

## **Water Levels – High Ottawa River Flows – Suddenly a Developing Story**

*TIA Water Levels Committee (4/22/23 updated 5/4/23) – by Barton, Stewart & White*

### **"Potential Flooding Notice"**

**Update May 4, 2023 at 3pm:** The rains that arrived on and after Sunday May 1<sup>st</sup> have changed the outlook, promising significantly higher water levels than anticipated. It is with an abundance of caution that the Thousand Islands Association shares this alert with those in the Upper St Lawrence and Lake Ontario regions. As a point of reference, in 2019 the peak Lake Ontario level was just over 249 feet. In the letter below from Bernie Gigas, ranges discussed currently fall in the 247' to 248' range.

Lake Ontario Shoreline Communication  Inbox x

**Bernie Gigas**

Wed, May 3, 3:04 PM (19 hours ago)

Good afternoon,

While I am not writing to you in an official capacity, I expect the IJC and/or Board may soon publish similar concerns as I outline below.

As recently as April 12, I thought it likely that Lake Ontario would peak at or below 247.4' (75.41 m). This was higher than the Board's 50% median forecast at the time, however I concluded that the late March snow storms in the Ottawa basin would lead to the need for Moses-Saunders outflow reductions due to the F-Limit. I, like everyone else, did not anticipate the very warm weather in April, nor the onset of significant rains just as the Ottawa River first began to subside. The timing of these events was such that despite already above average supplies (NTS) to Lake Ontario, the Board has had to reduce outflows significantly more than estimated. This is leading to a rapid rise in Lake Ontario levels.

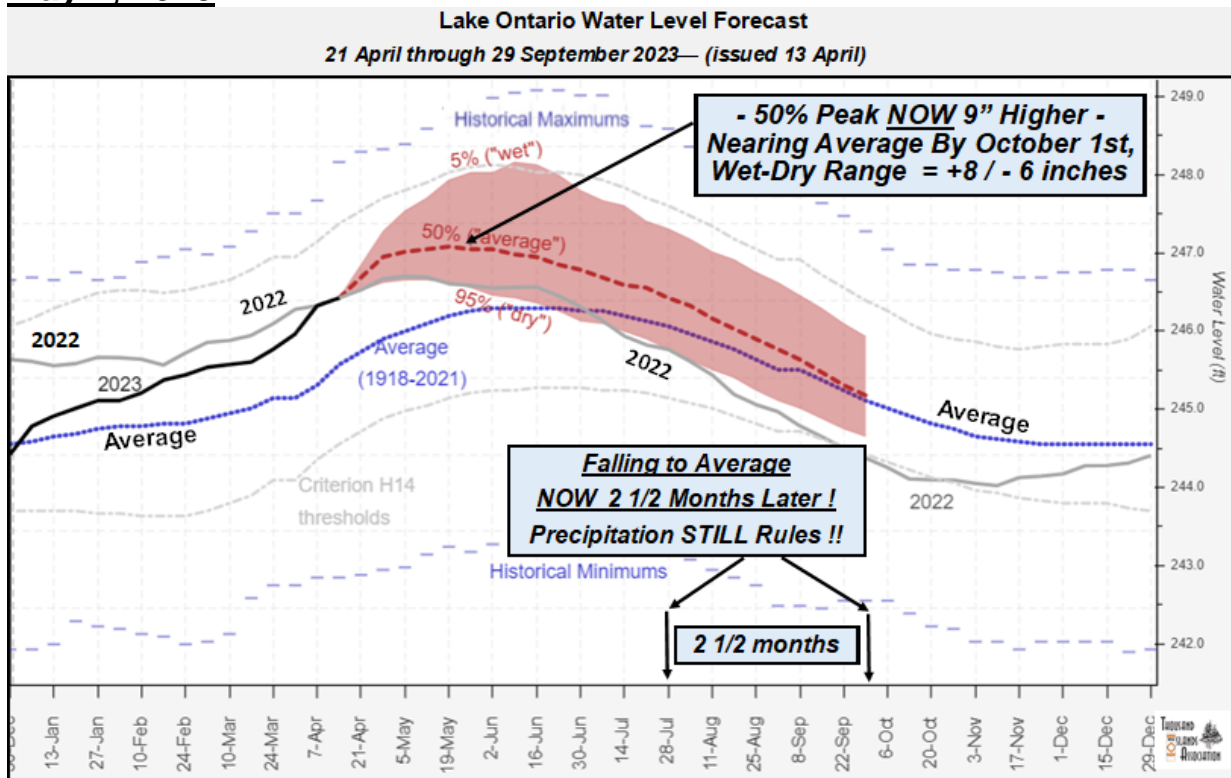
I believe that we will now almost certainly reach 247.4' (75.41 m). It is also quite possible that Lake Ontario will reach 247.7' (75.50 m), which many consider to be the onset of widespread flooding. If current conditions persist, we may even see criterion H14 levels in early June - 248.13' (75.63 m).

The purpose of this note is not to raise the alarms of impending floods. However, in response to 2017 and 2019 floods, all of you have done significant work on preparedness for shoreline flooding. It is my opinion that shoreline communities should consider pre-flood planning in the event of potential widespread flooding later in May and into June. It is unlikely that this will reach the heights of 2017 or 2019, but I believe it prudent to prepare the mitigation mechanisms you have already put in place.

Sincerely,

Bernie Gigas, PE  
Lake Ontario South Shore Engineering, PLLC  
[LOSSengineer@gmail.com](mailto:LOSSengineer@gmail.com)

**May 1, 2023**



<https://ijc.org/en/loslr/watershed/forecasts>

Edits by TIA

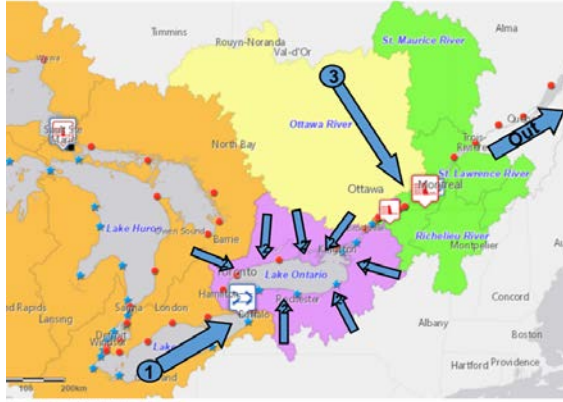
**SUMMARY –Watching the Rapid Melt Driven Ottawa River Spring Freshet.**  
**The 2023 Season WILL BE an Above Average Year for Water Levels!!**

- The River is over **3.0 ft above chart datum**. (*A full foot above last month*)
- Water levels are now about **10” above** the late April 100 year average.
- ILOSLR Board **outflow** was reduced due to Ottawa River & F-Limit flows

**UPDATE – May 1, 2023**

- Ottawa River flows into the St. Lawrence River **stabilized last week and have begun a slow decline**. However, Ottawa River flows are expected to **rise again due to two precipitation events in the last few days of April/early May**.
- The target outflow [from Lake Ontario via the SL River] for the week of April 29 through May 5 is the applicable Plan Rule Curve flow of 8,700 m<sup>3</sup>/s. This outflow is average for this time of year. However, the outflow will continue to be adjusted in accordance with the **Plan 2014 F Limit**.
- This situation is evolving almost daily, which is normal during the spring freshet. Please check out the **Board’s Facebook page** for up-to-date flow information and website for the **latest water level forecast**.

1. Great Lakes 2. Ontario Basin 3. Ottawa River



- The yellow area is the **Ottawa River Basin** (3) with the spring freshet well underway.
- The high **snowpack & water content** in the Ottawa basin plus fast melt led to local flooding from Ottawa to Montreal.
- **What does this now mean for the 1000 Islands? Levels Continue Above Average**
- The Ottawa River Board forecast for levels to stabilize the week of **April 24** came true.
- Outflows from the Moses-Saunders have now returned to average.
- The outlook will change weekly as impacts from recent precipitation events occur.

***The outlook for the 1000 Islands, is high water levels this spring, with potential minor flooding in some low-lying areas – but nothing like what we experienced in 2017 & 2019.***

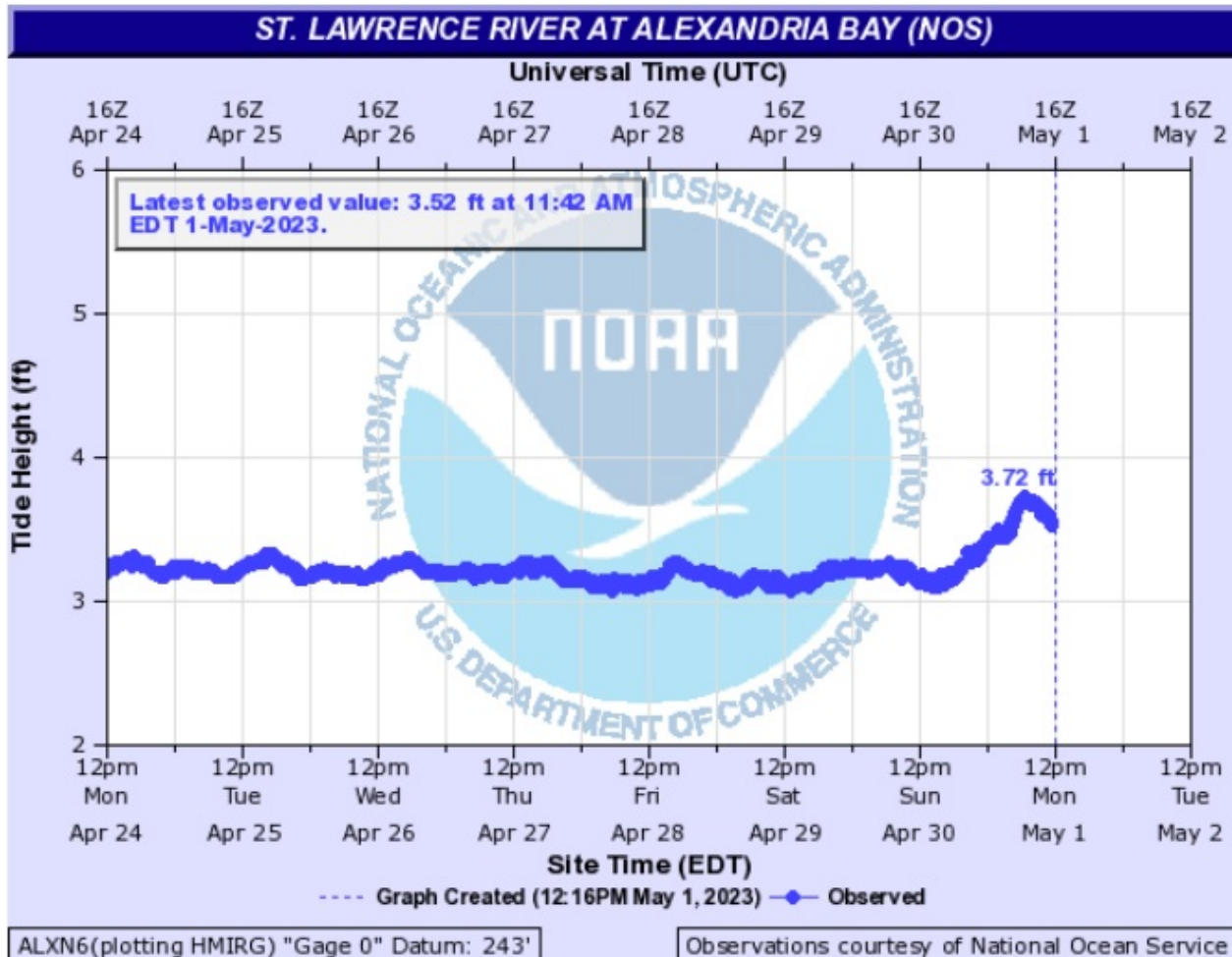
**CURRENT CONDITIONS** – A Great Lakes & NE Radar 2pm Sun April 30, 2023



***Image from Rain Alarm app.***



**The Precipitation came from the South, bringing OVER 2 inches of “wet” soaking rain into the Lake Ontario Basin.** The black dot symbolizes Ken White’s location a few miles south of Ithaca, NY. *The basin’s southernmost boundary is just a 10 minute drive further south. At that transition line, water no longer flows north to Lake Ontario, but flows south to the Susquehanna toward Maryland – Delaware and into the Atlantic.*



**Levels have remained nicely above 3 feet above chart datum all week.** The sudden level spike (a seiche) overnight is wind driven as this huge low pressure precipitation event departs. Results of all the precipitation on both sides of the border will show up in the next couple of days.

### **Further Background Information**

***In case you’d like to understand more about the annual collision of outflows from the Great Lakes (really Lake Ontario) and the huge Ottawa River Basin, we have pulled together the following background summary so you can help others to learn and understand.***

***Scroll Down...***

## When Rivers Converge

### **Why the Ottawa River Basin impacts the Lake Ontario – Thousand Islands Region**

When the Ottawa River freshet flows into the St. Lawrence River near Montreal, it has a significant impact on water levels in the Montreal Region. At the same time, all outflows from the Great Lakes flow through the St. Lawrence River, the Moses-Saunders Dam (located at Cornwall ON / Massena NY) and continue towards then passed Montreal.

**Both river systems converge in the Montreal region.** During this freshet, water levels naturally rise very quickly, creating possible flood conditions in the rivers and lakes surrounding the island of Montreal.

To **minimize the impact of flooding downstream** near Montreal, high-water level limits are set (at Pointe Claire, Quebec) which in turn regulate the outflow rates for the Moses-Saunders. These controls are referred to as the **F-limit** (*see the end of this article for details*) in the seaway regulation Plan 2014,. NOTE: ***this basic protection has been present in all previous regulation plans since the Seaway was established in 1958.***

It is important to note that the F-limit was established to protect downstream interests. The dredging necessary during the building of the St. Lawrence Seaway increased the natural conveyance capacity of the river (amount of water the river can pass) and increased the potential flooding both above and below the Moses-Saunders Hydro dam.

When outflows are reduced at the dam, Lake Ontario rises slowly. During the spring freshet, water levels at Montreal can rise quickly due to the high volume of water supply entering from all systems. The regulation plans have attempted to balance flooding downstream and upstream. **FYI:** This balancing act is quite controversial during both flood and drought conditions, and has led to many discussions, inquiries and lobbying for changes to the existing regulation plans.

These limits are a complex aspect of water regulation between Lake Ontario (Upper) and the Lower St. Lawrence River. If you wish to understand the more complex nature of the regulation plan, please feel free to reach out to the TIA Water Levels Committee at [thousandislandsassociation@gmail.com](mailto:thousandislandsassociation@gmail.com) for further information, and links to various sources.

### **What determines the intensity of a spring freshet?**

- 1) Snowpack and Snow Water Equivalent (SWE) accumulated over the winter months (this is generally well known and measured)
- 2) Timing and speed of the melt of the snowpack
- 3) Precipitation & temperatures during the freshet

Items (2) and (3) are highly variable, and no regulation plan or forecasting can predict with any degree of certainty just how this unfolds during each spring.

The following two images show the large extent of the Ottawa River Basin, as well as a map of the Montreal region where all rivers converge.



*Shown above in pale yellow, the huge Ottawa River Basin extent*

***A sobering fact: At times during heavy Ottawa River Basin flood years (i.e. 2017 & 2019) the OUTFLOW OF THE OTTAWA RIVER HAS EXCEEDED THE OUTFLOW OF ALL THE GREAT LAKES OVER NIAGARA FALLS INTO LAKE ONTARIO!***



*Convergence of St. Lawrence River and Ottawa River at Montreal*

**So what does this mean for the Thousand Islands Region in 2023?**

***In four words: We do not know*** (until it happens each year).

**The update found at the beginning of this article shares the good news for all interests and stakeholders, both in the Upper and Lower sections of the St Lawrence River, and the Ottawa River region too!**

***Lastly...***

***What is the F-limit?***

The F-limit rules are used to set maximum outflows to limit flooding on Lake St. Louis in consideration of Lake Ontario levels. These rules are meant to best balance risks and impacts associated with flooding and erosion both upstream and downstream of the Moses-Saunders Power Dam. These rules tend to commonly apply when the water levels at the Pointe-Claire gauge on Lake St. Louis are approaching or exceeding flood levels due to high flows coming into the St. Lawrence River from the Ottawa River. Since 1960, when the regulation of the outflows of Lake Ontario by the dam became possible, outflows have been reduced to avoid high water levels that would cause flooding downstream to Three Rivers, as indicated by this gauge located on Lake St. Louis. The water level thresholds within the F-Limit rules are tiered, so that, as water levels rise on Lake Ontario, the levels on Lake St. Louis are maintained at higher and higher values. After many years of operating experience, the factors influencing the timing and magnitude of the reduction to the Lake Ontario releases necessary to maintain a given level on Lake St. Louis are well known. However, wind effects and local inflows – especially following storms or heavy snowmelt - are less predictable, and may cause the level of Lake St. Louis to differ from the applicable F-limit threshold for short periods of time. Any Lake Ontario outflow adjustments necessary to maintain levels at the applicable threshold are treated as operational adjustments that do not require offsetting changes thereafter.

*Courtesy: IJC FAQ on Plan 2014*