summary of Outflow Deviations from Regulation Plan 1958-D Flow

Date 2015-2016	Deviation (cms)	Dev. (cms-wks)	Acc. Dev. rounded (cms-wks)	Cum. Effect on Lake Ont. rounded (cm)	Reason for Deviation
Sep 1			-630	2.0	
Sep 25	-160 for 24 hrs	-23	-650	2.0	Raise Lake St. Lawrence Levels
Sep 30-Oct 1	-280 for 36 hrs	-60			Raise Lake St. Lawrence Levels
Oct 2	-480 for 24 hrs	-69	-780	2.4	Raise Lake St. Lawrence Levels
Oct 3-4	-610 for 48 hrs	-174			Raise Lake St. Lawrence Levels
Oct 5	-310 for 13 hrs	-24	-980	3.0	Ramp to plan flow
Oct 10-11	-1,090 for 39 hrs	-253			To aid Lake St. Lawrence boaters with haul-out
Oct 11	-520 for 1 hr	-3			Ramp to plan flow
Oct 14	-600 for 8 hrs	-29	-1,270	3.9	Reduce Long Sault Dam spill
Oct 24-30	140 for 168 hrs	140	-1,130	3.5	Reduce stored water
Oct 31-Nov 6	130 for 24 hrs	130	-1,000	3.1	Reduce stored water
Nov 7-10	80 for 168 hrs	43			Reduce stored water
Nov 10-12	-220 for 43 hrs	-56	-1,010	3.1	Raise Lake St. Lawrence Levels
Nov 14-20	20 for 168 hrs	20	-990	3.1	Reduce stored water
Nov 28-Dec 1	250 for 96 hrs	143			Reduce stored water
Dec 2-4	30 for 72 hrs	13	-830	2.6	Reduce stored water
Dec 5-11	290 for 168 hrs	290	-540	1.7	Reduce stored water
Dec 19-25	540 for 168 hrs	540	0	0.0	Reduce stored water
Dec 26-Jan 1	280 for 168 hrs	280	280	-0.9	To smooth the transition in flows
Jan 20-22	-330 for 58 hrs	-114	170	-0.5	Ice Management (Beauharnois Canal)
Jan 23-27	-330 for 110 hrs	-216			Ice Management (Beauharnois Canal)
Jan 29	270 for 24 hrs	39	-10	0.03	Ice Management
Jan 30-Feb 5	-300 for 168 hrs	-300	-310	1.0	Ice Management
Feb 6-9	-560 for 96 hrs	-320			To smooth the transition in flows
Feb 10	-860 for 24 hrs	-123			Ice Management (Beauharnois Canal)
Feb 11-12	-1,130 for 48 hrs	-323	-1,080	3.3	Ice Management (Beauharnois Canal)
Feb 13-15	-1,130 for 72 hrs	-484			Ice Management (Beauharnois Canal)
Feb 16	-760 for 24 hrs	-109			Ramp to plan flow
Feb 17	-360 for 24 hrs	-51	-1,720	5.3	Ramp to plan flow
Feb 23-26	160 for 96 hrs	91	-1,630	5.0	Reduce stored water
Feb 27-29	90 for 72 hrs	39	-1,590	4.9	Reduce stored water

Table 5: Lake Ontario Recorded and Preproject Levels and Outflows

Month	Lake Ontario Monthly Mean Water Levels (IGLD 1985) - meters (feet)			Lake Ontario Monthly Mean Outflow		
	Recorded	Preproject	Diff.	Recorded	Preproject	Diff.
Sep 15	74.91 (245.76)	75.24 (246.85)	-0.33 (-1.09)	8,480 (299)	7,590 (268)	890 (31)
Oct 15	74.67 (244.98)	75.11 (246.42)	-0.44 (-1.44)	7,910 (279)	7,320 (259)	590 (21)
Nov 15	74.56 (244.62)	75.09 (246.36)	-0.53 (-1.74)	7,820 (276)	7,260 (256)	560 (20)
Dec 15	74.47 (244.32)	75.04 (246.19)	-0.57 (-1.87)	6,960 (246)	7,170 (253)	-210 (-7)
Jan 16	74.63 (244.85)	75.09 (246.36)	-0.46 (-1.51)	6,180 (218)	7,300 (258)	-1,120 (-40)
Feb 16	74.81 (245.44)	75.16 (246.58)	-0.35 (-1.14)	7,010 (248)	7,410 (262)	-400 (-14)

Table 6: Attendance at Meetings (1 September 2015 – 29 February 2016)

Board Member	Country	2
BG P. Kaiser	U.S.	
Mr. P. Morel[2]	Can.	
Mr. J. Aubry-Morin	Can.	
Mr. T. Brown	U.S.	
Mr. R. Campany	U.S.	
Ms. P. Clavet	Can.	

Mr. S. Durrett[3]	U.S.	X	-
Ms. J. Frain	Can.	X	X
Mr. M. Hudon	Can.	X	X
Dr. F. Sciremammano, Jr.	U.S.	-	X

Notes:
1. US Co-Chair
2. Canadian Co-Chair
3. US Alternate Co-chair

Location of Meeting:
23 September 2015: Montreal, QC, Canada
28 October 2015: Ottawa, ON, Canada

Appendix A: 2015 Communication Committee Summary

International St. Lawrence River Board of Control Communication Committee
2015 Summary of Activities

Over the course of 2015, the International St. Lawrence River Board of Control (ISLRBC) Communication Committee held 10 meetings, generally occurring each month via teleconference, with two in-person meetings. One major focus throughout the year was the development of the ISLRBC Strategic Communication Plan to meet the International Joint Commission's (IJC) 2015-2020 strategic communication goals.

The committee developed a plan which provides mechanisms to accomplish five strategic communication goals: Increase general public awareness of the IJC and the ISLRBC; communicate accurately and in a timely fashion about the actions of the ISLRBC and the reason for those actions; explain how natural factors and regulation affect water levels and flows; increase understanding of the necessity of and need to prepare for fluctuations in levels and flows; and consistently seek out, consider and respond to the views and concerns of all stakeholders.

The committee successfully gained the approval of the ISLRBC and submitted its plan to the IJC for information. In addition to developing the communication plan, the committee completed many other products and activities consistent with the communication strategy including:

- Created a standard slide presentation covering multiple ISLRBC topics for Board members to use at outreach and speaking engagements.
- Initiated the development of voice-over narration for the seven animated learning modules on the ILSRBC website
- Posted weekly updates on water levels and outflows through the Board's website and Facebook pages
- Responded to numerous public inquiries concerning low water levels on Lake St. Lawrence
- Held two public webinars/teleconferences in March and September
- Created a Flickr account for publically accessible photos with captions
- Posted the Board's semi-annual progress reports, meeting minutes, and media releases to the ISLRBC webpage
- Presented at the 2015 Forum of the Table de Concertation Régionale (TCR) du Lac Saint-Pierre. In Louiseville, Quebec on 29 May 2015
- Presented to the 2015 Association des Biologistes du Quebec (ABQ) and le Réseau des organisms de bassins versant du Québec (ROBVQ) on 6 November 2015, and the Montreal Field Naturalists on 25 November 2015
- Began data collection for two video segments on the topics of ice formation and fluctuating water levels to be posted on the Board website for public discussion

Finally, due to a lack of public participation, the committee discontinued the Board's 800 number, which reported water levels and flows, and decided to stop holding semi-annual public teleconferences/webinars. The committee, in consultation with the Board and IJC, determined that other methods of communication such as Facebook, YouTube and learning modules, have proved to be more effective forms of communication due to technological advancements and social trends. The Board will continue to consider the option of holding public teleconferences/webinars on an as-needed basis, and has protocol readily available for holding such meetings.

Appendix B: Glossary, Abbreviations, and Background Information

Appendix to the Progress Reports

to the

International Joint Commission

by the

International St. Lawrence River Board of Control

Covering the Periods After

March 2011

APPENDIX OBJECTIVE

The objective of this appendix is to provide the background material that was previously presented in the semi-annual reports of the International St. Lawrence River Board of Control (the Board) to the International Joint Commission (the Commission). Providing the material in this manner allows the report to focus on the issues and conditions of the reporting period, and the interested reader to refer to this appendix for the background information.

TABLE OF CONTENTS

LIST OF FIGURES

1. HYDROLOGICAL CONDITIONS

1.1 Net Basin Supply to Lake Ontario

Lake Ontario is the furthest downstream of the five Great Lakes. It receives the outflow of Lakes Superior, Michigan, Huron and Erie (Figure A-1). Historically, about 80 percent of the water received by Lake Ontario comes from the upstream Great Lakes. Lake Ontario outflows are controlled at a location about 160 kilometres (100 miles) from the Lake (Figure A-2), with almost all of the water going through the Moses-Saunders powerhouse. Prior to construction of the powerhouse and navigation locks (Figure A-3), the flow out of Lake Ontario was controlled by a set of rapids that began about 110 kilometres (70 miles) downstream of the Lake, near the towns of Ogdensburg, New York and Prescott, Ontario.

Water supply to Lake Ontario is composed of four main factors (Figure A-4): inflow from Lake Erie through the Niagara River and Welland Canal diversion, precipitation on the surface of the Lake, runoff from streams and groundwater flowing into the Lake, and evaporation of water from the Lake. In addition, water for consumptive use is taken from the Lake.

In the semi-annual progress reports, supplies to Lake Ontario are reported in terms of Net Basin Supplies and Net Total Supplies. The definitions of these terms are as follows:

> The Net Basin Supply is the aggregate of the amount of precipitation over the Lake, runoff to the Lake, including groundwater, and evaporation and consumptive uses from the Lake's surface. Precipitation and runoff are estimated by measurements but it is not possible to accurately measure evaporation and consumptive uses. Therefore, the Net Basin Supply is estimated as the difference between the Lake's outflow down the St. Lawrence River and inflow from Lake Erie, plus any change in storage within the Lake itself as a result of a rise or fall in the Lake's level. An indicator of the amount of spring runoff that may be expected is obtained by monitoring the snow pack in the basin.
>
> The Net Total Supply is obtained by adding to the Net Basin Supply the inflows from Lake Erie through the Niagara River and Welland Canal. The Niagara River flow is computed using a stage-discharge relationship for the Niagara River below Niagara Falls and adding the flow through the hydropower turbines located along the Niagara River.

1.2 Supplies of Lake Ontario

A summary of the mean supplies to Lake Ontario for each month in the reporting period is provided in tabular and graphical form as referenced in the text of Section 1. This information includes the inflow from Lake Erie, net basin supply and total supplies, along with some statistical data to assist in understanding how they compare historically.

Also shown are the long-term average monthly net basin supplies, and supplies for the previous two years. The horizontal bars above and below the plots are the recorded maximum and minimum long-term monthly net basin supplies for the period of record since 1900.

1.3 Precipitation

Monthly precipitation amounts for the Lake Ontario and Great Lakes basins for each reporting period of the semi-annual reports are provided in a table referenced in Section 1 of the report.

1.4 Snow-pack on the Lake Ontario Basin

The snow-pack on the Lake Ontario basin affects spring runoff supplies when the snow melts; however because of limited snowpack data and lack of skill in predicting melt conditions, the volumes of spring runoff are difficult to quantify.

1.5 Lake Ontario – Net Total Supply

The monthly net total supplies (NTS) to the Lake for each reporting period of the semi-annual reports are provided in tabular form (Table 3) and graphical form (Figure 1) showing the long-term average monthly NTS for the period of record and the supplies for the current reporting period. Also shown, for comparison purposes, are the monthly NTS for the previous two years. The horizontal bars above and below the curves on the graph are the long-term monthly net total supplies maxima and minima for the period of record since 1900. Also shown is a table of the six-month net total supplies for the past ten years for comparison purposes.

1.6 Ottawa River Basin

The Ottawa River is a major tributary of the St Lawrence River joining just upstream of Montreal which contributes to the water level of Lake St Louis at Pointe Claire and points downstream in the St. Lawrence River.

2. REGULATION OF FLOWS AND LEVELS

2.1 Application of Regulation Plan 1958-D

The Board assures that the provisions of the Commission's Orders of Approval relating to Lake Ontario-St. Lawrence River outflows and levels are met. Control of the outflows and levels of Lake Ontario follows a regulation plan that was designed to satisfy the criteria set out in the Commission's 1956 Orders and other requirements that were established to balance the benefits of regulation among various interests. The current plan of regulation, Regulation Plan 1958-D, was adopted by the Commission in 1963.

In 1961, the Commission authorized the Board to deviate from the outflows specified by the regulation plan in order to provide additional benefits to interests when this could be done without appreciable adverse effects on other interests. Today, the Board reviews conditions in the Great Lakes and Lake Ontario-St. Lawrence River basins at least monthly and establishes outflow strategies for the coming weeks that may or may not include deviations from Plan flows.

The outflow from Lake Ontario is computed weekly by following the procedure laid out in the Board's July 1963 Report to the Commission on Regulation Plan 1958-D. The computational procedure includes the following steps (the reader is referred to the Board's 1963 Report for additional details and considerations):

- Calculation of a provisional flow based on present conditions in the system (e.g., recent supplies and current/computed levels);
- Checking the provisional outflow against operational limits designed to protect interests; and,
- Setting a final 'Plan' outflow.

The Plan outflow is then reviewed by the Board's Regulation Representatives and Operations Advisory Group (OAG), and assessed against the Board's current outflow strategy and the current operational requirements of domestic water supply, navigation, power and other interests in the

system. If all are in agreement, the Regulation Representatives, on behalf of the Board, recommend an outflow for the coming week to the Government representatives who direct the hydropower entities (who operate the structures that control the outflows) on the outflow. If not all OAG members and Regulation Representatives agree on the flow for the coming week, the Board of Control is called upon to decide.

To aid in decision making, the Board analyses the risk of exceeding the criteria of the Orders and other water level indicators developed by the Board through experience.

2.2 Board Regulation Strategies and Actions

In order to be responsive to changing conditions and the needs of various interests, the Board schedules monthly teleconferences to review conditions in the Great Lakes-St. Lawrence River system and develop outflow strategies to respond to conditions and ensure that the Board is able to offer assistance to interests in times of critical need. The outflow strategies are designed to enhance the benefits provided by Regulation Plan 1958-D while not causing appreciable adverse effects to any interest. The Board Members are provided an assessment of conditions at the beginning of each month. Based on that, and a recommendation from the Regulation Representatives, the Board may decide that the strategy currently in place does not need to be modified. In such cases, a conference call may not be held. The strategy decisions made during the reporting period, and their rationales, are available on the Board's Website: http://ijc.org/conseil_board/islrbc/en/main_accueil.htm.

Figures referenced in Section 2 of each semi-annual report show the daily Lake Ontario outflows during the reporting period, and the Lake Ontario actual daily and weekly computed Plan 1958-D and pre-project condition levels during the reporting period. The Board's deviations from Plan 1958-D during the reporting period are summarized in tabular form as referenced in this section.

2.3 Ice Management

The hydropower entities install a series of ice booms each winter in the international section of the river to aid in the formation and stabilization of the ice cover. Hydro Quebec also installs a series of ice booms in the Beauharnois Canal each year. The Board does not direct the installation or removal of any of these booms. Installation and removal of the booms is coordinated between the hydropower entities and the St. Lawrence Seaway. The booms are normally removed as the ice deteriorates locally.

2.4 Iroquois Dam Operations

Under the conditions of paragraph (j) of the Commission's Order of Approval dated 29 October 1952, the power entities are permitted to operate Iroquois Dam with Board approval. The gates of the dam can be lowered into the water to assist in ice formation and to reduce the level of Lake St. Lawrence when there are low outflows. Boaters must use the Iroquois lock to bypass the dam when the dam gates are in use.

2.5 Results of Regulation

2.5.1 Upstream

Lake Ontario

The effects of Regulation Plan 1958-D and the Board's outflow strategies on the daily water levels on Lake Ontario for the previous two years and the current year to date are shown in

Figure 3 of each of the semi-annual reports. As a means of informing the Commission on the impacts of regulation activities on levels and outflows, the Board provides the Commission with a comparison of Lake Ontario's actual monthly levels and outflows to those that would have been obtained under pre-project conditions (that is, the levels and outflows that would have occurred had regulation not been undertaken). A summary of this comparison for the reporting period is provided in a table referenced in this section of the report. The referenced figure provides a comparison of the daily levels to long-term average, and the levels of the previous two years.

Lake St. Lawrence
The period of record for this water level gauge is from 1960.

2.5.2 Downstream

Lake St. Francis at Summerstown

The regulation of Lake Ontario outflows has a limited effect on the levels of Lake St. Francis, as the lake level is regulated by hydropower plant operations at Beauharnois and Les Cèdres, Québec. The historic range of monthly mean levels on Lake St. Francis since completion of the Saunders-Moses project is about one-fifth that of Lake St. Lawrence. The water levels of Lake St. Francis are shown in a figure referenced in Section 2 of each of the semi-annual reports. The period of record for this water level gauge is from 1960.

Lake St. Louis at Pointe Claire
Lake St. Louis water levels, in contrast, are influenced by the discharges from both the St. Lawrence and Ottawa Rivers, and are subject to much greater fluctuations. The period of record for this water level gauge is also from 1960.

Port of Montreal

Water level fluctuations in Montreal Harbour are influenced by the discharges from the St. Lawrence and Ottawa Rivers, winds, the tide, and in winter, by downstream ice conditions. The water levels of the harbour are shown in a figure referenced in Section 2 of each of the semi-annual reports. The period of record for this water level gauge is from 1967. Water level data prior to 1967 are not used to compute the averages or extremes as the St. Lawrence River near and below Montreal was altered by a dredging project in 1967.

3. BOARD ACTIVITIES

3.1 Board Meetings & Conference Calls

The Board, as mentioned in the previous section, oversees the operations of the hydropower project in the international reach of the St. Lawrence River. The Board, primarily through the offices of the Regulation Representatives, monitors conditions throughout the Lake Ontario-St. Lawrence River and Ottawa River systems. The Regulation Representatives provide the Board with weekly regulation data, monthly reviews of hydrological conditions, monthly risk analyses using water level outlooks, and advises the Board on regulation strategy options and their potential impacts on water levels and interests throughout the system. The Board's Operations Advisory Group (OAG) holds weekly teleconferences to apprise the Regulation Representatives of operational requirements and constraints. The Committee on River Gauging monitors the

Power Entities' program for operation and maintenance of the gauging system required for Board operations, and reports to the Board annually.

The Board typically assesses conditions on a monthly basis in the basin and adjusts its regulation strategy through meetings, conference calls, telephone and e-mail. Should conditions change rapidly, the Board can (and has) met more often. Board Members in attendance at these meetings and teleconferences are noted in a table referenced in this section.

3.2 Public Outreach and Engagement

Since 2015 the Board uses social media such as Facebook to interact with the public in lieu of regularly scheduled public webinars. The Board still maintains the option of holding public meetings, but will do so on an as-needed basis. The Communications Committee, individual Board Members and the Secretaries actively engage in outreach, information exchange and liaison with stakeholders throughout the Lake Ontario-St. Lawrence River system. Board members and staff respond to a number of inquiries and requests for interviews from the media and general public concerning water level conditions and the Board's strategies. These are detailed in each semi-annual report to the Commission.

4. COMMUNICATIONS COMMITTEE

The Board's experience and work under the IJC's Lake Ontario - St. Lawrence River Study both demonstrate that communications have become ever more important to the Board and Commission. Therefore, effective communications remains a key focus of the Board. Each semi-annual report summarizes the Board's communications activities during the reporting period. To lead this effort, the Board has a standing committee (the Communications Committee), consisting of two Board Members, the Board Secretaries, the Public Information Officers of the Commission, and the Engineer Advisors of the Commission.

5. RIVER GAUGING COMMITTEE REPORT

The Board's St. Lawrence Committee on River Gauging monitors the Power Entities' program of operating and maintaining 15 water level gauges required for the Board to monitor water levels and flows related to the operation of structures and forebay elevations. The Committee members are the U.S. Regulation Representative (U.S. Co-chair), a representative from Ontario Power Generation (Canadian Co-chair), a representative from the New York Power Authority and the Canadian Regulation Representative. Committee associates perform annual inspections of the water level gauging network.

The Committee thus ensures the accuracy of flow and water level measurements. This includes annual inspections of the computational methods used at each of the eight outflow structures as well as auditing the Power Entities' data processing. The Committee is charged with providing the Board with an annual report on the inspection results and computed outflows. Each semi-annual report records the status of the River Gauging Committee annual reports and any recent issues.

#. RAISIN RIVER DIVERSION

The Raisin River diversion is located at the village of Long Sault, ON. It is operated by the Raisin Region Conservation Authority to augment flow in the upper reaches of this small river, as necessary. The purpose of this diversion is to augment low summer flows in the Raisin River

to provide a reliable source of water for farms and villages, and to improve the environment for fish and wildlife, as well as recreational uses.

6. ST. LAWRENCE SEAWAY REPORT

Each semi-annual report records the first or last ship of the recording period.

7. HYDROPOWER PEAKING AND PONDING

By letter dated 13 October 1983, the Commission authorized Ontario Power Generation and the New York Power Authority to continue to carry out peaking and ponding operations at the St. Lawrence Project. Conditions governing peaking and ponding operations are specified in Addendum No. 3 to the Operational Guides for Regulation Plan 1958-D. The authority to peak and pond had been subject to Commission review and approval every five years. However, on 28 October 2005, the Commission approved peaking and ponding operations until the adoption of any revised Orders for the regulation of the St. Lawrence River or a period shorter than five years.

The semi-annual reports record peaking and ponding activities which occurred during the reporting period.

8. BOARD AND COMMITTEE MEMBERSHIP CHANGES

Each semi-annual report records changes in membership of the Board, its Regulation Representatives, Secretaries, Gauging Committee, and Operations Advisory Group.

9. ABBREVIATIONS AND TERMS USED IN THIS REPORT

actual (data)	the actual recorded value
avg	average
Board	International St. Lawrence River Board of Control (unless otherwise specified)
cfs	cubic feet per second
cm	centimetre(s)
cms	cubic metres per second
Commission	International Joint Commission
computed level, outflow	the level or outflow computed by Regulation Plan 1958-D
deviation (outflow)	a Lake Ontario outflow different from the Plan 1958-D outflow
exceedence probability	the percent of time that the value was exceeded in the past
ft	foot/feet
IJC	International Joint Commission
ISLRBC	International St. Lawrence River Board of Control
in	inch(es)
Lake	Lake Ontario (unless otherwise specified)

level	water level
LTA	long-term average
m	metres
m^3/s	cubic metres per second
mm	millimetres
NYPA	New York Power Authority
OAG	the Board's Operations Advisory Group
OPG	Ontario Power Generation
Peaking	hour-to-hour flow changes over the course of a day
Plan	Regulation Plan 1958-D
Ponding	day-to-day flow changes over the course of a week
pre-project	the levels and outflows that would have occurred had regulation not been undertaken
regulation	management of levels and flows in the Lake Ontario-St. Lawrence River system by physical control of outflows from Lake Ontario
Regulation Plan 1958-D	current plan of regulation for Lake Ontario
Seaway	the St. Lawrence Seaway (commercial navigation facility)
Study Board	International Lake Ontario-St. Lawrence River Study Board
supply	quantity of water received
tcfs	thousand cubic feet per second

Figure A-1. Great Lakes Drainage Basin - St. Lawrence River System

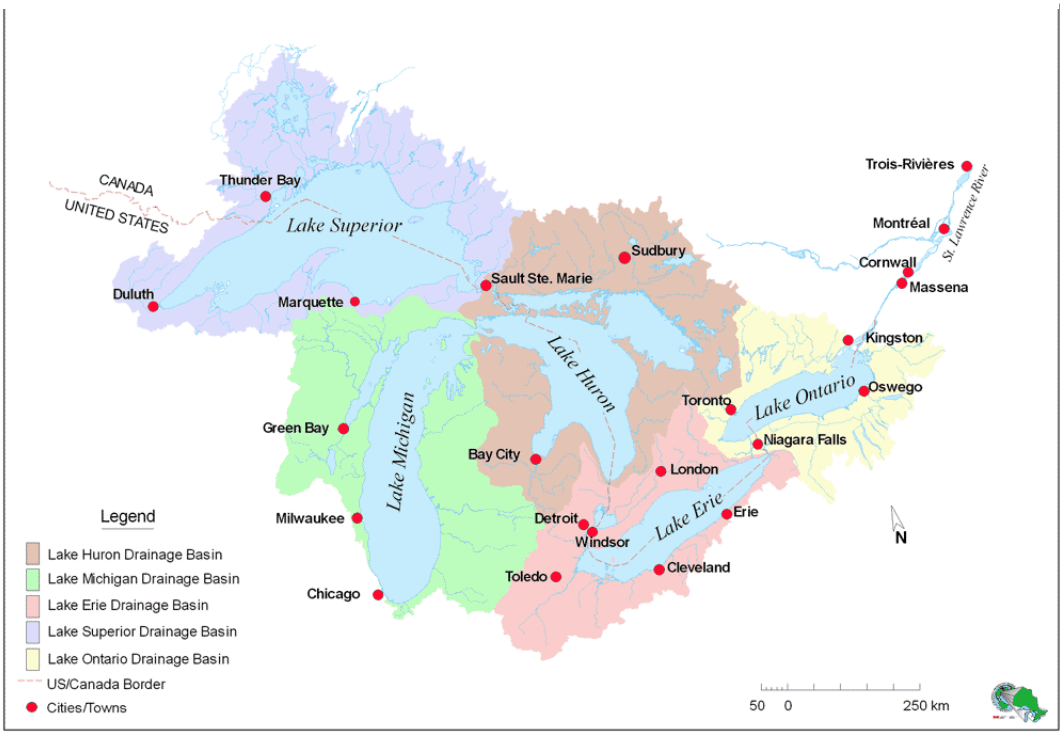


Figure A-2. Map of Lake Ontario-St. Lawrence River System

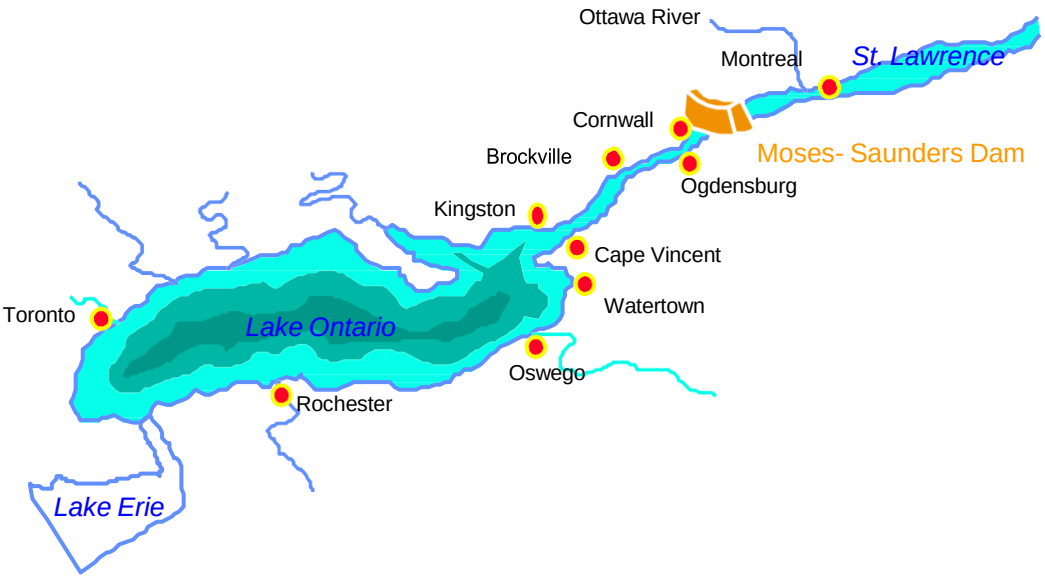


Figure A-3. Map of Upper St. Lawrence River Control Structures

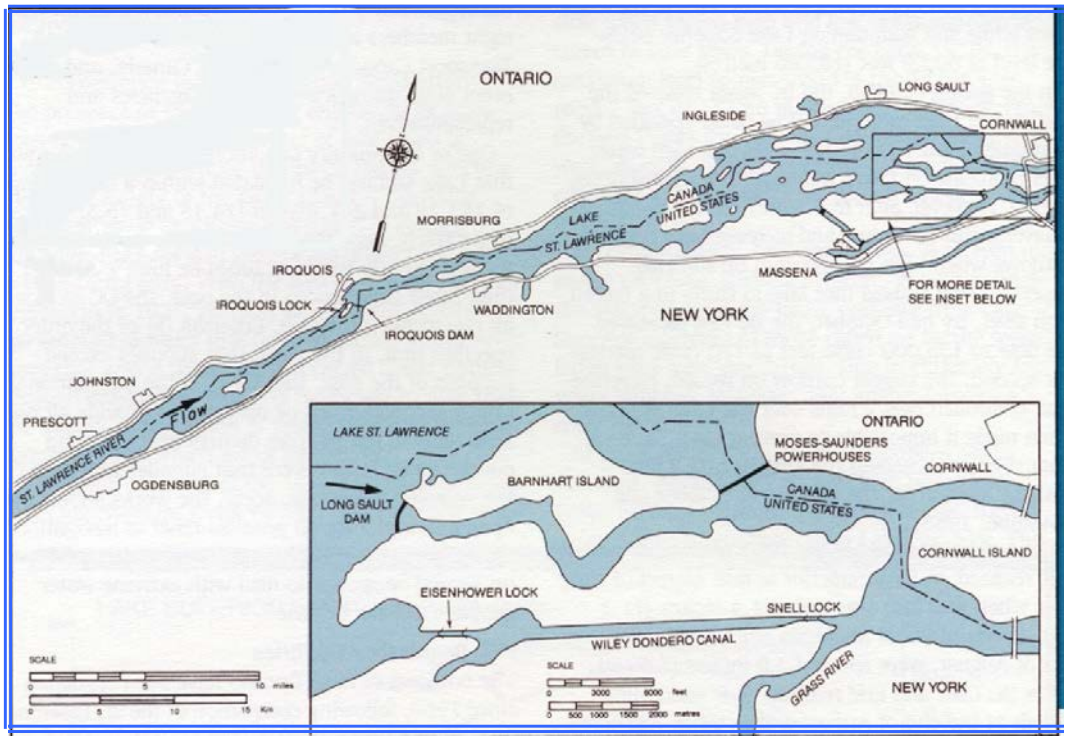
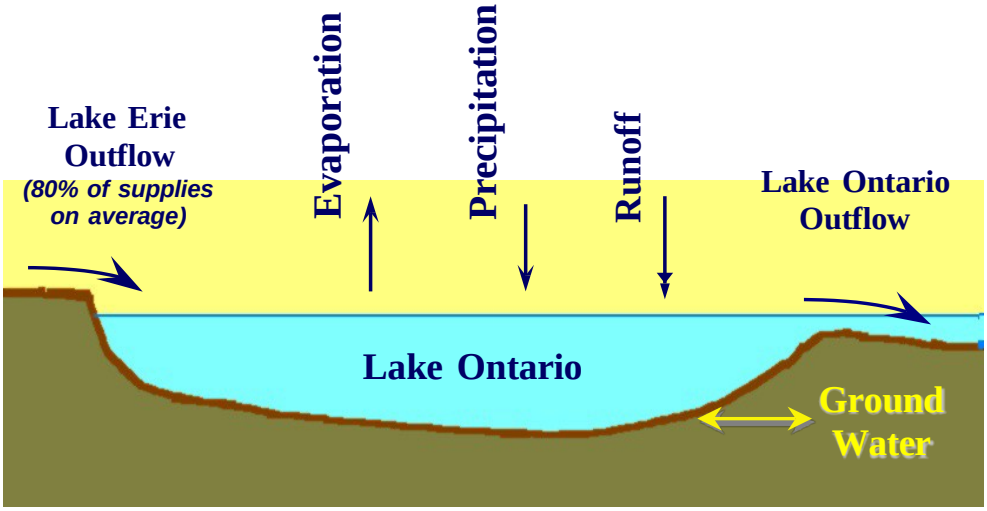


Figure A-4. Factors Affecting the Level of Lake Ontario



Appendix C: GLAM Annual Work Plan and Communication Strategy

Communication Management Strategy

Project Name:	Communications, Outreach and Engagement Strategy		
Date:	August 2015	**Release:**	**Draft**
Author:	Great Lakes-St. Lawrence River Adaptive Management (GLAM) Committee		
Owner:	GLAM Committee		
Client:	International Joint Commission and Great Lakes St. Lawrence River Boards of Control		
Document Number:	GLAMC-COM-1		

Introduction

The Great Lakes – St. Lawrence River Adaptive Management Committee (GLAM) was established to undertake the monitoring, modelling and assessment related to the on-going evaluation of the water level regulation plans and address other questions that may arise due to changing conditions in consultation with the International Lake Superior, Niagara, and St. Lawrence River Boards of Control. Specific tasks include:

- Develop an open and collaborative process for updating models and incorporating new science.
- Provide semi-annual updates to the Boards in advance of the IJC semi-annual appearances.
- Prepare a report on the progress of the work plan, providing advice to the Commission regarding adaptive management. This report will be coordinated with the preparation of the Commissions triennial "Assessment of Progress Report" under the Great Lakes Water Quality Agreement.
- Not more than 15 years after the establishment of the GLAM, provide a synthesis of the collective public and peer reviewed science and information gained from tasks outlined in the work plan and prepare formal recommendation to the Boards of any changes that may be warranted.

The GLAM Committee will require communication with and the engagement of a range of stakeholders, agencies and academia to maintain awareness of the diverse and potentially changing needs of the various interests, and to ensure an open and transparent science based adaptive management process.

Purpose

To establish a framework that guides all GLAM Committee communications. This strategy is to provide structure for facilitating outgoing and incoming communication between the GLAM Committee and the International Joint Commission (IJC), Boards of Control, governmental and non-governmental agencies/organizations, stakeholders, members of the public, and academic/research community to best serve the ultimate goal of the GLAM Committee, which is to learn how best to manage water levels and flows to respond to new knowledge and changing conditions.

Objectives

1. Clarify the roles of, and interactions among the GLAM Committee, the Boards of Control and the IJC in their communications activities.
2. Engage, listen and work with key stakeholders and interests who are willing to contribute to increasing the understanding of the effects of water levels and flows and changes over time.
3. Encourage scientific research, monitoring programs, and information management systems that may be beneficial to the GLAM Committee.
4. Support the IJC with coordination between the Great Lakes control boards and the Great Lakes Water Quality Board (WQB) and Science Advisory Board (SAB).
5. Publicize a working example of adaptive management to improve the practice of adaptive management.

Communication Principles

1. The GLAM Committee's external communications will be effectively coordinated with the Lake Superior, Niagara and St. Lawrence Boards of Control and IJC Communications. GLAM Committee public announcements and interactions will typically be made through the Boards or IJC and/or with full endorsement by the Boards and IJC.
2. However, the GLAM Committee may engage in external communication directly with specific audiences to facilitate research, seek stakeholder input, provide information regarding general adaptive management principles, and identify funding opportunities.
3. The GLAM Committee's internal communications will adhere to the IJC communication principles.
4. While the focus of GLAM communications will be to maintain the on-going evaluation and assessment of lake level regulation plans, communications activities will also support the principle of adaptive management[1]. These activities will inform those who are more interested in adaptive management than lake regulation

Communications Procedure

The GLAM committee will require communication, outreach, and engagement to fulfil its diverse objectives. First, "communication" will be required to report on activities and convey key messages to the Boards of Control, the IJC and for public consumption. Second, the GLAM will require "outreach" so the committee can maintain awareness of outside efforts from government and non-government agencies, organizations, researchers/academia, and stakeholders that may support AM efforts. Lastly, the GLAM will require "engagement" to facilitate collaboration and coordination among relevant parties that may support AM activities. Table 1 provides a list of tasks in the areas of communication, outreach, and engagement that will support each of these efforts.

Products and Tactics

- Key messages
- Fact sheets
- Standard presentations
- GLAM web site content
- Media lines
- Attendance and participation at stakeholder meetings, conferences, conventions,
- Stakeholder circles of influence meetings, webinars and teleconferences
- An agency advisory committee/network of key agencies and organizations committed to adaptive management with whom the GLAM can regularly engage
- Utilize existing Great Lakes research networks to communicate research opportunities that would support AM
- Utilize existing Great Lakes communications networks (e.g. Sea Grants and Conservation Authorities) for distributing key messages

[1] Years of discussion on the IUGLS study were required to affirm, then propose, adaptive management. Adaptive management is still difficult to fund. If the Committee is able to demonstrate that the approach is practical and effective, the value of adaptive management would gain greater recognition.

Key Messages

- The purpose of Adaptive management (AM) is to establish a structured, iterative process of robust evaluation in the face of uncertainty, with an aim to reduce uncertainty over time via system monitoring and feedback to the decision framework based on knowledge gained.
- The Great Lakes are dynamic and conditions, such as climate, are always changing
- There remains considerable uncertainty in our understanding of the implications of climate change and water level extremes, and how they may impact the regulation of outflows on the Great Lakes-St. Lawrence River system
- New regulation plans have been implemented or recommended and it is important to ensure their intended objectives are being met, now and into the future
- Adaptive Management is intensively collaborative and based on working with partners in the Great Lakes-St. Lawrence River system to gather and share critical information over time, assess the information with state-of-the art tools, measure our collective success in managing the impacts of water levels and adapt regulation plans accordingly over time.

Key Stakeholders

See table 2: Stakeholder Analysis

Records

- Meeting minutes will be provided by the secretaries and stored on the GLAM SharePoint site and posted to the GLAM Committee website for public view.
- Records of stakeholder meetings/workshops will be provided by the secretaries, reviewed by the stakeholders and stored on the GLAM SharePoint site and posted to the GLAM Committee website.

Reporting

- Semi-annual report to the Boards of Control on the GLAM work plan.
- Annual work plans to be submitted in September and progress reports in April.
- Triennial report on the evaluation of regulation plans on stakeholders and the GLAM work plan to the IJC Not more than 15 years after the establishment of the GLAM, provide a synthesis of the collective public and peer reviewed science and information gained from tasks outlined in the work plan and prepare formal recommendation to the Boards of any changes that may be warranted.

Table 1: Communication Procedure

	Communication Procedure	Tools and Techniques	Resource Needs	Target Audience
COMMUNICATION	Develop communication templates consistent with IJC protocols	Templates for presentations, written correspondence	GLAM Committee member time	IJC, Boards
	Establish working relationships with the three Boards of Control and coordinate a general broadcast strategy with them	GLAM Committee to be represented at all Board meetings	GLAM Committee member time	Boards
	Develop a story line of the evolution of the GLAM	Develop a standard presentation/fact sheet on what GLAM is for distribution and posting to GLAMC website	GLAM Committee member time	All
	Inform interested parties on AM concept, role of GLAM, the need for collaboration, and specific messages for target audiences	Key messages, fact sheets, standard presentation for use at conferences, meetings etc.	GLAM Committee member time	All
	Create a mechanism for posting and distributing regular bulletins about GLAM work	GLAM website, email distribution list, GLIN announce, social media – coordinate through Boards	GLAM Committee member time	All

Communication Management Strategy

	Communication Procedure	Tools and Techniques	Resource Needs	Target Audience
	Create a media strategy particularly around special events and triennial reports	Develop approved media lines, appoint spokespeople from Board, IJC and GLAM Committee, develop briefing kits	IJC Communications	Media/public
OUTREACH	Establish a research community network. Develop a list of research opportunities that support AM efforts	Standard presentation, attendance at relevant conferences (IAGLR,…, email distribution list	GLAM Committee member time , travel funds	Academia and Research Community
	Create a research outreach plan that covers both the monitoring of scientific literature on related subjects and a GLAM to agency connection that promotes research to address GLAM objectives	Research reviews; input from Great Lakes Science organizations; linkages with other Great Lakes wide initiatives (e.g. GLWQA; Blue Accounting; Great Lakes research consortiums etc.)	GLAM Committee member time	Academia and Research Community
	Link with other key agency priorities (e.g. CSME for LaMPs , SOLEC indicators, IJC indicators, and GLWQA Annexes	GLAM representation at meetings, conferences, teleconferences	Travel funds, conference registration, GLAM Committee member time	Government agencies

Communication Management Strategy

	Communication Procedure	Tools and Techniques	Resource Needs	Target Audience
ENGAGEMENT	Solicit stakeholder input on current or future models, indicators, and or plan performance	Develop circles of influence strategy with stakeholders from the six sectors including meetings, webinars, teleconference, and emails	GLAM Committee member time, travel funds	Stakeholders
	Engage with agency senior management to encourage collaboration and sharing and exchanging information with other related programs	Regularly scheduled meetings, webinars, and/or emails	GLAM Committee member time, travel funds	Government agencies
	Network with other efforts on the Great Lakes to share and exchange information and join activities	Conferences, workshops, webinars	Travel funds, conference registration, GLAM Committee member time	NGOs, government agencies

Table 2: Stakeholder Analysis

Interested Party[2]	Sub-group	Priority	Current Relationship	Objective (Desired Relationship)	Interfaces
International Joint Commission	Advisors	To be completed	To be completed	To be completed	To be completed
St. Lawrence River Board of Control	Secretaries Communications Group Board members	To be completed	To be completed	To be completed	To be completed
Niagara River Board of Control	Secretaries Board members	To be completed	To be completed	To be completed	To be completed
Lake Superior Board of Control	Secretaries Board members	To be completed	To be completed	To be completed	To be completed
Agency Senior Management	USACE; NOAA-GLERL; USGS; EPA; EC; DFO; TC NRCan; MNRF MOE&CC; CO; State DECs; GSLCI; GLC; CGLG; GLFC; MDDEFP;	To be completed	To be completed	To be completed	To be completed

[2] This may include accounts staff, user forum, internal audit, corporate or programme quality assurance, competitors etc.

Communication Management Strategy

Interested Party[2]	Sub-group	Priority	Current Relationship	Objective (Desired Relationship)	Interfaces
Research Groups (NGOs, Academia, Great Lakes groups)	Graham Institute – Water Center;	To be completed	To be completed	To be completed	To be completed
Water Quality Group	GLWQA Annex 2; Annex 4, Annex 9; WQB; SAB-SPC	To be completed	To be comp To be completed leted	To be completed	To be completed
Existing Great Lakes Networks/Communication Organizations	SeaGrants, RUSL, LORA, GBA, CAs; OCCIAR, GLIN; GLEC; LAMPS; ROW; CGL; GLSLCI etc.	To be completed	To be completed	To be completed	To be completed
Coastal Riparian Groups	CAs; ; Association of State Floodplain Managers; FEMA; State Coastal Managers; GLSLCI; Coastal researchers; LORA; GBA; various property owner associations; International Great Lakes Coalition	To be completed	To be completed	To be completed	To be completed
Commercial Navigation	St. Lawrence Seaway (US and CAN); Port				

Communication Management Strategy

Interested Party[2]	Sub-group	Priority	Current Relationship	Objective (Desired Relationship)	Interfaces
	Authorities (Montreal, major lake ports like Duluth, Hamilton, etc.); FedNav USACE group; Lake Carriers Association; Coast Guard; Transport Canada,				
Ecosystem Interests	TNC; CAs; GLRI; LAMPS; EC; St Lawrence Institute; DFO; Bird Studies Canada; Ontario Field Ornithologists, NY State Ornithological Association, local birding clubs, Ontario MNR, NYSDEC, Great Lakes Fishery Commission, St. Marys River	To be completed	To be completed	To be completed	To be completed

Interested Party[2]	Sub-group	Priority	Current Relationship	Objective (Desired Relationship)	Interfaces
	Fisheries Task Group				
Hydropower Production	OPG and NYPA (Niagara), Hydro Quebec (St. Lawrence), Brookfield, Cloverland (Superior), Welland Canal (Seaway), Parks Canada Lock at Soo	To be completed	To be completed	To be completed	To be completed
Recreational Boating and Fishing	Marina associations; tour, cruise and ferry operators; boating associations; riparian owners; boating shows; MNR&F;	To be completed	To be completed	To be completed	To be completed
Municipal and Industrial Water Use Industry	City water	To be completed	To be completed	To be completed	To be completed

Acronyms

AM – Adaptive Management

CA – Conservation Authority
CCGLBHHD – Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data
CGLG – Council of Great Lakes Governors
CO – Conservation Ontario
DFO – Fisheries and Oceans Canada
EC – Environment Canada
EPA – U.S. Environmental Protection Agency
FEMA – Federal Emergency Management Agency
GBA – Georgian Bay Association
GLC – Great Lakes Commission
GLEC - Great Lakes Executive Committee
GLERL – Great Lakes Environmental Research Laboratory
GLFC – Great Lakes Fishery Commission
GLIN – Great Lakes Information Network
GLOS - Great Lakes Observing System
GLRI – Great Lakes Restoration Initiative
GLRPB – Great Lakes Regional Planning Body
GLSLCI – Great Lakes and St. Lawrence Cities Initiative
GLWQA - Great Lakes Water Quality Agreement
IJC – International Joint Commission
IUGLS – International Upper Great Lakes Study
LAMPs – Lakewide Action and Management Plans
LORA – Lake Ontario Riparian Alliance
LOSLR – Lake Ontario St. Lawrence River Study
MDDEFP – Ministry of Sustainable Development, Environment, Wildlife and Parks (Quebec)
MOE&CC – Ministry of Environment and Climate Change (Ontario)
MNRF – Ministry of Natural Resources and Forestry (Ontario)
NARRCAP – The North American Regional Climate Change Assessment Program
NGOs – Non-Governmental Organizations
NOAA – National Oceanic and Atmospheric Administration
NOP GLRPB – National Ocean Policy Great Lakes Regional Planning Body
NRCan – Natural Resources Canada
NYDEC - New York State Department of Environmental Conservation

NYPA – New York Power Authority
OCCAIR – Ontario Center for Climate Impacts and Adaptation Resources
OPG – Ontario Power Generation
Ouranos – A consortium on regional climatology and adaptation to climate change
SAB – RCC – Science Advisory Board – Research Coordination Committee
SAB – SPC – Science Advisory Board – Science Priorities Committee
SLAP – St. Lawrence Action Plan
TC – Transport Canada
TNC – The Nature Conservancy
USACE – U.S. Army Corps of Engineers
USFWS – U.S. Fish and Wildlife Service
USGS – U.S. Geological Survey
WQB – Water Quality Board (IJC)

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