Adopted Regulation Strategy
Lake of the Woods Control Board
June 15, 2023

The Lake of the Woods Control Board held a Regulation Meeting in Kenora on June 15, 2023, when it adopted a Regulation Strategy to guide operations through the end of October, 2023. The strategy was formulated considering basin conditions, hydrological and meteorological forecasts, and the input of the various interests concerned with basin management. Input was provided in written and verbal reports as well as from the Board's Regulation Guide: (http://www.lwcb.ca/regguide/index.html).

For an update on current conditions, please refer to the Basin Data section of the Board's web site at http://www.lwcb.ca/waterflowdata.html. For regulation actions and directives taken under the strategy please see the Regulation Actions at http://www.lwcb.ca/regulation/index.html.

At the time of the Regulation Meeting, flows and lake inflows across the Winnipeg River basin were in decline and dry conditions that had developed in mid-May persisted. With average early spring precipitation, freshet had refilled the lakes to slightly below normal levels in the northern portion of the basin and to high normal levels in the southern portion of the basin. Inflows to Lac Seul have remained in the bottom half of the normal range. Inflows to Lake of the Woods had peaked twice above 75th percentile in early spring but are quickly dropping as flows are being cut upstream.

The strategy covers the period to the end of October, 2023. It specifies key aims and how the Board intends to balance these under a range of possible flow conditions should they develop during the strategy period. The goal of balancing conditions across the entire basin is a complex task given the diverse nature of the different, and sometimes conflicting, interests and the largely unpredictable nature of the hydrology that drives the system.

Lac Seul

A) Seasonal Considerations

Inflow to Lac Seul is in the low-normal range and outflow has been managed to allow for a steady rate of rise in lake level since mid-April. The Secretariat recommends regulation that will encourage refilling the lake, while remaining prepared to address worsening dry conditions or a change to wetter conditions. Ideal or desirable regulation objectives for the next several months, based on input provided to the Board, include the following:

- When flow capacity exists downstream in Manitoba, the rate of rise on Lac Seul should be controlled so that the lake level remains below upper quartile.
- Lac Seul level and outflow should be managed to reduce flood risk on the lake and downstream in Ontario and Manitoba.
- Attempt to meet the preferred Lac Seul, Pakwash Lake and English River levels for the fishery and tourist outfitter interests.
- Target a Lac Seulelevation between 356.1 m (1168.3 ft) and 356.3 m (1169.0 ft) by July 15.
- The tourist outfitters' preferred summer maximum level for Lac Seul is 356.6 m (1170 ft).
- Supply water requested by Ontario Power Generation and Manitoba Hydro for

hydroelectric energy generation; avoid spill in wet conditions and violation of low flow constraints in dry conditions.

- Maintain English River flow below 550 m^3/s at Caribou Falls to avoid levels at Grassy Narrows above 319.6 m (1048.6 ft) during the tourist season (May long weekend to after Thanksgiving).
- Use Lac Seul storage to offset Lake of the Woods high/low outflows for the benefit of users of the Winnipeg River in Manitoba.
- Lac Seul level and outflow should be managed to reduce the need to close the Lake St. Joseph diversion with resulting spill down the Albany River. However, the diversion should be closed to reduce impacts in the English and Winnipeg River basins under wet conditions.

B) Proposed Strategy

i) Low Inflow Conditions

- Manage outflows as necessary to achieve and maintain the lake level above 355.8 m (1167.3 ft). If the required reductions would lead to English and/or Winnipeg River flows less than minimum requirements of the provincial power utilities, discussions would be necessary with the OMNRF in Red Lake and Sioux Lookout, as well as with Rightsholders and stakeholders, to determine an appropriate balance between upstream and downstream conditions.
- Communicate with First Nation communities on Lac Seul and the English River, and with Grand Council Treaty #3 to keep communities informed of the low water conditions and to assist in the determination of an appropriate balance of upstream and downstream interests.
- Severely restrict outflow to maintain lake levels above 355.5 m (1166.3 ft). Again, discussions would be necessary to appropriately balance upstream and downstream interests.

ii) Moderate Inflow Conditions

- Due to higher inflow and water levels in recent years, strive to keep the lake level below 356.4 m (1169.3 ft), while balancing with other interests. Outflow should be at or below 450 m^3/s to achieve these levels.
- Lac Seul outflow should be no lower than 100 m^3/s to have the lake level stay above 355.8 m (1167.3 ft) while satisfying the overall objectives.
- Within the general outflow targets, supply water for hydropower production and for English River fishery concerns.
- If flows on the Winnipeg River in Manitoba are high, use the storage available in Lac Seul to minimize the water released downstream. However, Lac Seul levels throughout the entire regulation period should not be above 356.6 m (1169.9 ft).
- Lac Seul should be regulated to target an end of October water level between 356.0 m (1168.0 ft) and 356.2 m (1168.3 ft) with outflow between 100 and 450 m^3/s.

iii) High Inflow Conditions

- Balance outflow with the rise in Lac Seul level to reduce flood risk both on Lac Seul and on downstream areas such as Pakwash Lake and the Winnipeg River in Ontario and Manitoba.

- Communicate with First Nation communities on Lac Seul and the English River, and with Grand Council Treaty #3 to keep communities informed of the potential for flooding and to assist in the determination of an appropriate balance of upstream and downstream interests.
- Outflow should remain at or below 450 m^3/s for moderately wet conditions; at or below 500 m^3/s for most conditions; and below 600 m^3/s in all but extreme conditions.
- Regulate Lac Seul outflow to as high as 550 m^3/s to prevent the lake level exceeding 356.6 m (1169.9 ft).
- Lac Seul should be regulated to target for an end of October water level below 356.35 m (1169.1 ft) with outflow at or below 600 m^3/s. The Lake St. Joseph diversion should be reduced to the extent necessary before Lac Seul outflow is increased above 550 m^3/s. (The Lake St Joseph Diversion falls under LWCB authority when Lac Seul level is above 356.31 m (1169 ft) in June and above 356.62 m (1170 ft) in July through December.)
- Once the diversion is closed, regulate outflow to as high as 700 m^3/s to prevent the lake exceeding 356.9 m (1170.9 ft) and as high as necessary to prevent the lake exceeding 357.1 m (1171.6 ft). In case of continued high inflow, strive to maintain a buffer below the top of the flood reserve level of 357.2 m (1171.9 ft) so that this storage limit is not exceeded.

Lake of the Woods

A) Seasonal Considerations

The level of Lake of the Woods is currently in the normal range and its rate of rise has slowed due to the dry conditions in May. Upstream, the levels of Namakan and Rainy Lakes are expected to return to their Rule Curve ranges and this will result in outflow reductions from both lakes. Based on the expectation of declining inflows to Lake of the Woods over the next month, the Secretariat recommends a strategy to gradually reduce outflow to the Winnipeg River while maintaining a stable lake level in July, within the range of 322.9 to 323.0 m (1059.4 to 1059.7 ft). As of August, the Strategy recommends a gradual decline in lake levels heading into the fall for freeze-up. As always, regulation must remain prepared to address a return to wetter conditions.

Ideal or desirable regulation objectives for the next several months, based on input provided to the Board, include the following:

- Adjust lake level and outflow to achieve a balance between upstream and downstream interests, as inflow dictates.
- For loons on the Winnipeg River, flow changes during the primary incubation period (normally to about the end of June) should be avoided. About 4½ to 5 weeks of relatively steady flows are needed for nesting success. Loons can make a second or third attempt, which means they could be on their nests into August for late nesting.
- A peak summer level of 323.0 m (1059.7 ft) is desired for Lake of the Woods property owners.
- For piping plovers on Lake of the Woods, maintain lower lake levels and minimize lake level increases during their nesting and rearing season, which could extend to mid-July.
- For wild rice, the most important period for controlled and stable water levels is during the

floating leaf stage from early June to mid-July. During this period, the optimal level of Lake of the Woods is between 322.5 m (1058.1 ft) and 322.8 m (1059.0 ft), although the most important consideration is that water level increases be gradual.

- Water level is also important during wild rice harvesting, which runs from about mid-August to mid-September on Lake of the Woods. If the water level is too high, the top of the plant will become submerged. If water levels are too low, the crop may be inaccessible to the harvesters' boats or canoes. Levels near 322.8 m (1059.0 ft) seem to be satisfactory.
- A significant drop in river level during the period up to mid-July could adversely impact sturgeon spawning and fry development on the Winnipeg River. The actual period of concern may vary and may be better defined each year by district fishery biologists.
- For recreational users on Lake of the Woods, maintain water levels in the range of 322.8 to 323.1 m (1059.0 to 1060.0 ft).
- Within the regulation parameters for Lake of the Woods, regulate outflows to assist in meeting targets/preferences for the Winnipeg River in Manitoba.

B) Proposed Strategy

i) Low Inflow Conditions

- Avoid outflow reductions that would impact sturgeon eggs and larvae (possibly to mid-July).
- Communicate with First Nation communities on Lake of the Woods and the Winnipeg River, and with Grand Council Treaty #3 to keep communities informed of the low water conditions and to assist in the determination of an appropriate balance of upstream and downstream interests.
- Reduce outflow to as low as 150 m^3/s to prevent the lake from declining below 322.7 m (1058.7 ft) for July through September and below 322.6 m (1058.4 ft) in October.
- Maintain, or reduce, outflow to as low as 100 m^3/s to prevent to lake from declining below 322.5 m (1058.1 ft) through the regulation period.
- If Lake of the Woods level is projected to drop below 322.4 m (1057.7 ft) reduce outflow to as low as 70 m^3/s, following discussion with OMNRF and OMOECP regarding fishery and water quality concerns.
- If Lake of the Woods level is projected to drop below 322.4 m (1057.7 ft) during the regulation period, notify the City of Winnipeg such that preparations can be made to ensure that seasonal water demands are met through the period.

ii) Moderate Inflow Conditions

- Set outflows to target a summer level between 322.8 m (1059.0 ft) and 323.1 m (1060.0 ft) with outflow in the 300 m^3/s to 700 m^3/s range.
- Increase outflow to as high as 800 m^3/s to keep the lake level from exceeding 323.1 m (1060.0 ft).
- Balance attempts to achieve the above preferred summer levels range with consideration of the impacts of outflows on downstream interests in both Ontario and Manitoba.
- Attempt to limit Lake of the Woods outflow changes that would adversely affect nesting loons on the Winnipeg River.
- Avoid outflow reductions that would impact sturgeon eggs and larvae (possibly to mid-July).

- Try to manage lake levels to limit the rate of rise of the lake for wild rice during the floating leaf stage and to benefit the piping plovers nesting at Windy Point and on the Sable Islands.
- Lake of the Woods should be regulated to target for an end of October water level between 322.8 m (1059.0 ft) and 323.0 m (1059.7 ft). The preferred level on October 31 would be no higher than 322.9 m (1059.4 ft) with outflow between 300 m^3/s and 700 m^3/s.

iii) High Inflow Conditions

- Balance higher water levels on the lake with the impact of high outflows downstream, both in Ontario and Manitoba.
- Communicate with First Nation communities on Lake of the Woods and the Winnipeg River, and with Grand Council Treaty #3 to keep communities informed of the potential for flooding and to assist in the determination of an appropriate balance of upstream and downstream interests.
- An outflow of about 900 m^3/s would be appropriate to keep the lake level (or projected level) below 323.3 m (1060.7 ft). However, under some circumstances, it may be appropriate to adjust outflows to accommodate changing inflows, to provide a storage buffer to reduce the risk of higher lake levels or outflows, or to provide relief to the lake or river.
- Lake of the Woods should be regulated to target for an end of October water level between 322.8 m (1059.0 ft) and 323.0 m (1059.7 ft) with a preferred level no higher than 322.9 m (1059.4 ft) with outflow at or below 900 m^3/s.
- Outflow should be set as necessary to try to prevent the lake level (or the projected level) from rising above 323.47 m (1061.25 ft), which is the legislated top of the normal operating range. Note however, that the Convention and Protocol states “during periods of excessive precipitation the total discharge from the lake shall, upon the level reaching 1061 [ft]sea-level datum, be so regulated as to ensure that the extreme high level of the lake shall at no time exceed elevation 1062.5 [ft] sea level datum”.
- An attempt should be made to keep outflow changes to a maximum of 100 m^3/s per week. Note, however, that development of high inflow conditions in the past have frequently necessitated outflow changes of 200 m^3/s or more per week.