

INTERNATIONAL LAKE SUPERIOR BOARD OF CONTROL

Minutes of the 15 September 2016 meeting

The International Lake Superior Board of Control met on 15 September 2016 in the Room 111 A at the Marie Guyart Building in Quebec, Quebec. Mr. Jaymie Gadal, Canadian Chair, chaired and convened the meeting at 8:40 a.m. The attendees were:

<u>United States</u>		<u>Canada</u>
	Board Members	
Mr. S. Durrett (Alt.)		Mr. J. Gadal
	Secretaries	
Mr. A. Heer		Mr. R. Caldwell
	Regulation Representatives	
LTC D. Sugrue		Mr. J. Bruxer
Mr. J. Allis (Alt.)		Ms. J. Dickhout (Alt.)
	Associates/IJC	
Ms. C. Jarema		Mr. R. Stefano
Mr. B. Carmichael		Ms. W. Leger
Mr. J. Oyler (by phone)		Mr. D. Fay
Mr. P. Schmitgal (by phone)		Mr. Jean-Francois Cantin
		Ms. Patricia Clavet
		Mr. Aaron Thompson

Item 1. Welcome and Introductions

Chair Gadal initiated a round of introductions.

Item 2. Approval of Agenda and Status of Prior Action Items

The agenda was approved as drafted. Mr. Caldwell noted that all prior action items were promptly completed.

Item 3. Update from Regulation Representatives

Hydrologic Conditions

The Board was provided with the following update on hydrologic conditions for lakes Superior, Michigan-Huron, and Erie. Mr. Bruxer presented slides showing recent net basin water supplies, levels and flows (observed and forecasted), precipitation, and climate outlooks. Highlights included:

- The upper Great Lakes remain above average and near or above last year's levels.
- Following a dry spring, the past six months were wet overall on Lake Superior; it was generally dry on Lake Michigan-Huron throughout most of the reporting period.
- During the past six months, basin-wide water supplies were unremarkable, but locally, some very wet and very dry conditions were observed.
- There was a maximum of about four gates equivalent open at the Compensating Works this summer.

Regulation and Deviation Strategy Update

Mr. Bruxer then summarized the results of the Board's 2016 flow deviation strategy. Given significant hydropower maintenance and reduced side-channel capacity had been expected this past spring and summer, on 15 April, the Board requested to deviate from Plan 2012 from May to November and reduce the potential impact of large, fluctuating flows in the St. Marys Rapids. The objective was to spread the excess flow that would have been required each month in the St. Marys Rapids due to side-channel flow capacity limitations over these several months, rather than month-by-month. The Commission approved these deviations on 26 April.

Mr. Bruxer noted that conditions ended up being such that we were able to generally release amounts comparable to Plan 2012-prescribed values. Mild weather in April permitted an increased gate setting earlier than normal commencing on 6 April.

Since then, the Board has followed the IJC-approved deviation strategy but deviations have been less than had been anticipated may be necessary due to water supply conditions observed and a partial reduction in the amount of hydropower maintenance that was originally anticipated. Mr. Bruxer expects that we will release flows somewhat lower than those prescribed by Plan 2012 in September through November, and overall, it is expected that lake level impacts would be negligible. The highest gate setting equivalency used this reporting period was around four gates during most of August through September, with a gradual increase and decrease before and after, whereas strict adherence to Plan 2012 would have prescribed more variable gate setting and the highest gate setting of six gates open in September. As a result, generally a more natural release pattern was followed this summer than the Plan would have called for in consideration of the hydropower plant maintenance that occurred.

Mr. Bruxer noted that the Canadian National Railway bridge piers will be inspected by a contractor in November. Divers require no flow through the gates located immediately in front of the piers being inspected, so the scheduling of these inspections will need to be coordinated with the hydropower operators. Mr. Allis added that the US Army Corps of Engineers (USACE) may take advantage of decreased flows in the St. Marys Rapids that month and perform LIDAR flights using a drone that will provide valuable data to the ecohydraulic model that will be developed to assess impacts of flow changes on spawning. Mr. Bruxer added that flow measurements will be taken in early November as well. The Reg Rep offices will take into consideration all of these items when scheduling gate changes over the next few months.

Item 4. Hydropower

Recent and Expected Maintenance and Other Outages

U.S. Government Hydropower Plant

LTC Sugrue reported an upcoming shutdown from 7 to 28 September that will leave the plant with 25 percent of its normal capacity. During the reporting period, there were 121 hours of outages, 68 of which were due to a valve failure in Unit 3A.

Cloverland Electric Co-op (CEC)

Mr. Schmitgal reported that canal restoration work recommenced on 1 September but will be suspended for the winter and will recommence in the spring. Flow will be limited to as low as 570 m³/s during canal working hours six days a week, and may be as high as 790 m³/s on Sundays.

Brookfield Renewable Energy Partners (BREP)

Mr. Stefano reported 1048? hours of outages during the reporting period, mainly due to planned inspections and maintenance. There will be about a 4-hour long, no-flow request sometime in October to facilitate the cable inspection. Also, a flow decrease will be required from 26 September through 11 October during transformer work by the transmission company. He added that the presence of didymo algae this year at the plant was greater than normal and resulted in a number of temporary flow decreases and forced workers to clean the trash racks weekly.

Item 5. Compensating Works

Inspections and Maintenance

Ongoing, routine, monthly inspections of the Compensating Works occurred in the past six months.

Mr. Stefano noted that routine monthly inspections conducted on the Canadian portion by BREP indicated the structure remains in good condition and no concerns were raised.

LTC Sugrue reported that the monthly inspections conducted on the US portion performed by USACE Detroit District found the Compensating Works facilities to be in good condition. Great Lakes Restoration Initiative funding of \$350K is being employed for the design to automate all eight US gates. Mr. Allis added that BREP could consider buying the power and automating the Canadian gates too as the US cable supplying the Compensating Works will be large enough to supply power to the entire structure. The contract should be rewarded in September to automate Gates 11 to 14. A flow deviation strategy will be required to be followed during the work, as several flow

constraints are foreseen. Ms. Jarema added that Gates 9 and 10 are already powered and semi-automated. A contract option for Gates 9 and 10, and 15 and 16 may be awarded next August.

Item 6. Flow Verifications

Partial-Gate Measurements and Ratings

Ms. Dickhout provided a brief summary of some in-house work that was completed to develop rating equations for use with partially-opened gate settings. A series of three flow measurements were taken on 10 and 11 May and 30 August this reporting period. These, along with measurements collected during the previous two years, have been used to calibrate and verify the parameters used in the weir flow equations, and further measurements scheduled for November are expected to help verify the ratings at lower flows.

Hydropower Canal Verification Measurements

Ms. Jarema noted that a report on the 2015 measurements will soon be completed. Measurements are performed every five years. Thirteen were performed at two sections in the BREP canal. At relatively low flow values between 700 to 900 m³/s, there was a 5 to 6 percent over-reporting bias observed. Mr. Stefano suggested the increased uncertainty may be due to errors in the pressure transducers' measurements that can result when running the plant at lower efficiency levels (i.e., the combination of higher water levels and lower flows). Fifteen measurements were performed at two sections in the CEC canal near the headrace. Similarly, at relatively low flow values between 500 to 700 m³/s, there was a roughly 6 percent over-reporting bias observed as well. It was agreed that more measurements should be taken, preferably during the next lower water level period, in order to verify and identify the reasons for these biases.

Item 7. GLAM Committee and Superior Board Task Update

IWI Gate Movement Study

Mr. Allis reported that the two-dimensional hydrodynamic model is now calibrated and can be used to simulated hydraulic parameters in the St. Marys River, including the rapids area, under various scenarios. USACE intends to look at November flow changes first of all since the expected reduction in flows and levels in the rapids heading into the winter period seem most likely to cause issues of stranding, and then they expect to assess (over the next six months or so) the various flow changes observed to try and tease out which ones are most critical with respect to gate movement rates.

Other Recent and Expected Tasks

Mr. Bruxer presented slides to provide an overview of Great Lakes – St. Lawrence River Adaptive Management Committee (GLAM) progress. Annual (fiscal year 2016) work plan (covering 1 October 2015 through 30 September 2016) progress included baseline work needed to generate 30-year hindcasts of precipitation, evaporation and runoff and updates to an inventory of available net basin supply (NBS) information. Regulation plan improvements included development of a plan review and evaluation framework as well as baseline work on hydraulic and regulation models supporting St. Marys River outflow strategies related to partial gate settings and side-channel capacity. St. Marys River work will continue through development of new performance indicators focused on the St. Marys Rapids area. Work planning for FY 2017 is under way and includes: ongoing reviews of Plan 2012 performance under observed water levels and flows and using existing evaluation tools, with verification of performance indicators using observed data; establishment of technical work groups (stakeholder assessment, Plan evaluation, hydrology, etc.); initial development of a prototype St. Marys Rapids integrated ecosystem response model (IERM2D); as well as Great Lakes basin-wide projects related to precipitation (Canadian Precipitation Analysis [CaPA]) and water budget closure. GLAM is seeking Board review and endorsement of its semi-annual report and FY 2017 work plan by 23 September, and later this fall, will be seeking feedback on and endorsement of its triennial report to the IJC. As well, GLAM will be seeking a review and endorsement of its mid-term strategy later this fall.

Item 8. Communications

2016 Meeting with the Public

Mr. Caldwell reported that the Board hosted a public Webinar on 8 June at noon. About ten members of the public and media participated, along with government officials, Board Members, staff and associates. This was a turn-

out comparable to recent years. No concerns were received and only questions of a technical nature were asked by attendees. Mr. Bruxer added that the session was recorded as a video and posted to the Board's Facebook site, allowing a larger audience to be reached.

The date of next year's Webinar will be established at the spring business meeting.

2016 Engineer's Day

Ms. Dickhout presented a few photos from the 24 June event, noting that about fifty people spoke directly to Board representatives. A similar Board presence is planned at next year's event. Ms. Jarema suggested the creation of some maps to share with visitors and further enhance the Board's display.

Website/Facebook Updates

Mr. Bruxer noted that no major updates have been performed recently, but the sites continue to be maintained. Popularity of recent Facebook posts waned somewhat, but varied depending on the number of "Shares".

Public Feedback

Mr. Bruxer provided a summary of the public comments and feedback received to date. Most were either from anglers related to Rapids flows (i.e., either disruption to fishing or sensitivity to flow in relation to breeding, though didymo algae or "rock snot" remains a concern for some) or riparians (i.e., high lake levels causing erosion concerns and loss of beaches). Several people have asked why deviations from Plan 2012 were undertaken in the past two years, and wanted to know if there'd be any impact on lake levels.

Item 9. Review Semi-Annual Progress Report

Mr. Caldwell requested timely receipt of any additional comments or changes to the draft Semi-Annual Progress Report. He will incorporate changes, update the available data, and distribute advance copies to the IJC prior to its October meeting. Mr. Fay indicated that the IJC would appreciate advance electronic copies of the report by 1 October or so.

Item 10. Other Business

5-Year Peaking and Ponding Review

Mr. Caldwell indicated that the IJC's 27 April 2015 Directive on Peaking and Ponding requires that, "On a five year basis, beginning in 2016, the Board shall review peaking and ponding practices and write to the Commission summarizing the outcome of its review and including any recommendations for adjustments to this directive..." Mr. Caldwell previously circulated a draft letter as a first such review submission. It contains a summary of operations and notes that no comments or concerns were expressed. It also notes that there have also been no operational problems and the Board finds that the directive remains adequately and appropriately worded. Mr. Caldwell will finalize and send this letter to the IJC next week.

Item 11. Upcoming Meetings

IJC Appearances

Mr. Caldwell noted that initial indications were that the Appearances would likely be on 26 October, but new information suggests that they would be during the week of 23 October. Mr. Fay will keep the Secretaries abreast as details are finalized.

IWI Workshop

Mr. Caldwell noted that initial indications were that there might be another workshop on 23 October. Mr. Fay noted that there is no workshop scheduled this October. There will be a 28 October teleconference for several people who had previously volunteered to help develop a white paper on climate change.

Spring Board Meetings

Mr. Caldwell noted that initial indications were that the spring Board meeting would be held on 23 March. However, there are a number of conflicts during that month. Board Secretaries will work together to determine a

suitable time and date in Cincinnati, Ohio. Presently, it is expected that the three Boards might meet on 2 and 3 March.

Item 12. Action Item Review

Mr. Caldwell noted several major actionable items during this meeting:

- Regulation Representatives to coordinate gate movements and other operational requirements for November's work.
- USACE to finalize the 2015 flow verification report.
- Secretaries to send 5-year peaking and ponding review letter to the IJC.
- Board staff to develop a set of maps to provide as hand-outs and/or display at future meetings with the public.
- Canadian Secretary to receive comments on the Semi-Annual Report by 23 September.
- Secretaries and IJC to settle on dates for Appearances, reception, and the spring Board meeting in Cincinnati.

Item 13. Closing Remarks and Adjourn

Mr. Caldwell took the opportunity to thank Ms. Clavet for hosting the Boards. Mr. Caldwell expressed the Board's gratitude and good wishes to Mr. Gadal, who announced his retirement from public service immediately following the meeting. There being no other business, Mr. Gadal adjourned the meeting early at 11 a.m.

INTERNATIONAL LAKE SUPERIOR BOARD OF CONTROL
Board Meeting, September 15, 2016, 8:30 am to 12:00 pm

Ministère du Développement durable, de l'environnement et de la Lutte contre les changements climatiques
(Édifice) Marie Guyart Building
675 René Lévesque Blvd. East, **Tour/Tower 1er étage/First Floor, Rm./Salle 111 A**
Québec, QC
(Webinar and teleconference info follows)

AGENDA

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| 1. Welcome and introductions [Gadal] | 0830-0840 |
| 2. Approval of agenda and status of prior action items [Caldwell] | 0840-0845 |
| 3. Update from Regulation Representatives [Bruxer] | 0845-0900 |
| a. Hydrologic Conditions | |
| b. Regulation and Deviation Strategy Update | |
| 4. Hydropower [Stefano, Schmitigal, LTC Sugrue] | 0900-0915 |
| a. Recent and expected maintenance and other outages | |
| 5. Compensating Works [Stefano, LTC Sugrue] | 0915-0930 |
| a. Inspections and maintenance | |
| 6. Flow verifications | 0930-1000 |
| a. Partial gate measurements and ratings [Dickhout, Jarema] | |
| b. Hydropower canal verification measurements [Jarema] | |
| <i>Break</i> | |
| 7. GLAM Committee and Superior Board task update [Bruxer, Allis] | 1015-1045 |
| a. IWI gate movement study [Allis] | |
| b. Other recent and expected tasks [Bruxer] | |
| 8. Communications | 1045-1100 |
| a. 2016 Meeting with the public [Caldwell] | |
| b. 2016 Engineer's day [Dickhout, Jarema] | |
| c. Website/Facebook updates [Bruxer] | |
| d. Public feedback [Bruxer, Jarema] | |
| 9. Review semi-annual progress report [Caldwell] | 1100-1115 |
| 10. Other business | 1115-1130 |
| 11. Upcoming meetings [Caldwell] | 1130-1140 |
| a. IJC Appearances - Wed, 26 Oct 0830-1030?? Ottawa | |
| b. IWI workshop - Tues, 25 Oct 0830-1200? Ottawa | |
| c. Spring Board meetings - Thur, 23 Mar 2017 0830-1200? Cincinnati | |
| 12. Action Item Review [Caldwell] | 1140-1155 |
| 13. Closing Remarks and Adjourn [Gadal] | 1155-1200 |

Webex info:

<https://pwgsc-nh.webex.com/pwgsc-nh>

Meeting number: 552 071 422

Meeting password: supboard

Teleconference info:

Call-in toll-free number: 1-877-413-4790

Conference ID: 724 831 7#