



WASHBURN COUNTY HIGHWAY DEPARTMENT

Brian Danielsen P.E., Commissioner

1600 County Highway H
SPOONER, WISCONSIN 54801
(715) 635-4480 Fax (715) 388-7945

Chair Tim Kessler Hank Graber, Vice Chair
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June 3, 2022

SUMMARY OF LONG LAKE DAM OPERATION FOR THE JUNE 4, LLPA MEETING

GENERAL

The Long Lake Dam is maintained and operated by the Washburn County Highway Department. The Dam consists of 200' embankments on both sides of the dam structure with an 80' emergency spillway. The dam is controlled by two split leaf gates that can be raised or lowered independently to control water flow. The pond on the downstream end of the dam is used to dissipate energy of the water being released prior to going under the culvert to the Brill River.

The Highway Department is required to maintain water levels within the Wisconsin DNR ordered minimum and maximum water levels at all times. The ordered water levels are set to maintain the integrity of the dam structure. Summer target pool elevations must be set within the ordered range. Winter drawdowns are allowed as long as the timing meets the requirements of the DNR. At all times, a minimum flow of 15 cfs needs to be maintained in the Brill River.

Currently, Brian Danielsen, Highway Commissioner, is the only operator of the dam. The Highway Technician is the backup operator, but the Highway Department is currently looking for a new Highway Technician. The Highway Department has cameras on the staff gauge that can be viewed at all times by the Commissioner and backup dam operator. There used to be a phone in system to check water levels, but that system failed 2 years ago. In addition, there are no capabilities to remotely raise and lower the gates at the dam. All adjustments to the gates are made by someone going to the dam itself. Adjustments are made to the dam to adjust for forecasted rain, to hold back water during dry periods, to adjust water levels either up or down for a drawdown, etc... All adjustments to water levels on the lake are made based on the staff gauge at the dam. An adjustment of 1" at the dam may not correlate to an adjustment of 1" on all parts of the lake.

Currently the dam is in good condition. The Highway Department has a scheduled inspection with Ayres in June. Per the past inspections, there are no outstanding areas of concern on the dam. Highway crews have been performing required maintenance each time an inspection is completed. The benchmarks on the dam are also scheduled to be surveyed this summer by the Washburn County surveyor.



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CURRENT WATER LEVEL TARGETS

| | |
|------------------------------|----------------------------------|
| Permitted Upper Elevation | 1224.2 |
| Permitted Lower Elevation | 1222.0 (Summer), 1220.5 (Winter) |
| Summer Target Level | 1223.2 |
| Winter Target Level | 1222.6 |
| Begin Drawdown | October 1st |
| End Drawdown | October 15th |
| Begin Normal Pool Elevations | After Ice Out in Spring |

As noted above, the maximum and minimum target levels are ordered by the DNR and they are the levels that the Highway Department needs to stay within when operating the dam. Summer target levels and winter drawdown target levels are levels that have been set locally. Drawdown timeframes are also set locally, but must be approved by the DNR to ensure aquatic animals are protected during hibernation.

The current summer target level of 1223.2 has been used since around 2009. Prior to that, the summer target level was between 1223.0 and 1223.1. There is no record of why the summer target level was adjusted around 2009. One of the previous dam operators retired during this timeframe and a new Commissioner was hired, but the changes were not formally documented.

The current winter drawdown target level of 1222.60 has also been used since around 2009. Prior to that, the winter drawdown target elevation was around 1223.2 based on historical records. The drawdown has started on October 1st and ended on October 15th for the last 5 years. Between 2009 and 2017 there was a lot of inconsistency on how the drawdown was handled with varying dates. Prior to 2009, the drawdown started around Labor Day and extended through mid-October.

Refilling the lake in the spring does not start until all of the ice is out on the lake to minimize shoreline erosion with floating ice sheets. Timing of ice out varies each year, and re-fill rates vary as well based on base flow into the lake and precipitation. For the spring of 2022, ice went out very late, and there was minimal precipitation after ice went out. Water flow released from the dam was set at the minimum (15 cfs) and water levels in the lake were raised as soon as possible. Every year will be different for bringing water back to normal pool. As long as there is a drawdown, expect variability in the timing of ice out and the time to bring the lake back to normal pool.



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**The following table shows a summary of recorded low/high readings, average summer elevations, and estimated drawdown dates in the fall.

| Year | Recorded Low | Recorded High | Average Summer (May-August) | Est. Drawdown begin | Est. Drawdown End |
|------|--------------|---------------|-----------------------------|---------------------|-------------------|
| 2001 | 1222.40 | 1223.20 | 1223.08 | 16-Sep | 22-Oct |
| 2002 | 1222.20 | 1223.40 | 1223.08 | 13-Sep | 18-Oct |
| 2003 | 1222.30 | 1223.20 | 1223.06 | 19-Sep | 2-Nov |
| 2004 | 1222.30 | 1223.20 | 1223.06 | 6-Sep | 4-Oct |
| 2005 | 1222.20 | 1223.10 | 1223.04 | 11-Oct | 28-Oct |
| 2006 | 1222.10 | 1223.25 | 1223.07 | 28-Aug | 30-Oct |
| 2007 | 1222.10 | 1223.20 | 1222.87 | 21-Sep | 14-Oct |
| 2008 | 1222.20 | 1223.60 | 1223.08 | Low all fall | Low all fall |
| 2009 | 1223.00 | 1223.00 | 1222.61 | Low all year | Low all year |
| 2010 | 1222.60 | 1223.60 | 1223.29 | 1-Oct | 20-Oct |
| 2011 | 1222.60 | 1223.40 | 1223.18 | 10-Oct | 3-Nov |
| 2012 | 1222.50 | 1223.50 | 1223.20 | 8-Oct | 6-Nov |
| 2013 | 1222.80 | 1223.50 | 1223.20 | No records | No records |
| 2014 | 1222.70 | 1223.50 | 1223.11 | 9-Sep | 14-Oct |
| 2015 | 1222.60 | 1223.70 | 1223.22 | - | - |
| 2016 | 1222.60 | 1223.54 | 1223.23 | 26-Sep | 25-Oct |
| 2017 | 1222.40 | 1223.66 | 1223.33 | 25-Sep | 16-Oct |
| 2018 | 1222.68 | 1223.62 | 1223.20 | 15-Oct | 1-Nov |
| 2019 | 1222.56 | 1223.55 | 1223.30 | 1-Oct | 15-Oct |
| 2020 | 1222.40 | 1223.50 | 1223.26 | 1-Oct | 15-Oct |
| 2021 | 1222.50 | 1223.50 | 1223.21 | 1-Oct | 15-Oct |



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**The following table shows approximate dates for ice out, and time to reach normal pool elevation after ice out. Data from 2019-2021 is more accurate.

| Date of Ice Out | Elevation | Date of Normal Pool | Elevation | Days to raise to normal |
|-----------------|-----------|---------------------|-----------|-------------------------|
| 3/31/2014 | 1223 | 4/22/2014 | 1223.5 | 22 |
| 3/23/2015 | 1222.66 | 5/26/2015 | 1223.35 | 64 |
| 3/2/2016 | 1223.08 | 3/14/2016 | 1223.16 | 12 |
| 3/29/2017 | 1222.6 | 4/23/2017 | 1223.2 | 25 |
| 4/23/2018 | 1222.95 | 5/3/2018 | 1223.22 | 10 |
| 4/2/2019 | 1222.8 | 4/17/2019 | 1223.17 | 15 |
| 4/13/2020 | 1222.55 | 4/29/2020 | 1223.2 | 16 |
| 3/23/2021 | 1222.78 | 4/9/2021 | 1223.2 | 17 |
| 4/26/2022 | 1222.60 | 5/19/2022 | 1223.2 | 23 |

WASHBURN COUNTY DAM POLICY

Everyone who uses Long Lake seems to have varying opinions on how the lake should be maintained. Some want summer target levels lower to prevent shoreline erosion from wave and boat traffic. Some want summer target levels higher to allow better access to shallower areas on the lake. Some want to be right in the middle. Drawdowns have been historically done to minimize shoreline erosion and damage from moving ice flows in the spring and to prevent extreme high water in the event of a very quick melt of snow pack. Some people do not want drawdowns to allow them to use the lake until freeze up in late fall/winter. Some people want a drawdown, but want it to start in November which does not meet the approval of the DNR.

In November of 2020, the Washburn County Highway and Dam Committee drafted a policy that locks in the current operational parameters for all Highway Department controlled dams and set the procedure for making changes to the parameters. The policy was reviewed by all 3 Townships on Long Lake and the DNR. To make changes to the summer target, winter target, drawdown dates, or to eliminate the drawdown, all 3 Townships must submit approved minutes showing the Town Board approved the requested change and the requested change. If all 3 do not agree, then there will not be any changes to the current parameters. In addition, any changes will be submitted to the DNR for review prior to final changes to the parameters. If the DNR has concerns, the changes will not be made until the DNR approves the requested changes.

The Highway and Dam Committee's responsibility is to ensure that the Dam is maintained according to the DNR requirements and operated within parameters that will prevent



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the dam from failing. Since there are so many differing opinions on how to manage the lake, a set policy/procedure was needed to establish the rules for a change to be made and to allow any changes to be properly documented. Since the dam policy was established, there has been a Joint Committee formed from the Townships of Long Lake, Birchwood, and Madge. The committee has met multiple times to discuss if any changes should be made to operation of the dam. At this time, no recommendations have come to the Highway Department to change the current water levels from the 3 Townships. The LLPA and Long Lake Chamber are encouraged to work with the Townships to voice your concerns. The Highway and Dam Committee only needs approved minutes from the 3 Townships to make a change and does not specify how the Townships are supposed to get to their decision. The Highway and Dam Committee will not be mandating how the Townships create their Lake Committees.

Thanks

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