**Adopted Regulation Strategy**
**Lake of the Woods Control Board Regulation Meeting**
**March 12, 2013**

The Lake of the Woods Control Board held a Regulation Meeting March 12, 2013 in Kenora. 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/reg-guide/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.

## Lac Seul

### *A) Seasonal Considerations*

The end-of-winter (April 15) level target range set at the October Regulation Meeting (354.7 m/ 1163.7 ft) remains an achievable target under current conditions, with approximately 30cm / 12 in of drawdown remaining over the next six weeks. This is within the maximum 1.5 m / 4.9 ft winter drawdown preferred for fisheries interests on Lac Seul.

To support spawning conditions and navigation in early spring, it is desirable to have the lake level rising after mid-April. This will likely require outflow reductions, but rising lake levels must be balanced against a future risk of high water. The points below reflect a number of ideal or desirable regulation objectives over the next few months, based on input provided to the Board.

- Regulation of Lac Seul level and outflow should take into account the preferred Lac Seul, Pakwash Lake and English River levels for the fishery and tourist outfitter interests, to provide good spring spawning conditions and adequate navigation levels at the start of the walleye fishing season.
- Lac Seul level should be constant or rising after April 15 for spring spawning fish.
- The minimum spring lake level should be no more than 1.5 m (5 ft) below the November 1 level for whitefish. For spring 2013, this level is 354.65 m (1163.55 ft).
- The desirable lake level on May 15 is no less than 355.1 m (1165 ft) for navigation for the start of the walleye fishing season.
- The tourist outfitters preferred summer maximum level is 356.6 m (1170 ft).
- Lac Seul level and outflow should be managed to supply water requested by Ontario Power Generation and Manitoba Hydro for hydroelectric energy generation, to avoid spill in wet conditions and violation of low flow constraints in dry conditions.

- A minimum flow of 180 m³/s below Manitou Falls is desirable during spring spawning. If there is not sufficient water to meet this criteria, Lac Seul discharge should be set to maintain a uniform flow through the spawning period.
- River flows at Grassy Narrows should be less than 550 m³/s.
- Lac Seul storage should be used to offset Lake of the Woods high/low outflow 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 nevertheless be closed to reduce impacts in the English and Winnipeg River basins under wet conditions.

***B) Proposed Strategy***

**To April 15 (Drawdown Period)**

Incremental Lac Seul outflow adjustments should be made through March and early April in order to target an end-of-winter (April 15th) level of 354.65 m / 1163.5ft.

**After April 15 (Refill Period)**

i) Low Inflow Conditions
- Outflow should be managed to ensure that Lac Seul level does not decline, and preferably rises, while providing sufficient outflow to meet downstream hydropower generation and fishery requirements.
- Target for an end-of-June level no lower than lower quartile (355.461 m / 1165.2 ft) with an outflow no lower than 100 $m^3/s$, provided that flow in Manitoba is no lower than 600 m³/s.
- Target for an end-of-June level no lower than 355.1 m (1165.0 ft) with an outflow no lower than 25 m³/s, provided that flow in Manitoba is no lower than 300 m³/s.
- Consultation with interests, including OMNR staff, tourist outfitters and the provincial hydro utilities, may be necessary to arrive at the appropriate balance between lake levels and outflows.
- If inflow remains low throughout the refill period, outflow should be adjusted to maintain a balance between upstream and downstream interests. Note that a lower decile outflow for May for the 1976-2005 period was approximately 55 $m^3/s$ while a 5th %ile outflow was below 20 $m^3/s$.

ii) Moderate Inflow Conditions
- Due to concerns of high water, regulate through the refill period to hedge against wetter conditions, so that the risk of outflow above 500 m³/s is reduced.
- Generally target for lake levels between lower and upper quartile, while supplying water for hydropower production and for English River fishery concerns.
- Use additional water to maintain desired fishery flows in the English River below Manitou Falls, provided this does not cause high flow conditions on the Winnipeg River in Manitoba.
- Target for flow in the Winnipeg River in Manitoba between 675 and 960

$m^3/s$.

iii) High Inflow Conditions

- As above, regulate through the refill period to hedge against a return to wetter conditions, so that the risk of outflow above 500 $m^3/s$ is reduced.
- Balance Ear Falls outflow with the rise in Lac Seul level to reduce flood risk both on Lac Seul and on downstream areas such as Pakwash Lake.
- Seek to maintain Lac Seul level (or projected level) below upper quartile through the refill period. Outflow should remain below 450 $m^3/s$ for moderately wet conditions, below 500 $m^3/s$ for most conditions, and below 600 $m^3/s$ in all but extreme conditions.
- Increase outflow to as much as 800 $m^3/s$ to keep the level below 357.1 m (1171.6 ft).
- When Lac Seul is above the level at which the Lake St. Joseph diversion comes under Board jurisdiction (356.01 m / 1168.0 ft until the end of May; 356.31 m / 1169.0 ft for June), the diversion flow should be reduced before increasing Lac Seul outflow to more than 500 $m^3/s$.

**Lake of the Woods**

***A) Seasonal Considerations***

Winter precipitation has improved drought conditions across the US portion of the basin since October, when much of the basin was classified as under moderate to severe drought by the U.S. Drought Monitor. Currently, the classifications range from abnormally dry to moderate drought. The U.S. Drought Monitor's outlook suggests that drought conditions will continue to improve through the spring. Canadian portions of the basin are not under drought conditions. Seasonal forecasts by Environment Canada are for above normal temperatures and normal rainfall between March and May.

The points below reflect a number of ideal or desirable regulation objectives over the next few months, based on input provided to the Board.

- Adjust lake level and outflow to achieve a balance between upstream and downstream interests, as inflow dictates.
- Minimize ice damage when possible. Ice damage is greater in the spring if there are rapid changes in water level (on either the lake or the river) and especially if the level rises while there is still a solid ice cover.
- The preferable end-of-April level for Lake of the Woods fishery is no lower than 322.5 m (1058.0 ft). Higher levels would be beneficial to northern pike.
- Regulate to avoid, to the extent possible, any reductions in outflow or any large increases in outflow during the spring spawning season on the Winnipeg River (late April to early June).
- For loons on the Winnipeg River, flow changes during the incubation period (approximately mid-May to the end of June) should be minimized.
- A summer Lake of the Woods level 10-15 cm (4-6 in ) below the summer peak median level of 323.14 m (1060.2 ft) is desired for south shore residents. Satisfying these criteria would result in a summer peak level of about 323.0 m (1059.7 ft).
- For wild rice on Lake of the Woods and the Winnipeg River, maintain lower lake and river levels and minimize level and flow increases during the floating leaf stage in June and early July.

- For piping plovers on Lake of the Woods, maintain lower lake levels and minimize lake level increases during their nesting and rearing season of May, June and July.
- Within the regulation parameters for Lake of the Woods, regulate outflow to assist in meeting targets/preferences for the Winnipeg River in Manitoba.

***B) Proposed Strategy***

**Until March 31st (Drawdown Period)**

Manage outflow to reach a March 31st level between lower quartile and median (322.36 to 322.46 m / 1057.6 to 1057.9 ft). Outflow should not be increased unless prolonged high inflow conditions are projected. As in recent years, the Secretariat recommends targeting the lower end of this range in order to allow for more room to handle higher inflow during the refill period.

**After March 31st (Refill Period)**

In the lead-up to freshet, much of the basin has a substantial snowpack, yet many upper parts of the basin (e.g. Lac la Croix, Basswood Lake) continue to have one-in-ten-year low inflows. Historically, the refill rate of Lake of the Woods is a factor more of the timing and magnitude of spring rainfall than of snowpack at end of winter. Given the current conditions, the Secretariat recommends cautiously regulating in anticipation of normal inflow through freshet, but provides for scenarios that depart towards wet or dry conditions. Since spring rainfall is highly variable and precipitation forecasts are unreliable beyond horizons of more than a few days, regulation must be continually updated and outflow adjusted in response to changing conditions and forecasts. If inflow conditions are above 75th percentile or below 25th percentile at the end of April, or if extreme weather conditions exist in the basin, the Board will convene a conference call to review the regulation strategy.

i) Low Inflow Conditions
- Adjust outflow as necessary (subject to minimum flow requirements as recommended by the Ontario Ministry of the Environment) to keep the lake from declining. If possible, have the lake maintain at least a 10 %ile level, with outflow no lower than 100 $m^3/s$.
- Assess conditions immediately before spawning begins in the Winnipeg River so that outflow can be set to prevent, as much as possible, the need for further flow reductions during the spawning season (late April to early June), while ensuring the lake level does not decline.
- Target a lake level above lower quartile at the end of June (322.72 m / 1058.8 ft), if possible, with outflow no lower than 200 $m^3/s$.
- If inflow remains low throughout the refill period, outflow should be adjusted to maintain a balance between upstream and downstream interests.

ii) Moderate Inflow Conditions
- Assess conditions immediately before spawning, as described under "Low Inflow Conditions" above.
- Outflow increases should be kept moderate during the spawning period and reductions should be minimized.
- Set outflow to as much as 800 $m^3/s$ to prevent the peak lake level from exceeding 323.09 m (1060 ft) for the benefit of Lake of the Woods cottagers, if inflow is no higher than median.
- Under wet conditions, it is preferable to have longer periods of moderately

high outflow than short periods of high outflow to meet lake level targets. Under wet conditions, aim to provide some storage buffer on Lake of the Woods below 323.09 m (1060 ft)

- Attempt to keep the summer lake level 10-15 cm (4-6 in) below the summer peak median level of 323.14 m (1060.2 ft) in accordance with the commitment made by the Board following the high water year of 2001. To achieve this, the lake level targets would be approximately 322.7 m (1058.7 ft) for the end of May and 322.9 m (1059.4 ft) at the end of June. Try to balance this with avoiding outflow in excess of the generation capability at Kenora and optimizing hydroelectric generation downstream.
- Through late May and June, attempt to limit Lake of the Woods outflow changes that would adversely affect nesting loons on the Winnipeg River.
- Through June (and early July), try to manage lake levels to limit the rate of rise for wild rice.
- By managing Lake of the Woods outflow, along with Lac Seul outflow, try to maintain Nutimik Lake levels in the preferred range.

iii) High Inflow Conditions

- Balance higher water levels on the lake with the impact of increased outflow downstream, both in Ontario and Manitoba.
- Do not increase outflow above 800 - 900 $m^3/s$ to keep the lake level (or projected level) below upper quartile in June (approximately 323.2 m / 1060.4 ft). A flow of 900 $m^3/s$ on the Winnipeg River would cause the level below the Norman Dam to be about 1.4 m (4.6 ft) above normal; upper quartile level is 0.2 m (8 in) above median on the lake.
- Increase outflow as necessary 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.
- An attempt should be made to keep outflow increases to a maximum of 100 $m^3/s$ per week, except during the spawning season when it would be desirable to not exceed 50 $m^3/s$ per week. Persistent higher inflow could, however, necessitate inflow increases of 200 $m^3/s$ per week or more.