

**One Hundred and Thirty-First Progress Report to the
International Joint Commission by
the
International Lake Ontario-St. Lawrence River Board
Covering the Period
1 September 2018 through 28 February 2019**

6 March 2019



Cover Photo: Lake evaporation and lake-effect precipitation on the north shore of Lake Ontario. Taken on 1 February 2019 this illustrates the results of relatively warm open water and cold air over the Lake. Photo Credit: Jacob Bruxer, Environment & Climate Change Canada.

Executive Summary

HYDROLOGICAL CONDITIONS, OUTFLOWS AND LEVELS

Lake Ontario water levels in September 2018 were near the Lake's long-term average and exhibited a gradual decline as is normal for that time of year. The following six months were slightly wetter than average in terms of Lake Ontario net basin supply, due in large part to the persistently high inflows from Lake Erie observed throughout this time. These conditions resulted in well above average net total supplies throughout the reporting period. This resulted in water levels of Lake Ontario rising above average during a period of wet weather in October, and water levels on the Lake remained above average through February.

Outflows were generally set according to Plan 2014 and were well above average throughout most of the reporting period as the Plan responded to the high inflows and the above-average water levels of Lake Ontario seen from October through February. The high outflows resulted in extremely low water levels on Lake St. Lawrence, which were near the L-limit minimum of 72.6 m throughout most of the fall, with the exception of two weekends in October, where minor deviations from Plan 2014 were employed to temporarily raise levels and facilitate boat-haul out on Lake St. Lawrence.

Ice formation commenced in the Beauharnois Canal and the International Section of the St. Lawrence River in early January. This required the outflow from Lake Ontario to be adjusted in accordance with the Plan 2014 I-limit. Later in January, when ice formation was complete, outflows were gradually increased according to Plan rules and were kept very high throughout the month of February. The ice and high outflows continued to result in low levels at Lake St. Lawrence, which were near the I-limit minimum of 71.8 m that applies during the non-navigation season. Lake St. Louis levels were also quite high in February owing to the high outflows.

BOARD ACTIVITIES

The Board, International Joint Commission (IJC) advisors, and associates met in-person twice during the reporting period to conduct business and assess conditions. The regulation representatives provided the Board with weekly information on conditions in the system, monthly reviews of hydrologic conditions, and forecasts. The Canadian regulation representative office continued to provide weekly briefings of water levels and weather predictions in the system. The Operations Advisory Group (OAG) continued its regular teleconferences to inform the regulation representatives of operational requirements and constraints.

The joint Board-GLAM-IJC Communication Committee prepared media releases and top line messages to communicate critical information to the public and stakeholders. Board members, secretaries, and regulation representatives continued to conduct media interviews and provide timely responses to inquiries from the public, local government officials, and stakeholders. The Board continues to improve public communication with the use of its website and Facebook page. Additionally, the Board completed work with the IJC on a website modernization project.

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[Appendix C](#), available on the [Report Library page](#) of the Board's website, provides the background information that had been included in the main body of these reports previously, allowing this report to focus on the issues and conditions of the reporting period.

1. Hydrological Conditions

1.1 Lake Ontario Basin - Net Basin Supply

Monthly net basin supplies (NBS) to Lake Ontario (see Appendix C for definition) for September 2018 through February 2019 and the average for the six-month period are provided in Table 1. Net basin supplies were slightly below average in September, near average in October and January, and above average in November, December and February.

1.2 Precipitation

Monthly precipitation amounts for the Lake Ontario and Great Lakes basins, and the averages for the total six-month period are provided in Table 2. Precipitation over the Lake Ontario basin was below average in September and January, above average in October, November, and February, and near average in December.

The average precipitation over the Lake Ontario basin for the six-month reporting period was 78 mm (3.1 in), which was just above average. Monthly average precipitation over the entire Great Lakes basin for the six-month period was 67 mm (2.6 in), which was also above average, having been exceeded 44% of the time historically.

1.3 Supply from Lake Erie

Reflecting higher water levels in the upper lakes, the inflows to Lake Ontario from Lake Erie during the reporting period remained well above average from September through February, as shown in Table 1. The six-month average Lake Erie outflow during the reporting period has been previously exceeded only 3% of the time since reliable recordkeeping began in 1900.

1.4 Lake Ontario – Net Total Supply

The monthly net total supplies (NTS) to Lake Ontario (see Appendix C for definition) are provided in Table 1 and shown graphically in Figure 1. Figure 1 shows the long-term average monthly NTS for the period 1900 to 2017 and the supplies so far for 2019. Also shown, for comparison purposes, are the monthly NTS for 2017 and 2018. The horizontal bars above and below the curves on the graph are the long-term monthly NTS maxima and minima. Overall, the six-month average net total supply was 126% of long-term average during this reporting period.

1.5 Ottawa River Basin

Figure 2 shows the Ottawa River flows. Outflows from the Ottawa River basin generally remained above average throughout the reporting period.

2. Regulatory Operations

2.1 Regulation Overview

Figure 3 shows actual daily outflows from Lake Ontario from January 2017 through February 2019, and Figure 4 shows the actual Lake Ontario outflows for the reporting period in comparison to the long-term average, pre-project and plan-specified outflows. Tables 3a and 3b summarize the outflow changes including operational adjustments and minor deviations that occurred during the reporting period. Operational adjustments are required to account for uncertainty in forecasts of within-week conditions in order to maintain the intent of the plan and are not required to be paid back by subsequent offsetting outflows.

Lake Ontario's water level did not exceed the Criterion H14 high threshold or low threshold levels during the reporting period.

Lake Ontario outflows followed those specified by Plan 2014 throughout the reporting period. With the upper Great Lakes water levels remaining well above average and Lake Ontario levels rising above-average again following wet weather starting in October, Plan 2014 continued prescribing well-above-average outflows in response. Notably, Plan 2014's maximum flow limitations applied during most of the reporting period, indicating that Plan 2014 generally continued to maximize outflows to the extent possible and in consideration of conditions in the St. Lawrence River.

Plan 2014's rule curve prescribed an outflow of 8,420 m³/s (297,400 ft³/s) for the week of 7 September. However, to reduce the potential for a large and rapid drop in Lake St. Lawrence levels during the Labor Day long weekend, Plan 2014 includes a y rule that requires outflows remain consistent with outflows during the last week of August, and so outflows were kept at 8,400 m³/s (296,600 ft³/s) during the first week of September. On 12 September, Lake Ontario outflows were temporarily reduced for a few hours to facilitate a planned hydropower outage. Outflows were increased above plan-prescribed values for the balance of the week to pay back the minor deviation within-the-week. Operational adjustments to the L-limit were made in September and this continued into October to maintain Lake St. Lawrence levels above the minimum threshold of 72.60 m (238.19 feet) that applies during the navigation season. The Board directed a brief reduction in outflows (minor deviation) during two weekends in October to temporarily raise low levels and assist boat haul-outs on Lake St. Lawrence. For the weeks of 26 October through 14 December, the outflow was generally set slightly above plan-prescribed values in order to remove the water stored on Lake Ontario from the boat haul-out minor deviations in October. During this period, operational adjustments in accordance with the L-limit also continued to be required.

Ice formation began in critical areas of the St. Lawrence River during a period of cold weather in January. Starting on 11 January, Lake Ontario outflows were reduced in accordance with Plan 2014's I-limit, as ice formation had commenced on the Beauharnois Canal. By late January, a stable ice cover was completed on Beauharnois Canal and the International Section of the St. Lawrence River, allowing outflows to be gradually increased according to the J-limit, which prescribes the maximum change in outflow from one week to the next.

Throughout February, the combined effects of high flows and ice conditions caused water levels on Lake St. Lawrence to remain low. This required outflows to be adjusted according to the Plan 2014 I-limit to maintain levels at Long Sault Dam near 71.80 m (235.56 feet), which is the minimum level that applies during the winter to protect water intakes on Lake St. Lawrence.

2.2 Deviations from Regulation Plan 2014

Figure 4 shows daily outflows compared to weekly Plan-specified outflows from Lake Ontario and Table 3a summarizes weekly outflows including minor deviations during the reporting period.

The Board deviated from outflows prescribed by Plan 2014 during 11 weeks of the reporting period. The first minor deviation was initiated on Friday, 5 October. The outflow was temporarily reduced for 48 hours to raise low levels and assist with boat haul-outs on Lake St. Lawrence. A second minor deviation was conducted on the following weekend beginning on Friday, 12 October. The outflow was again temporarily reduced for 48 hours to raise low levels and assist with boat haul-outs on Lake St. Lawrence. Beginning on 20 October, outflows above Plan 2014 prescribed flows were released to offset the effects of the temporary

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flow reductions on Lake Ontario and remove the excess water (relative to Plan 2014) which had totaled 2.0 cm (0.8 in). Outflows continued to be set slightly above the plan-prescribed values through 10 December, as conditions allowed, to complete payback of the minor deviations. At times, Lake Ontario outflows were adjusted in accordance with the L-limit to maintain Lake St. Lawrence levels above the minimum threshold of 72.60 m that applies during the navigation season.

2.3 Water Levels throughout the system

Figure 5 shows the levels of Lake Ontario, which are primarily affected by water supplies to the lake, and to a lesser degree by outflows. As described in Sections 2.1 and 2.2, outflows generally followed Plan 2014 except during minor deviations in October through December. For comparison purposes, the daily levels of 2017, 2018 and 2019 through 28 February are shown. During this reporting period, Lake Ontario's water level started slightly above average and remained near average through the end of October before diverging from the mean and increasing to well above average by the end of the reporting period. This was due to significantly above average outflows from Lake Erie, combined with sporadic rainfall events in the upper and lower Great Lakes. During this reporting period, water levels of all five of the Great Lakes water levels remained above average. Lake Ontario levels began their seasonal rise at the start of November, increasing 9 cm (3.5 in) in November, 11 cm (4.3 in) each month in December, January and February despite continued above-average monthly-mean Lake Ontario outflows.

As a means of determining the effect of regulation activities on levels and outflows, a comparison of Lake Ontario's actual monthly levels and outflows to those that would have occurred under pre-project conditions (i.e. the levels and outflows that would have occurred had regulation not been undertaken) is provided in Table 4. This summary shows that Lake Ontario was approximately 75 cm (29.5 in) lower than it would have been without regulation throughout the reporting period. A comparison of the daily levels to long-term average, pre-project levels, and computed Plan 2014 levels is also shown in Figure 6.

The water levels of Lake St. Lawrence at Long Sault Dam (Figure 7) were generally well-below average throughout the reporting period except during minor deviations when outflows were reduced to raise levels temporarily and assist boat haul-outs during two weekends in October. The flow reductions, combined with the impact of southwest winds, resulted in a water level rise on Lake St. Lawrence of approximately 55 to 60 cm (21.6 to 23.6 in).

During ice formation in January, Lake St. Lawrence temporarily rose above average due to reduced outflows from the Moses-Saunders dam, but subsequently fell below average again owing to the effect of the ice cover and subsequent outflow increases. Levels remained below average as outflows were increased as ice conditions stabilized. Outflows were adjusted according to the I-limit to maintain weekly mean levels near 71.80 m (235.56 ft), which is the minimum level that applies during the winter to protect water intakes on Lake St. Lawrence, but daily mean levels fell as low as 71.62 m (234.97 ft) on 3 February 2019.

Daily water levels at Summerstown on Lake St. Francis generally fluctuated around average from September through December. Daily mean levels were at or above the Seaway Low Alert level throughout most of the navigation season, except for one occurrence on 7 November when levels dropped to 46.54 m (152.69 ft), 4 cm (1.6 in) below the low alert level of 46.58 m (152.82 ft). Water levels fell to near-record-low values in early January but quickly rebounded and hovered around average through February.

The daily water levels on Lake St. Louis at Pointe Claire (Figure 8) remained generally above average throughout the reporting period, except for a few days in October when levels fell below average in

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response to the reduced Lake Ontario outflows (to assist with Lake St. Lawrence boat haul-out deviations). Lake St. Louis also fell below average during early January when outflows were reduced to facilitate ice formation in the St. Lawrence River. Levels increased again at the end of January due to high outflows from the Moses-Saunders dam under stable ice conditions.

The daily levels at the Port of Montreal (Figure 9) began September slightly above average and fell below average temporarily in early October in response to the reduced Lake Ontario outflows. Water levels remained near or above average until January when they dipped below average when outflows were reduced to facilitate ice formation in the St. Lawrence River. At the end of the reporting period, levels were well above the seasonal average.

The daily levels of Lake St. Peter at Sorel are shown in Figure 10.

2.4 Iroquois Dam Operations

The gates at Iroquois Dam were partially closed from 24 January to 1 March to facilitate stable ice formation upstream of the structure. Thereafter, all of the gates were raised to their typical “Summer Set” position with the two navigation gates raised well above the water line.

2.5 Long Sault Dam Operations

The power entities opened gates partially at Long Sault Dam for 22 days during mid-October through early-November, for one day in December, and for five days in late-February to spill the amount of total Lake Ontario outflow that exceeded the capacity of the Moses-Saunders Dam, which varied according to maintenance requirements.

2.6 Raisin River Diversion

The Raisin River Diversion was opened beginning 4 July and closed for the season on 4 October 2018. Diverted flows were generally less than 0.1 m³/s during this time since Lake St. Lawrence levels were extremely low.

2.7 St. Lawrence Seaway Report

The 2018 navigation season closed after the transit of the last commercial down bound vessel, *M/V Floragracht*, through St. Lambert Lock in the Montreal Lake-Ontario (MLO) Section of the Seaway, at 7:44 PM on 30 December 2018.

2.8 Hydropower Peaking and Ponding

By letter dated 13 October 1983, the IJC authorized Ontario Power Generation (OPG) and New York Power Authority (NYPA) to continue to carry out peaking and ponding operations at the St. Lawrence Project. The conditions governing peaking and ponding operations are currently specified in Addendum No. 3 to the Operational Guides for Regulation Plan 1958-D. On 4 November 2016, the IJC renewed the approval for a 5-year period, dated 1 December 2016 to 30 November 2021. Previously, the IJC wrote to the Board requesting information regarding details of adverse impacts as a result of peaking and ponding operations. The Board responded, indicating they have not received any notification of adverse impacts resulting from peaking and ponding. After communicating with the Board, the IJC wrote to the Power Entities requesting an analysis on potential impacts for flow variations greater than 570 m³/s during non-navigation season. The peaking and ponding extension was approved; however, flow variations greater than 570 m³/s during non-navigation season will not be considered until the analysis is complete. The Power Entities are preparing this analysis.

No ponding operations were conducted. Peaking operations were conducted on select days from 26 January to 5 February.

3 Board Activities

The Board continued to direct the outflow from 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. The regulation representatives provided the Board with weekly water level, forecast and hydrologic conditions updates, weekly regulation data, monthly reviews of the hydrological conditions, and advised the Board on minor deviation 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 the regulation representatives on weekly operational requirements and constraints. The Board continued to work with the IJC, through the Communication Committee, to seek opportunities to improve communications, outreach, and engagement with its stakeholders and the public. The Committee on River Gauging monitored the power entities' program throughout the reporting period for operation and maintenance of the gauging system required for Board operations, hold teleconferences as necessary, and report annually.

3.1 Board Meetings & Conference Calls

The Board met in person twice, along with IJC advisors, associated subcommittees, and advisory groups to conduct business and assess conditions during the reporting period. The Board held face-to-face meetings on 18 September in Cornwall, Ontario and on 24 October in Ottawa, Ontario. Table 5 provides a list of Board Members in attendance at the in-person meetings.

3.2 Board and Committee Membership Changes

Mr. Bryce Carmichael replaced Mr. Arun Heer as US Secretary effective 7 January 2019 following Mr. Heer's transition to another position within the US Army Corps of Engineers. The US Army Corps of Engineers hired a Public Affairs Officer to assist the Board in public communications. Mr. Andy Kornacki has many years of experience in public relations with the Buffalo District office and has been a welcome addition to the Communication Committee.

3.3 Communications, Outreach and Engagement

During the reporting period, the Communication 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 and participated in various stakeholder and public meetings. More details of these outreach efforts are listed in Appendix A and a full Communication Committee membership list is available in Appendix B.

Board members and staff responded to a number of telephone and email inquiries from local government officials, interested stakeholders and members of the general public concerning water level conditions and Board strategies and conducted numerous interviews with the media. Board staff continued to send weekly updates on current conditions to over 400 email subscribers. Weekly and monthly updates on the Board's Facebook pages continue to be posted in both French and English and Board staff frequently respond to public comments and questions. The [French](#) and [English](#) pages currently have over 350 and 3,300 "likes" respectively. The Board's Facebook presence is currently reaching an average of about 4,500 people per week.

The Canadian regulation representative office continued to provide weekly briefings of water levels and weather predictions that were developed during the spring of 2017. The briefings are distributed by email to Board members and associates, and interested stakeholders including federal, provincial and state government agencies, several Conservation Authorities, Port Authorities, and municipalities.

The Board updated its' website (<https://www.ijc.org/en/loslrp>) in conjunction with the IJC's Website Modernization Team's roll-out of the new IJC website. The website currently includes:

- Weekly tabular and graphical updates on water levels, outflow changes, and water supply information;
- General information about the Board, its activities and its structure;
- Current and archived media releases;
- Frequently Asked Questions and responses including a separate Questions and Answers page related to the 2017 high water levels;
- Semi-annual progress reports, meeting minutes, and other background publications; and
- Animated "Learning Modules".

A Board letter to community leaders focusing on resiliency and adaptive management measures was issued in December to over 100 municipalities throughout the System. Board members and staff attended public meetings in Wilson Hill, New York and Long Sault, Ontario regarding low Lake St. Lawrence levels and in St. Anicet, Quebec regarding Lake St. Francis levels. The Communication Committee started developing a Wikipedia piece on Lake St. Lawrence to raise awareness of the Board's regulatory operations and the control structures. The Board partnered with the St. Lawrence River Institute of Environmental Science on an IJC International Watersheds Initiative (IWI) funded project that will help correlate potential impacts to certain fish species owing to given seasonal or regulatory changes in Lake St. Lawrence levels.

3.4 Gauging Committee

The St. Lawrence Committee on River Gauging (Gauging Committee) is granted authority by the Board to ensure the accuracy of flow estimates and water level measurements in the international section of the St. Lawrence River. The Gauging Committee inspects the computational methods employed at each of the eight outflow structures and monitors the operation and maintenance of the water level gauges owned and operated by the power entities (OPG and NYPA). The committee conducts an annual field inspection of 16 of the water level gauges used by the Board to monitor river conditions and performs monthly audits of the water level and outflow data collected and archived by the power entities. The findings and results of these activities are documented in an annual report to the Board.

The 81st (2017) and 82nd (2018) reports are currently being prepared. They will include the findings and results of the annual inspections that were completed on 11-15 September 2017 and 11-15 June 2018. A precision survey was planned to take place in 2018, but was re-scheduled for fall of 2019. NOAA's National Geodetic Survey (NGS) office will follow the same survey route as the previous precision survey, using newer, stricter procedures related to the new horizontal and vertical datum, Geoid 2022. This datum will be the base relationship for the new International Great Lakes Datum (IGLD 2020), with emphasis on GPS observations. The 2019 annual water level gauge inspections are scheduled for 12 to 16 August.

4. Adaptive Management Committee

The Great Lakes – St. Lawrence River Adaptive Management (GLAM) Committee of technical experts, established by the IJC to consider adaptive management methods as part of an on-going evaluation of regulation plans, continued to work with the Board to implement the science-based recommendations of

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past studies and develop new ones. The Board seeks to evaluate regulation plan performance over time with regard to a broad range of environmental and economic indicators. Detailed reports of GLAM activities can be found on the GLAM Committee's [website](#).

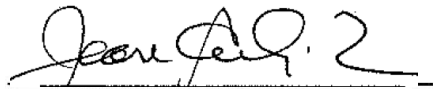
The committee has been very active and published its report of the impacts of 2017 high water levels in November. The report reviews climate conditions, water levels and flows in 2017, and the available information on the impacts experienced by different interests throughout the Great Lakes-St Lawrence River system. The focus of the report is on the extraordinary conditions caused by record rainfall and runoff in the Lake Ontario, St. Lawrence River, and Ottawa River basins, where significant damage to coastal properties and negative impacts to recreational boating and tourism occurred. The GLAM Committee's analyses support the finding of the Board's report published in May 2018, namely that Plan 2014 did not cause, nor meaningfully exacerbate the flooding and associated damages that occurred. The committee also examined potential changes to the rules in Plan 2014, including the maximum flow limits and high-water trigger levels, and found that the changes would not have significantly reduced water levels in 2017 and, in some cases, would have only shifted the damaging impacts from one geographic location or interest to another. Overall, the analyses reinforce the fact that regulation of outflows alone cannot eliminate severe impacts during such extreme events.

Respectfully submitted,

MEMBERS FOR CANADA



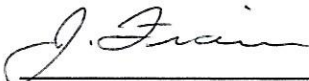
G. BECHARD, CHAIR



J. AUBRY-MORIN



P. CLAVET



J. FRAIN



M. HUDON

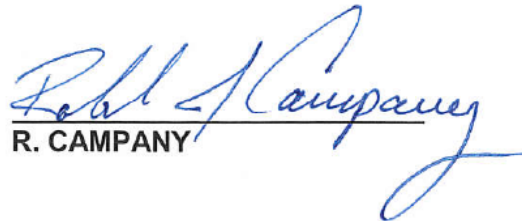
MEMBERS FOR THE UNITED STATES



S. DURRETT, Alt. CHAIR



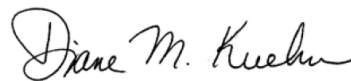
T. BROWN



R. CAMPANY



A. DAVID



D. KUEHN

**Table 1:
Provisional Monthly Mean Supplies to Lake Ontario**

Month	Inflow from Lake Erie				Local Net Basin Supplies			Total Supplies			
	m ³ /s	tcfs	Exceed. Prob. ⁽¹⁾	% of LTA ₍₁₎	m ³ /s	tcfs	Exceed. Prob. ⁽¹⁾	m ³ /s	tcfs	Exceed. Prob. ⁽¹⁾	% of LTA ₍₁₎
Sep 18	6820	241	9	114	-60	-2	64	6760	239	16	111
Oct 18	6900	244	5	118	170	6	51	7070	250	14	115
Nov 18	7160	253	2	122	1640	58	6	8800	311	2	135
Dec 18	7120	251	4	121	1870	66	6	8990	317	3	134
Jan 19	7170	253	2	126	980	35	47	8150	288	11	122
Feb 19	7010	248	2	125	1870	66	9	8880	314	1	133
6-month Average	7030	248	3	121	1080	38	11	8110	286	3	126

⁽¹⁾ Based on period of record 1900-2017

**Table 2:
Provisional Precipitation over the Great Lakes and Lake Ontario Basins**

Month	Great Lakes Basin			Lake Ontario Basin		
	mm (inches)	% of LTA ⁽¹⁾	Exceed. Prob. ⁽¹⁾	mm (inches)	% of LTA ⁽¹⁾	Exceed. Prob. ⁽¹⁾
Sep 18	77 (3.03)	89	66	72 (2.83)	87	62
Oct 18	105 (4.13)	142	11	88 (3.46)	110	37
Nov 18	65 (2.56)	93	58	105 (4.13)	131	16
Dec 18	50 (1.97)	82	76	77 (3.03)	103	44
Jan 19	41 (1.61)	73	82	59 (2.32)	86	68
Feb 19	63 (2.48)	140	12	64 (2.52)	107	40
6-month Average	67 (2.64)	102	44	78 (3.07)	105	38

⁽¹⁾ Based on period of record 1900-2016

Table 3a: Summary of Weekly Outflows, Operational Adjustments and Deviations

Week Ending 2018	Adj. RC Flow		Plan Flow		App. Rule/ Limit	Actual Flow		Op. Adjustments &/or Plan Limitations		Deviations						Type	Details
	m³/s	tcfs	m³/s	tcfs		m³/s	tcfs	m³/s	tcfs	Weekly		Accumulated		Cumulative effect on L. Ontario			
										m³/s	tcfs	m³/s-wks	tcfs-wks	cm	in		
31-Aug	8400	297	8400	297	RC	8400	297										Plan (Rule Curve)
07-Sep	8400	297	8400	297	R+	8400	297										Plan (R+) Increase to 8420 m³/s (74.8 by 1 Jan), limited to Labor Day rule (no increase from prior week)
14-Sep	8200	290	7940	280	L	7940	280	-260	-9.2								OAs for max L-limit (Lake St. Lawrence minimum threshold of 72.60 m), minor deviation and payback (OPG's black start testing)
21-Sep	8100	286	8100	286	RC	8100	286										Plan (Rule Curve)
28-Sep	8060	285	8000	283	L	8000	283	-60	-2.1								OAs for max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
05-Oct	7990	282	7830	277	L	7770	274	-220	-7.8	-60	-2.1	-60	-2.1	0.2	0.1	Minor & Unintent.	OAs for max L-limit (Lake St. Lawrence minimum threshold of 72.60 m), minor deviation for boat haul-out on Lake St. Lawrence
12-Oct	7980	282	7890	279	L	7570	267	-410	-14.5	-320	-11.3	-380	-11.3	1.2	0.5	Minor & Unintent.	Minor deviation for boat haul-out on Lake St. Lawrence
19-Oct	8010	283	8010	283	RC	7730	273	-280	-9.9	-280	-9.9	-660	-9.9	2.0	0.8	Minor	Minor deviation for boat haul-out on Lake St. Lawrence
26-Oct	7900	279	7860	278	L	7910	279	10	0.4	50	1.8	-610	1.8	1.9	0.7	Minor	Minor deviation to remove water stored on L. Ontario for boat haul-out; OAs for max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
02-Nov	7770	274	7620	269	L	7650	270	-120	-4.2	30	1.1	-580	1.1	1.8	0.7	Minor	Minor deviation to remove water stored on L. Ontario for boat haul-out; OAs for max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)

Note: The Op. Adjustments &/or Plan Limitations column values shown in this table are computed as the Actual Flow minus Adjusted RC Flow.

Note: The "+" in the App. Rule/Limit column denotes the Plan 2014 "September Rule" was applied. Whenever the Lake Ontario level is above 74.8 m at the beginning of September, the September Rule strives to lower Lake Ontario to 74.8 m by 1 January. The rule curve flow is linearly increased by the amount needed to eliminate the storage on the lake above 74.8 m over the remaining time, before 1 January. The adjusted flow is constrained by the L-limit.

Table 3a (continued): Summary of Weekly Outflows, Operational Adjustments and Deviations

Week Ending 2018	Adj. RC Flow		Plan Flow		App. Rule/ Limit	Actual Flow		Op. Adjustments &/or Plan Limitations		Deviations						Type	Details
	m³/s	tcfs	m³/s	tcfs		m³/s	tcfs	m³/s	tcfs	Weekly		Accumulated		Cumulative effect on L. Ontario			
										m³/s	tcfs	m³/s-wks	tcfs-wks	cm	in		
09-Nov	7790	275	7780	275	L	7910	279	120	4.2	130	4.6	-450	4.6	1.4	0.6	Minor	Minor deviation to remove water stored on L. Ontario for boat haul-out; OAs for max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
16-Nov	7920	280	7900	279	L	8050	284	130	4.6	150	5.3	-300	5.3	0.9	0.4	Minor	Minor deviation to remove water stored on L. Ontario for boat haul-out; OAs for max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
23-Nov	8000	283	7950	281	L	7990	282	-10	-0.4	40	1.4	-260	1.4	0.8	0.3	Minor	Minor deviation to remove water stored on L. Ontario for boat haul-out; OAs for max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
30-Nov	7940	280	7890	279	L	7990	282	50	1.8	100	3.5	-160	3.5	0.5	0.2	Minor	Minor deviation to remove water stored on L. Ontario for boat haul-out; OAs for max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
07-Dec	8190	289	8150	288	L	8240	291	50	1.8	90	3.2	-70	3.2	0.2	0.1	Minor	Minor deviation to remove water stored on L. Ontario for boat haul-out; OAs for max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
14-Dec	8270	292	8230	291	L	8300	293	30	1.1	70	2.5	0	2.5	0.0	0.0	Minor	Minor deviation to remove water stored on L. Ontario for boat haul-out; OAs for max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
21-Dec	8290	293	8290	293	RC	8290	293										Plan (Rule Curve)
28-Dec	8200	290	8200	290	RC	8200	290										Plan (Rule Curve)

Note: The Op. Adjustments &/or Plan Limitations column values shown in this table are computed as the Actual Flow minus Adjusted RC Flow.

Table 3a (continued): Summary of Weekly Outflows, Operational Adjustments and Deviations

Week Ending 2019	Adj. RC Flow		Plan Flow		App. Rule/ Limit	Actual Flow		Op. Adjustments &/or Plan Limitations		Deviations						Type	Details
										Weekly		Accumulated		Cumulative effect on L. Ontario			
	m ³ /s	tcfs	m ³ /s	tcfs		m ³ /s	tcfs	m ³ /s	tcfs	m ³ /s	tcfs	m ³ /s-wks	tcfs-wks	cm	in		
04-Jan	8380	296	8380	296	RC	8380	296										Plan (Rule Curve)
11-Jan	8540	302	8480	299	I	8480	299	-60	-2.1								OA for ice management at Beauharnois Canal
18-Jan	8580	303	6470	228	I	6470	228	-2110	-74.5								OA for ice management at Beauharnois Canal
25-Jan	8490	300	6460	228	I	6460	228	-2030	-71.7								OAs for ice management
01-Feb	8560	302	7160	253	J	7160	253	-1400	-49.4								OAs for ice management and maximum week-to-week change in flow (J-limit)
08-Feb	8580	303	7680	271	J/I	7680	271	-900	-31.8								OAs for maximum week-to-week change in flow (J-limit) or max I-limit (maintain L. St. Lawrence at 71.80 m)
15-Feb	8760	309	8010	283	I	8010	283	-750	-26.5								OAs for max I-limit (maintain L. St. Lawrence at 71.80 m)
22-Feb	8890	314	8380	296	I	8380	296	-510	-18								OAs for max I-limit (maintain L. St. Lawrence at 71.80 m)
01-Mar	8900	314	8580	303	I	8580	303	-320	-11.3								OAs for max I-limit (maintain L. St. Lawrence at 71.80 m)

Note: The Op. Adjustments &/or Plan Limitations column values shown in this table are computed as the Actual Flow minus Adjusted RC Flow.

Week Ending 2018	Flow Changes							App. Rule/Limit	Details
	Day	Hr	(m ³ /s)		(tcfs)		Reason		
			From	To	From	To			
31-Aug	25-Aug	0001	8420	8400	297.3	296.6	Plan	RC	Plan (Rule Curve)
7-Sep							Plan	R+	Plan (R+) Increase to 8420 m ³ /s (74.8 by 1 Jan), limited to Labor Day rule (no increase from prior week), remain at 8400 m ³ /s
14-Sep	8-Sep	0001	8400	8210	296.6	289.9	Dev	Minor	10 m ³ /s above plan flow (Rule Curve) in anticipation of 12 Sept flow reduction for OPG's black start testing
	9-Sep	1601	8210	7800	289.9	275.5	OA	L	Operational adjustment to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
	12-Sep	1201	7800	7580	275.5	267.7	Dev	Minor	OPG's black start testing
	12-Sep	1501	7580	7800	267.7	275.5	Dev	Minor	
	14-Sep	0001	7800	8100	275.5	286.0	OA	L	Operational adjustment to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
21-Sep							Plan	RC	Plan (Rule Curve), remain at 8100 m ³ /s
28-Sep	22-Sep	0001	8100	8060	286	284.6	Plan	RC	Plan (Rule Curve)
	24-Sep	1001	8060	7700	284.6	271.9	OA	L	Operational adjustments to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
	25-Sep	1401	7700	8060	271.9	284.6	OA	L	
5-Oct	29-Sep	0001	8060	7990	284.6	282.2	Plan	RC	Plan (Rule Curve)
	1-Oct	1601	7990	7600	282.2	268.4	OA	L	Operational adjustments to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
	3-Oct	1201	7600	7990	268.4	282.2	OA	L	
	5-Oct	0001	7990	7600	282.2	268.4	OA	L	
	5-Oct	1601	7600	6500	268.4	229.5	Dev	Minor	Boat haul-out on Lake St. Lawrence
12-Oct	7-Oct	1501	6500	7000	229.5	247.2	Dev	Minor	Ramp up to plan flow
	7-Oct	1601	7000	7500	247.2	264.9	Dev	Minor	
	7-Oct	1701	7500	7980	264.9	281.8	Dev	Minor	
	12-Oct	1601	7980	6800	281.8	240.1	Dev	Minor	Boat haul-out on Lake St. Lawrence
19-Oct	14-Oct	1501	6800	7500	240.1	264.9	Dev	Minor	Ramp up to plan flow
	14-Oct	1601	7500	8010	264.9	282.9	Dev	Minor	
26-Oct	23-Oct	1401	8010	7700	282.9	271.9	OA	L	Operational adjustments to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
	24-Oct	1401	7700	7900	271.9	279	OA	L	
	26-Oct	1601	7900	7600	279	268.4	OA	L	
2-Nov	27-Oct	1601	7600	7100	268.4	250.7	OA	L	Operational adjustments to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
	28-Oct	1601	7100	7600	250.7	268.4	OA	L	
	29-Oct	1201	7600	7820	268.4	276.2	Dev	Minor	Minor deviation pay back
	2-Nov	1201	7820	7500	276.2	264.9	OA	L	Operational adjustments to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
9-Nov	3-Nov	0001	7500	7700	264.9	271.9	OA	L	Operational adjustments to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
	3-Nov	1201	7700	7850	271.9	277.2	Dev	Minor	
	6-Nov	1601	7850	8000	277.2	282.5	Dev	Minor	Minor deviation pay back

Note: The "+" in the Applicable Rule/Limit column denotes the Plan 2014 "September Rule" was applied. Whenever the Lake Ontario level is above 74.8 m at the beginning of September, the September Rule strives to lower Lake Ontario to 74.8 m by 1 January. The rule curve flow is linearly increased by the amount needed to eliminate the storage on the lake above 74.8 m over the remaining time, before 1 January. The adjusted flow is constrained by the L-limit.

Week Ending 2018/2019	Flow Changes								Details
	Day	Hr	(m ³ /s)		(t cfs)		Reason	App. Rule/ Limit	
			From	To	From	To			
16-Nov	10-Nov	1201	8000	8100	282.5	286	Dev	Minor	Minor deviation pay back
	15-Nov	1601	8100	7800	286	275.5	OA	L	Operational adjustment to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
	16-Nov	1601	7800	8100	275.5	286	Dev	Minor	Minor deviation pay back
23-Nov	19-Nov	1601	8100	7800	286	275.5	OA	L	Operational adjustment to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
	21-Nov	1201	7800	8000	275.5	282.5	OA	L	
30-Nov	26-Nov	1201	8000	7600	282.5	268.4	OA	L	
	27-Nov	1201	7600	7940	268.4	280.4	OA	L	
	28-Nov	1201	7940	8100	280.4	286	Dev	Minor	Minor deviation pay back
	29-Nov	1601	8100	8200	286	289.6	Dev	Minor	
7-Dec	2-Dec	1101	8200	7900	289.6	279	OA	L	Operational adjustment to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
	3-Dec	1201	7900	8200	279	289.6	Dev	Minor	Minor deviation pay back
	4-Dec	1601	8200	8300	289.6	293.1	Dev	Minor	
	6-Dec	1601	8300	8450	293.1	298.4	Dev	Minor	
14-Dec	10-Dec	1701	8450	8270	298.4	292.1	Plan	RC	Return to plan flow
	13-Dec	1001	8270	8000	292.1	282.5	OA	L	Operational adjustment to max L-limit (Lake St. Lawrence minimum threshold of 72.60 m)
	14-Dec	1201	8000	8290	282.5	292.8	OA	L	
21-Dec							Plan	RC	Plan (Rule Curve), remain at 8290 m ³ /s
28-Dec	22-Dec	0001	8290	8200	292.8	289.6	Plan	RC	Plan (Rule Curve)
4-Jan	29-Dec	0001	8200	8380	289.6	295.9	Plan	RC	Plan (Rule Curve)
11-Jan	5-Jan	0001	8380	8540	295.9	301.6	Plan	RC	
	11-Jan	1701	8540	7100	301.6	250.7	OA	I	Ice management at Beauharnois Canal
18-Jan	12-Jan	1601	7100	6700	250.7	236.6	OA	I	
	13-Jan	1601	6700	6300	236.6	222.5	OA	I	
	14-Jan	1601	6300	6500	222.5	229.5	OA	I	
25-Jan	16-Jan	1701	6500	6230	229.5	220	OA	I	Ice management
	20-Jan	1901	6230	6400	220	226	OA	I	
1-Feb	23-Jan	1601	6400	6700	226	236.6	OA	I	
	27-Jan	1301	6700	6900	236.6	243.7	OA	I	
	28-Jan	1301	6900	7200	243.7	254.3	OA	I	
8-Feb	30-Jan	0001	7200	7470	254.3	263.8	OA	J	Maximum week-to-week change
	2-Feb	0001	7470	7860	263.8	277.6	OA	J	Maintain L. St. Lawrence at 71.80 m
	3-Feb	1101	7860	7600	277.6	268.4	OA	I	
7-Feb	1501	7600	7730	268.4	273	OA	I		
15-Feb	9-Feb	1201	7730	8000	273	282.5	OA	I	
	10-Feb	1201	8000	8300	282.5	293.1	OA	I	
	11-Feb	1601	8300	8100	293.1	286	OA	I	
	12-Feb	1601	8100	7800	286	275.5	OA	I	
	14-Feb	1201	7800	8100	275.5	286	OA	I	

Table 3b (continued): Summary of Flow Changes

Week Ending 2019	Flow Changes								Details
	Day	Hr	(m3/s)		(tcfs)		Reason	App. Rule/ Limit	
			From	To	From	To			
22-Feb	16-Feb	1201	8100	8300	286	293.1	OA	I	Maintain L. St. Lawrence at 71.80 m
	17-Feb	1201	8300	8400	293.1	296.6	OA	I	
	22-Feb	1401	8400	8500	296.6	296.6	OA	I	
1-Mar	26-Feb	1601	8500	8600	300.2	303.7	OA	I	
	27-Feb	1901	8600	8700	303.7	307.2	OA	I	

**Table 4:
Lake Ontario Recorded and Pre-project Water Levels and Outflows**

Month	Lake Ontario Monthly Mean Water Levels (IGLD 1985) - meters (feet)			Lake Ontario Monthly Mean Outflow m ³ /s (tcfs)		
	Recorded	Pre-project	Diff.	Recorded	Pre-project	Diff.
Sep 18	74.73 (245.17)	75.47 (247.60)	-0.74 (-2.43)	8100 (286)	8020 (283)	80 (3)
Oct 18	74.62 (244.81)	75.37 (247.27)	-0.75 (-2.46)	7710 (272)	7820 (276)	-110 (-4)
Nov 18	74.62 (244.81)	75.38 (247.31)	-0.76 (-2.50)	7970 (281)	7840 (277)	130 (5)
Dec 18	74.72 (245.14)	75.49 (247.67)	-0.77 (-2.53)	8270 (292)	8070 (285)	200 (7)
Jan 19	74.83 (245.50)	75.58 (247.96)	-0.75 (-2.46)	7290 (257)	8220 (290)	-930 (-33)
Feb 19	74.97 (245.96)	75.64 (248.16)	-0.67 (-2.20)	8120 (287)	7940 (280)	180 (6)

Table 5: Attendance at Meetings

Board Member	Country	18 Sept	24 Oct
BG M. Toy ¹	US	-	-
Dr. G. Bechard ²	Can	X	X
Mr. S. Durrett ³	US	X	X
Mr. T. Brown	US	X	X
Mr. R. Company	US	X	X
Mr. A. David	US	X	X
Dr. D. Kuehn	US	X	X
Mr. J. Aubry-Morin	Can	X	X
Ms. P. Clavet	Can	X	X
Ms. J. Frain	Can	X	X
Mr. M. Hudon	Can	X	X

Notes:

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

Location of Meeting:

18 September 2018: Cornwall, ON
24 October 2018: Ottawa, ON

Figure 1: Monthly Net Total Supplies to Lake Ontario

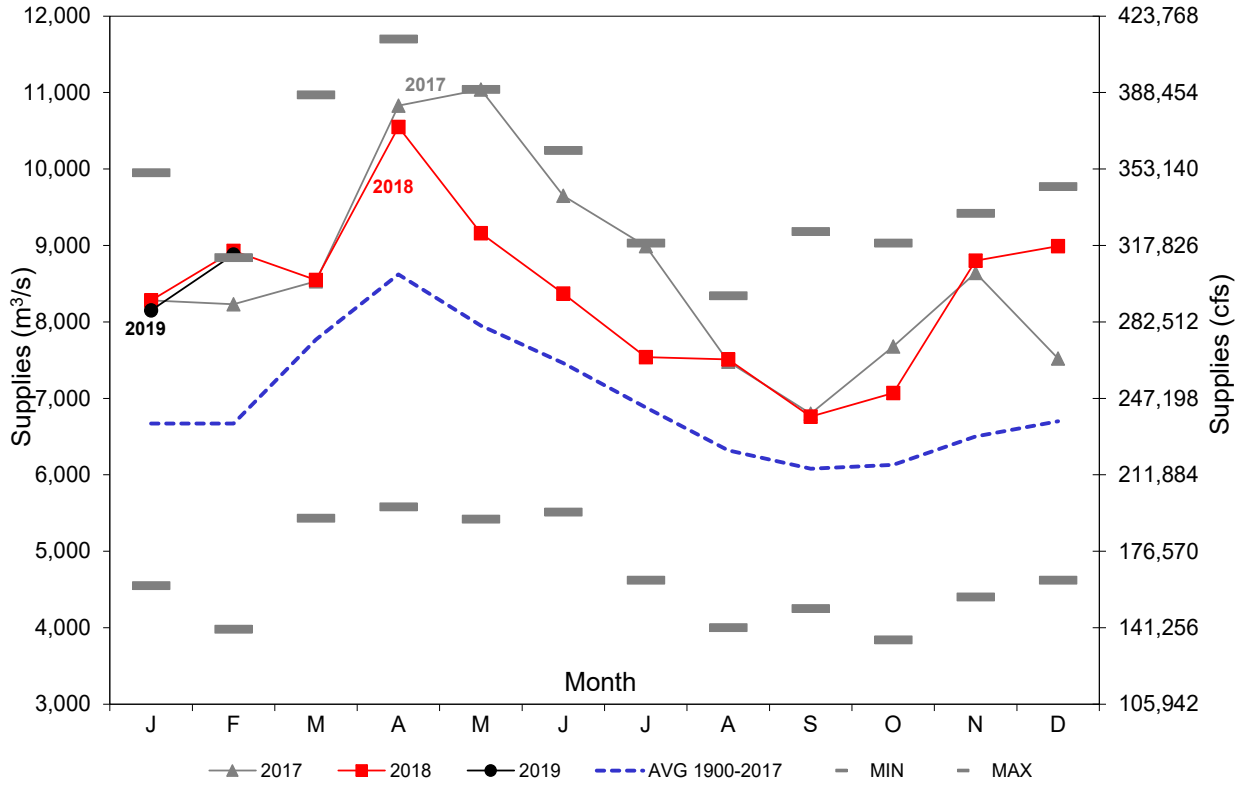


Figure 2: Daily Ottawa River Flow @ Carillon

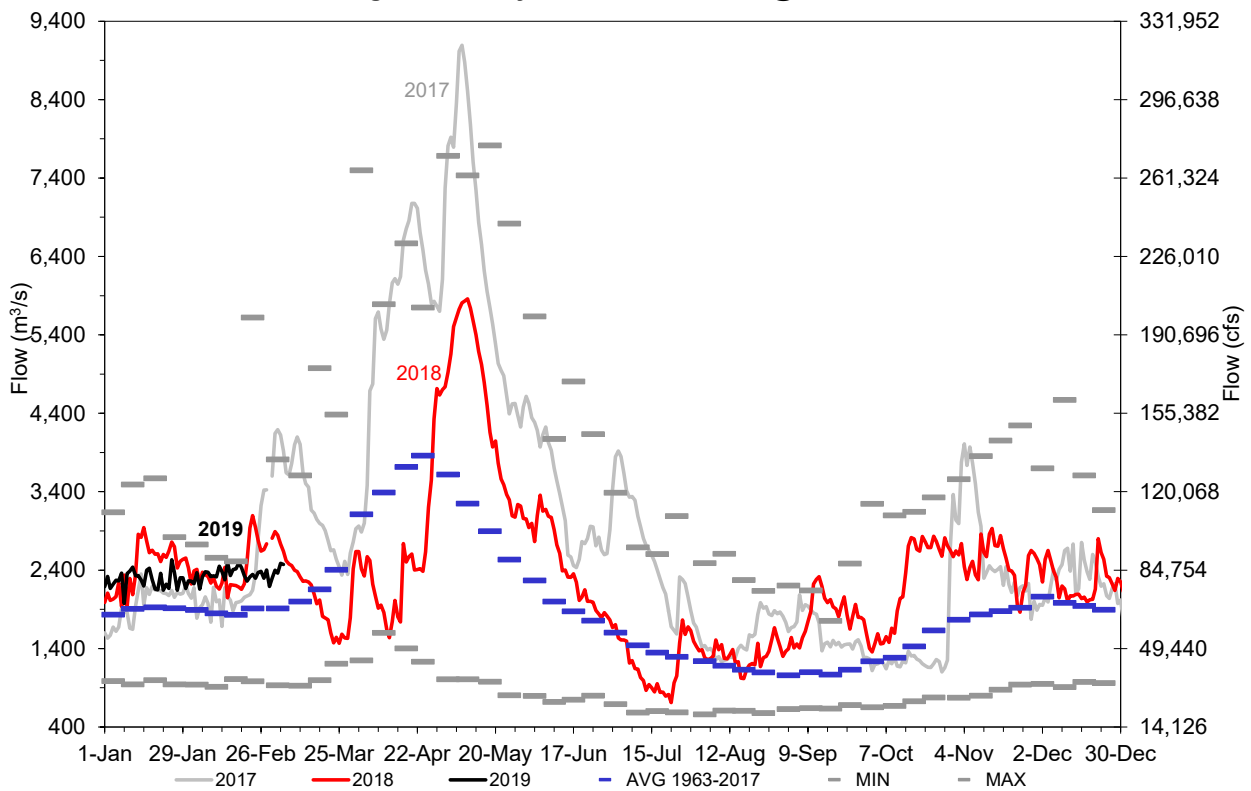


Figure 3: Lake Ontario Daily Outflows

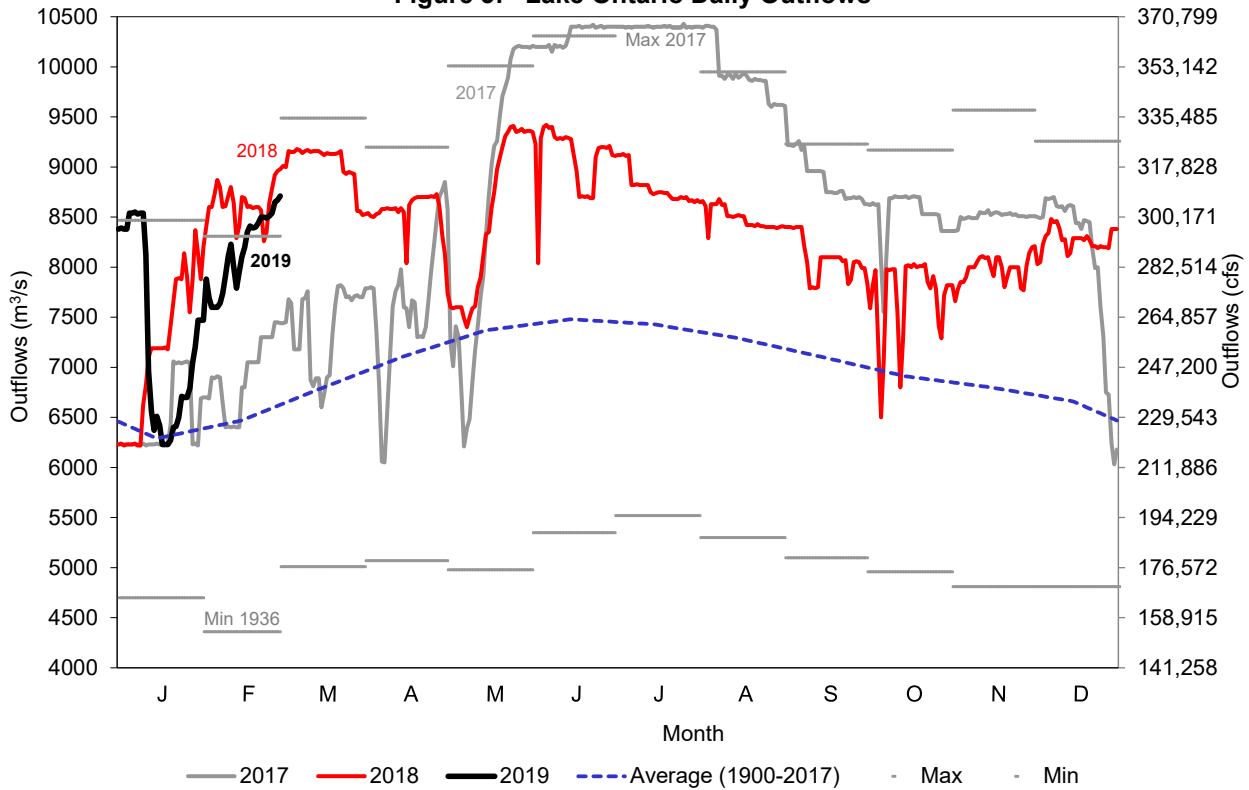


Figure 4: Lake Ontario Actual, Preproject & Plan 2014 Outflows

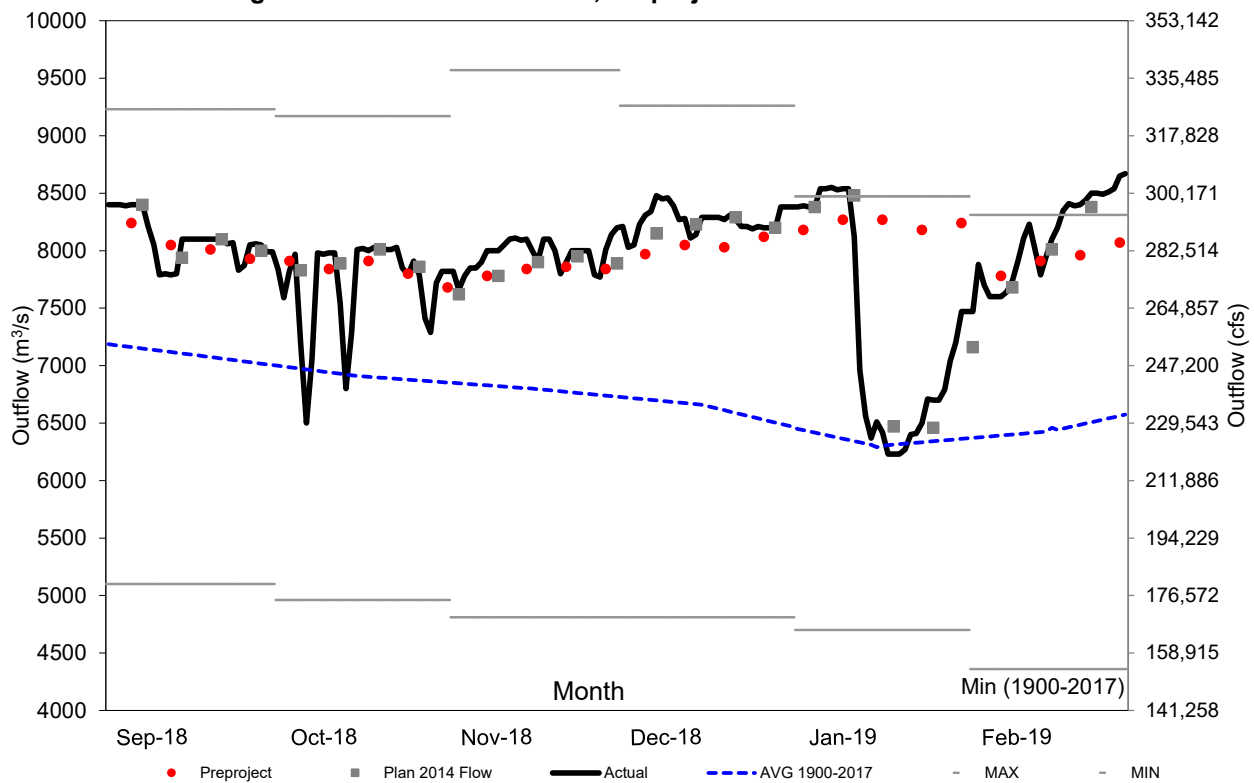


Figure 5: Daily Lake Ontario Water Levels

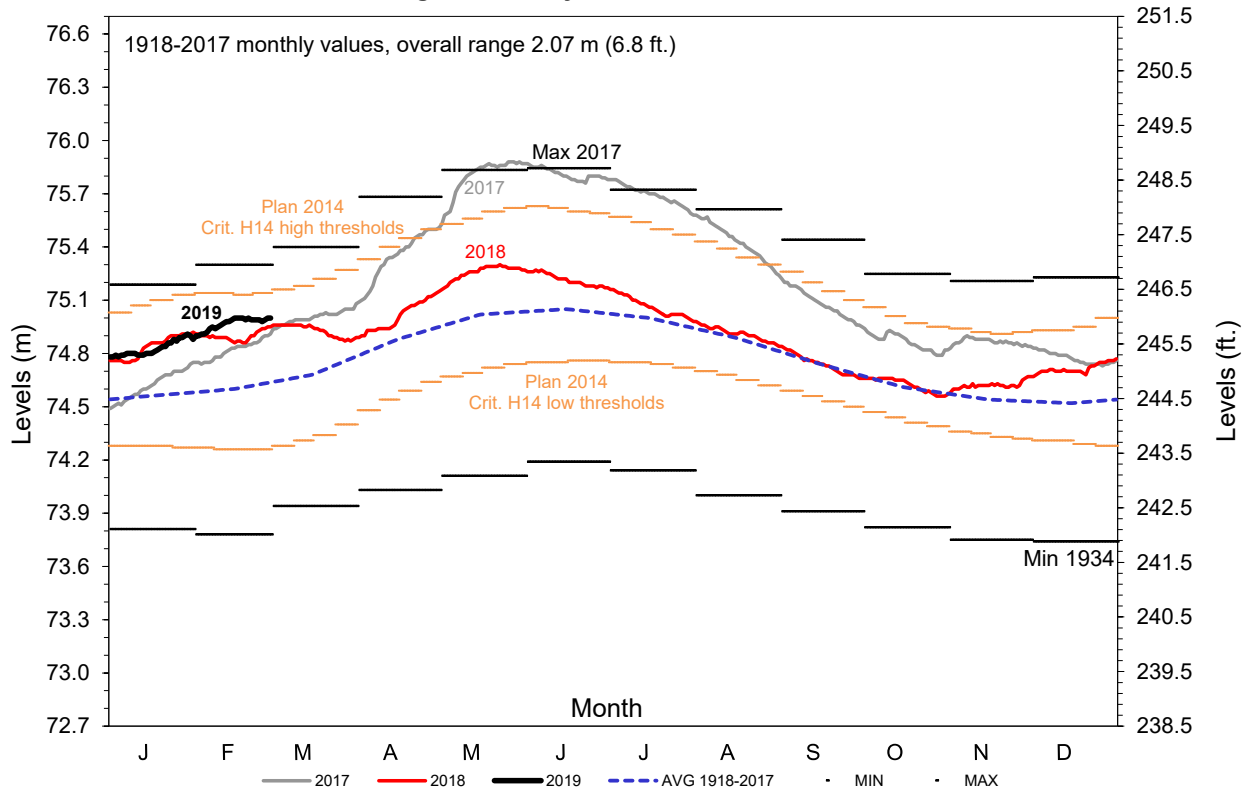


Figure 6: Lake Ontario Actual, Preproject & Plan 2014 Levels

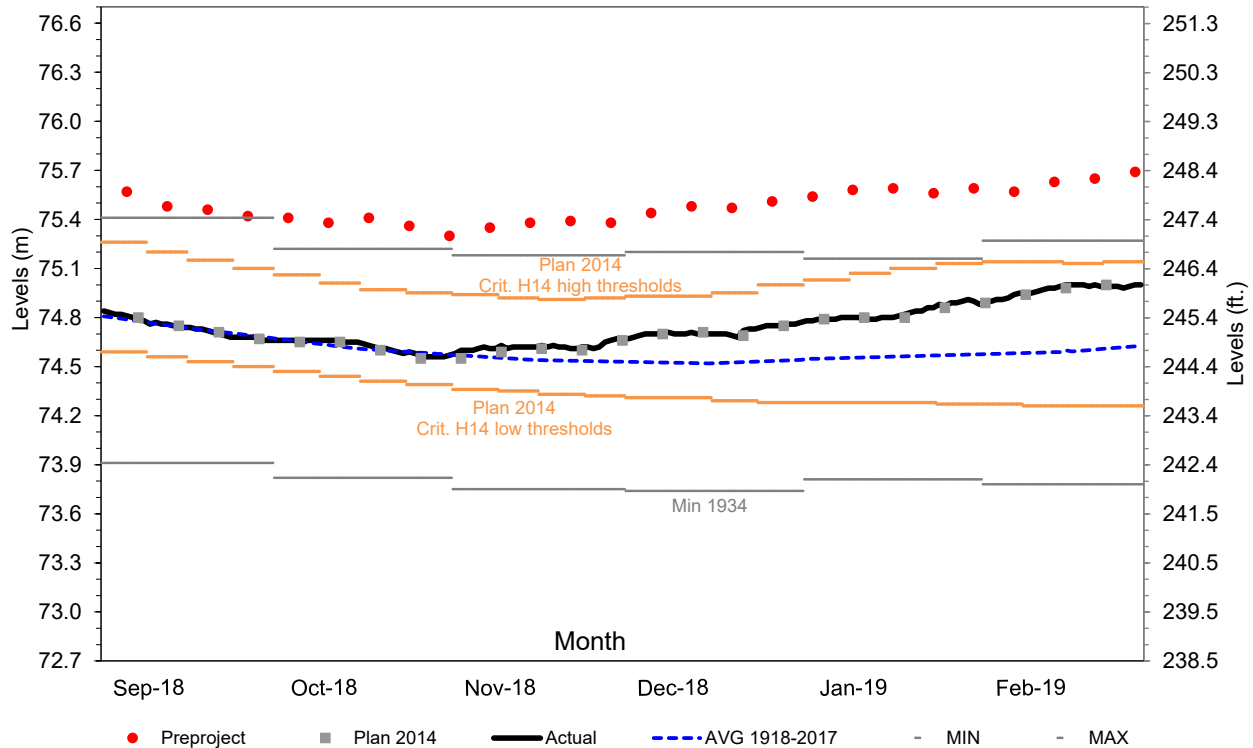


Figure 7: Daily Lake St. Lawrence Levels @ Long Sault Dam

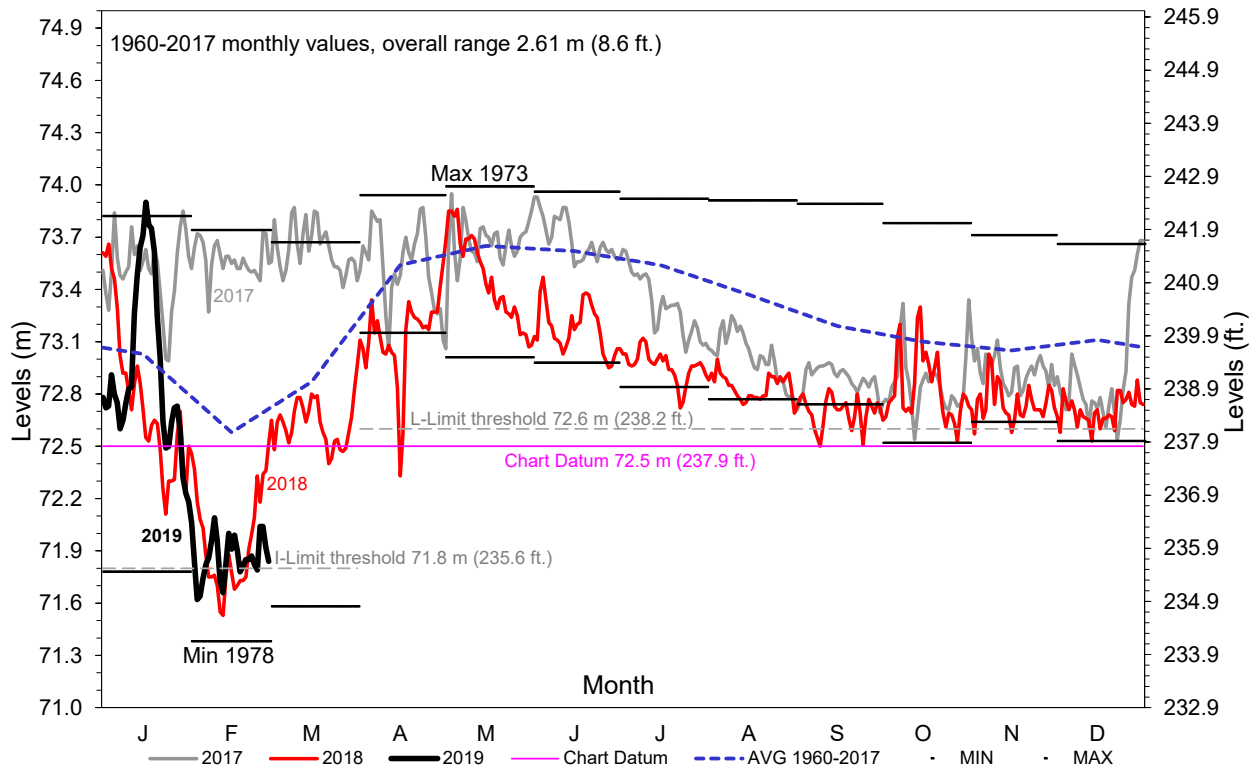


Figure 8: Daily Lake St. Louis Levels @ Pointe-Claire

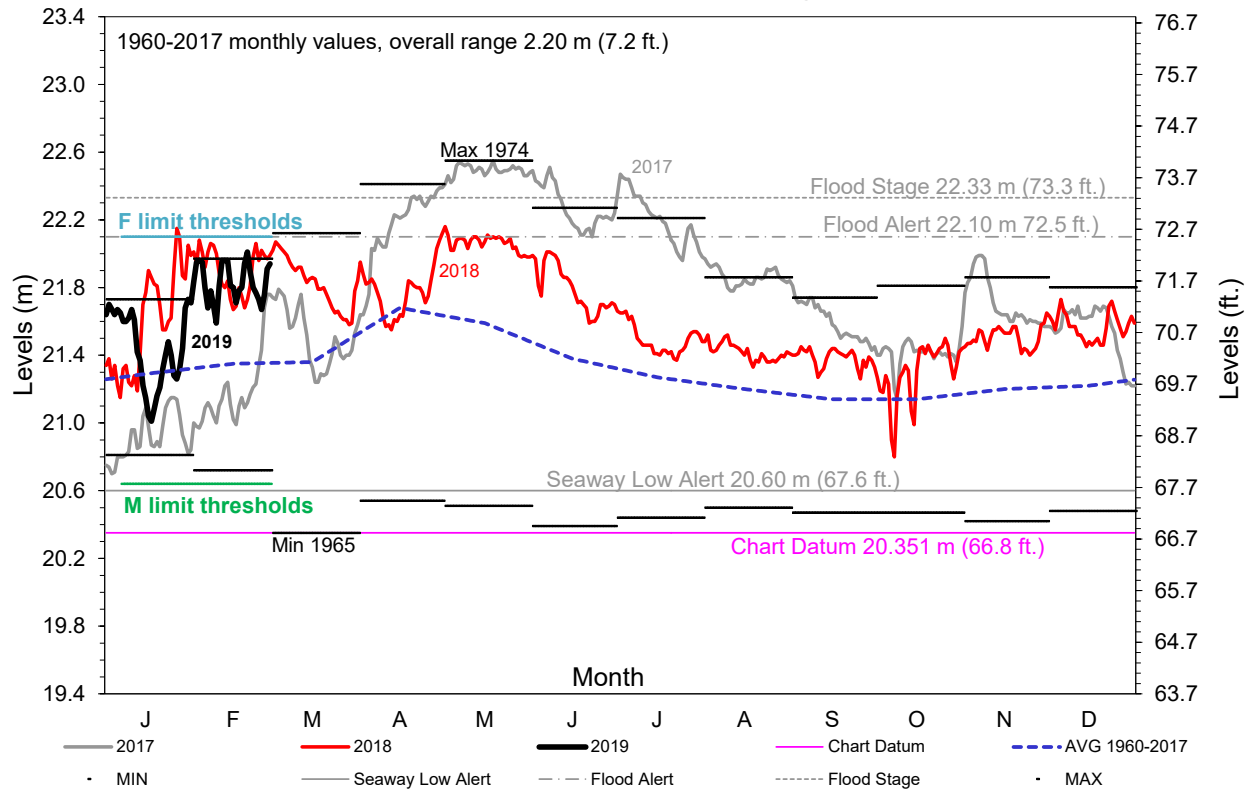


Figure 9: Daily Port of Montreal Levels @ Jetty #1

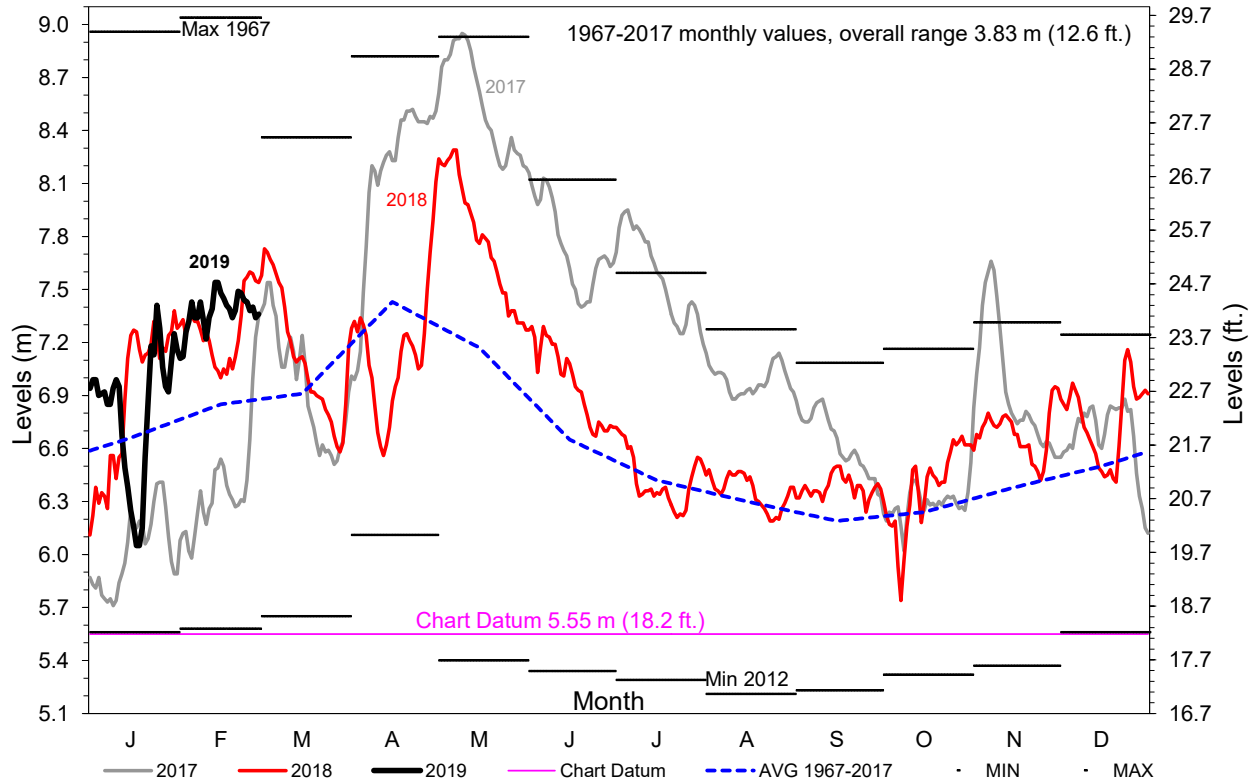
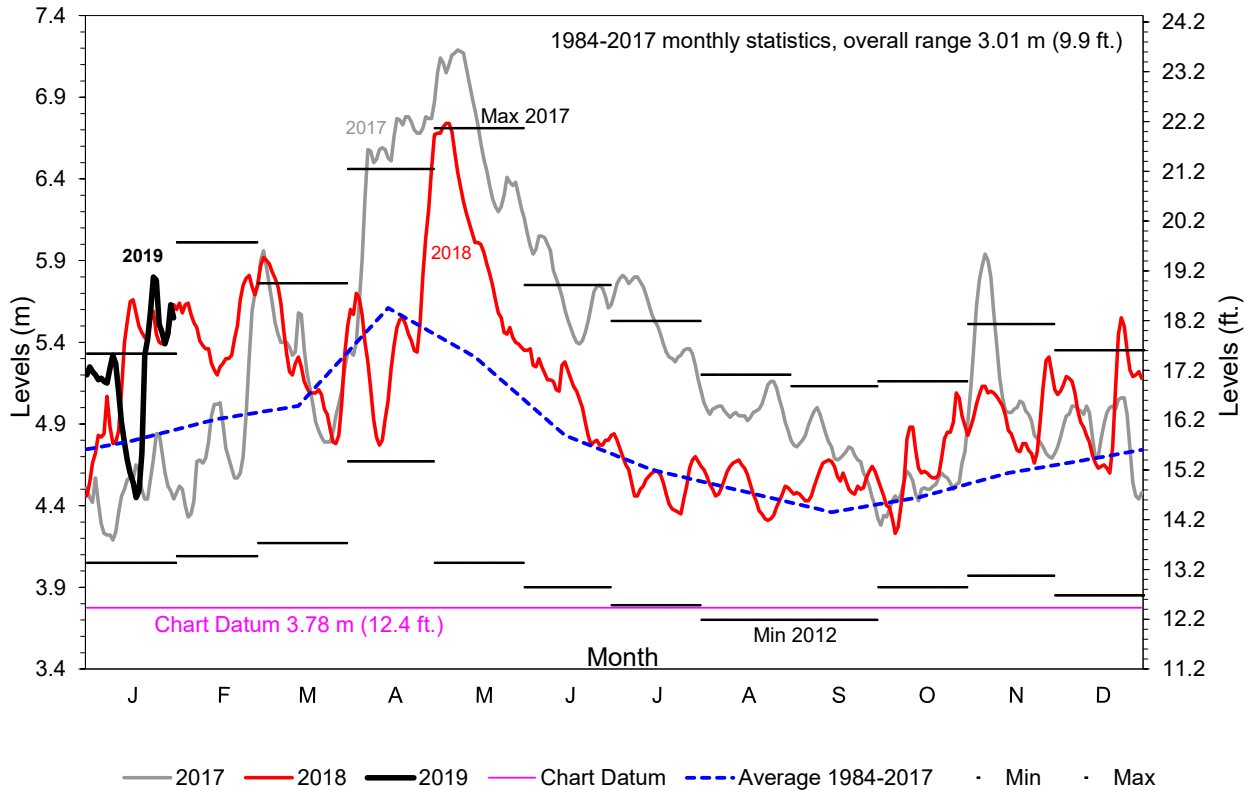


Figure 10: Daily Lake St. Peter Levels @ Sorel



Appendix A: Communication Committee Summary of Activities

Since 1 September 2018, the International Lake Ontario - St. Lawrence River Board of Control Communication Committee held several meetings in person and via teleconference. The committee continued to engage in initiatives and develop products to accomplish five strategic communication goals:

1. increase general public awareness of the IJC and the Board;
2. communicate accurately and in a timely fashion the actions of the Board and the reason for those actions;
3. explain how natural factors and regulation affect water levels and flows;
4. increase understanding of the necessity of and need to prepare for fluctuations in levels and flows; and
5. consistently seek out, consider and respond to the views and concerns of all stakeholders.

In addition to the outreach through Facebook, Flickr and the Board's website, Board members and staff held interviews, responded to media, and communicated with individual stakeholders throughout the entire system. They also actively engaged stakeholders, presenting at the following venues where they answered questions and concerns from those present:

Tuesday, September 11, 2018	Long Sault meeting with residents	Long Sault, ON
Thursday, September 13, 2018	Lake St. Francis Stakeholders	St. Anicet, QC
Sunday, September 23, 2018	Association pour la sauvegarde du lac Saint-François	St. Anicet, QC
Monday, September 24, 2018	Briefing for Institute of Natural Resources and Journalism	Cornwall, ON
Tuesday, October 30, 2018	Comité de concertation Navigation (CCN)	Bécancours, QC
Thursday, November 8, 2018	Conseil consultative regional sur la navigation de plaisance	Belleville, ON
Monday, November 19, 2018	Lake St. Lawrence Stakeholders	Cornwall, ON
Friday, November 29, 2018	NYS Department of Environmental Conservation	Potsdam, NY
Saturday, November 30, 2018	NYS Department of Environmental Conservation	Auburn, NY
Wednesday, January 16, 2019	Cornwall/ South Stormont Township Residents	Cornwall, ON
Wednesday, January 23, 2019	Eel passage Technical Committee	Webinar
Saturday, February 2, 2019	Save the River/ St. Lawrence Riverkeeper	Clayton, NY

Appendix B: Communication Committee Membership

Mr. R. Company
Mr. T. David
Mr. B. Carmichael
Mr. K. Koralewski
Mr. F. Bevacqua
Mr. A. Kornacki

Mr. M. Hudon
Mr. R. Caldwell
Mr. J. Bruxer
Ms. S. Lobrichon
Mr. D. Fay