

Current Operation of Rest Lake Dam FAQ

General Information

The Public Trust Doctrine emanates from Article IX, Section 1 of the Wisconsin Constitution. It states that all rivers, lakes and navigable waterways are under the jurisdiction of the State of Wisconsin. Any structure which is built on a waterway impacts the public rights to that waterway, and needs to be monitored by the State of Wisconsin to assure safety, water quality, public access and monitor its impact on Wisconsin wildlife. Chapter 31 created in 1917 under the Water Power Law, was developed to ensure that dams are safely built, operated and maintained.

Document Navigation

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#1: What role does DNR have in the operation of the dam?

- Wisconsin lakes and rivers are public resources held in trust for all Wisconsin citizens under the state's [Public Trust Doctrine](#). The Department of Natural Resources (DNR) is responsible for protecting public interests in navigable waters. These interests include public rights to water quality and quantity, recreational activities, and scenic beauty. The DNR is also to promote safety and protect life, health and property. We balance these sometimes competing interests by carrying out and enforcing applicable state laws and administrative codes regarding lakes and rivers.

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#2: Why is the DNR working on the Rest Lake Dam operation at this time?

- Department of Natural Resources (DNR) staff has been working on the Rest Lake Dam operating issues since the spring of 2002. In the fall of 2003, a “stakeholder” group was put together to work with the DNR in reviewing the resource issues surrounding the operation of the Rest Lake Dam. The primary stakeholder groups included the Friends of the Manitowish River; the Manitowish Waters Lakes Association, the Manitowish Lakes Alliance; the Town of Manitowish Waters and Xcel Energy. DNR staff met with this group through December 2006, in an attempt to come to an agreement on an operational strategy for the dam.
- The DNR Water Program consists of many different programs and each one has its own priorities. Some of the other aspects of the water program include aquatic invasive species, storm water control, as well as lake planning and grants, to name a few. In each aspect of the program, the DNR has a responsibility to protect the public interest in navigable waters. These interests include public rights to water quality and quantity, to recreational activities, and to scenic beauty. The DNR is also to promote safety and protect life, health and property. This requires the DNR to work with people to understand each other’s views and often involves a balancing of competing interests, while protecting our fish and aquatic life resources.

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#3: Minimum flow from a dam – What is the law?

- The authority for the Department of Natural Resources (DNR) to regulate dams, water levels and minimum flow discharges is contained in Chapter 31, Wisconsin Statutes. [Section 31.02\(1\)](#) of that law states: *“The department, in the interest of public rights in navigable waters or to promote safety and protect life, health and property may regulate and control the level and flow of water in all navigable waters.....”* [Section 31.34](#) requires that *“Each person, firm or corporation maintaining a dam on any navigable stream shall pass at all times at least 25 percent of the natural low flow of water of such stream, except as otherwise provided by law.”*
- In administering these statutes, the DNR has interpreted and applied statewide, since the early 1980s, that 25 percent of the natural low flow equals the Q7,10, which is the lowest average flow of a stream over seven consecutive days during a 10-year period. This number differs by stream and is developed using a statistical analysis of stream gauging performed over many years. The Q 7,10 flow is not 25 percent of the flow coming into a lake chain.

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#3: Minimum flow from a dam – What is the law? (Continued)

- The DNR works with the United States Geological Survey (USGS), which operates stream flow gauges on rivers across the state, to set the Q 7,10 for rivers with dams. The figure for the Manitowish River has been calculated at 50 cfs. DNR is now working with Xcel Energy and the USGS to collect additional data to assure that the Q7,10 flow estimate is the most accurate possible for the Manitowish River.
- In order to help provide USGS with additional streamflow data during 2007 to assist in the Q7,10 calculation, DNR staff measured the 5 rivers/creeks that flow into the chain, as well as the Manitowish River below the dam, on 4 different days (May 10, July 13, August 1, and August 29).

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#4: Why did the DNR require Xcel Energy to discharge 50 cubic feet per second (cfs) from the dam during a drought?

- The Department of Natural Resources (DNR) is responsible for ensuring that the dam is operated according to its operating [order](#) and [Wisconsin law](#). State law requires that Xcel Energy, the dam owner, release a minimum flow of water from the dam at all times to protect public and private rights downstream, including allowing fish and other aquatic life downstream of the dam to get the water they need to survive. That minimum flow is equivalent to one-fourth of the natural low flow of water downstream of the dam. The minimum flow is not one-fourth of current low flow coming into the flowage.
- The DNR is now working with Xcel Energy and the United States Geological Survey (USGS) to determine the most accurate natural low flow downstream of the dam. Until that determination can be made, the DNR considers 50 cubic feet per second (cfs) to be the minimum flow because this is the flow figure Xcel Energy has used and practiced in their dam operation documentation. The Manitowish Waters Defense Fund believes there is no minimum flow or it is 25 cfs or less.
- In times of drought, the state [law](#) requiring a minimum flow of water to be released from a dam is even more important. Fish and other aquatic life downstream of a dam are much more susceptible to low flow conditions than aquatic life in the lake created behind the dam, which can more easily move to other areas and habitats. Adult fish need enough water to maintain resting and feeding habitat, and to be able to move up and downstream. Young fish need backwater habitat for cover (protection) and feeding areas. Riffle areas provide young fish with insects for food and are an important part of the aquatic food chain. Sand flats need water to sustain mussels and clams.

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#5: Why is the DNR not following the 1939 order and allowing the elevation to drop below the minimum lake level of 7 feet 3 inches?

- The continuing drought in northern Wisconsin meant that this spring, the Manitowish chain of Lakes never filled. In fact, the highest chain elevation recorded this spring/summer was 7.2 feet. Lack of rainfall over the summer and the need to provide a minimum flow of water downstream prevented the ability to maintain the 7 foot 3 inch elevation. Many northern Wisconsin reservoirs are experiencing similar conditions. The Turtle Flambeau Flowage is below the summer minimum elevation. The Rainbow Reservoir is 15 feet down. All of the major flowages that practice a winter drawdown had difficulty filling their flowages and maintaining water levels primarily because of the drought. Even natural lakes have [low water](#) caused by dropping groundwater tables.
- Xcel Energy operating records that date to 1955 show there have been other drought years when the chain of lakes failed to fill. Most notably, in 1976 and 1988 the lake levels were about two feet low in August. In 1976, downstream flow from the dam was completely shut-off, contrary to state law, and lake levels continued dropping. In most years, even when rainfall and snowfall is below normal, the lakes are filled with water even though the dam releases at least 50 cubic feet per second. The back-to-back drought years of 2006 and 2007 have been very severe.

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#6: Why did DNR require more flow to be released over the dam than what was coming in to the chain?

- The DNR is responsible for ensuring that the dam is operated according to its operating [order](#) and [Wisconsin law](#). State law requires that Xcel Energy, the dam owner, release a minimum flow of water from the dam at all times to allow fish and other aquatic life downstream of the dam to get the water they need to survive.
- The minimum flow equals one-fourth of the natural low flow in the river downstream of the dam. Because of the severe and continuing drought, releasing the minimum flow required by law meant that on certain days, but not all, more water was released through the dam than entered the chain from the rivers and creeks that flow into the chain. During this spring/summer, DNR staff measured these tributary waters and compared that to what was being released from the dam. On May 10, the inflow was 100 cfs, while the dam overflow was 50 cfs. On July 13, the inflow was 55 cfs and the dam discharge was reduced to 30 cfs. On August 1, the inflow was 40 cfs, while the dam discharge was 50 cfs. On August 29, the inflow was 27 cfs, while the discharge was 33 cfs.

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#7: Why change the operation of the dam just for sturgeon?

- No changes were made in the dam operation during 2007 to benefit sturgeon. The summer flow over the dam is not related to sturgeon. The need for downstream flow to allow for sturgeon spawning conditions occurs during the spring. Temperature recording devices installed in the river in recent years have determined that the time period in which river temperatures are suitable for sturgeon spawning runs from around May 8 to the first part of June.

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#7: Why change the operation of the dam just for sturgeon? (Continued)

- The flow desired for spring sturgeon spawning was determined by sturgeon reproduction experts to range from 75 to 150 cfs. Depending on the level of spring runoff and precipitation in any given year, it may be possible to have a flow that exceeds this range. Under drought conditions, however, it may be difficult to achieve even the lowest flow required for sturgeon spawning – 75 cfs.
- Some property owners expressed concern that a change in the operating order was being pursued solely to encourage sturgeon spawning in the Manitowish River. In fact, any new operating order would be designed to balance adequate water quality and quantity, recreational opportunities and scenic beauty both upstream and downstream of the dam.
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#8: 2007 Drought – How bad was it?

- The drought this year is particularly severe in the Manitowish Waters area, and it follows severe drought in 2006. The Department of Natural Resources (DNR) weather station at Trout Lake that records precipitation from April through November shows that rainfall was 9.29 inches below normal as of September 1. The winter was also very dry. In nearby Woodruff, winter precipitation was down an additional .59 inches, causing a well-publicized downturn in winter tourism. In 2006, precipitation was 10.54 inches below normal. These back-to-back droughts left us 20 inches behind in rain and snowfall, causing lower lake levels across northern Wisconsin, particularly in the Manitowish Waters area.
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#9: What other factors affect lake levels on the chain?

- Lack of rain and snow has by far the biggest impact on lake levels. Other factors include the amount of water sent downstream (50 cfs for most of this summer), and other withdrawals of water from the lakes. We have reports that one cranberry operation could be taking out 11 to 14 cfs and that many homes on the chain have pumping systems to pull lake water for watering lawns and gardens. Also, evaporation from the chain during a hot July is estimated to be 32 cfs, equivalent to a drop of 5.5 to 6 inches in water elevation over the month.
- Other factors affecting lake levels include lake property owners' request that Xcel Energy not start filling the lakes until later in the year to protect their piers from ice damage. The existing operating order requires Xcel Energy to begin filling the chain at "spring breakup" and raise the water level in the chain to 7 feet, 3 inches by April 15. In order to protect piers and other structures in the lake, Xcel Energy has been asked by the property owners on the lakes to wait to fill the chain until the ice is out, which is often after April 15. As a result, spring snowmelt and rainfall that could be filling the lakes is passed downstream instead. Although the benefit of capturing the spring snowmelt and rainfall varies from year to year, failing to capture this water as a matter of course may lead to lower summer water levels during a dry spring and summer.
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#10: Why was the operation of the Rest Lake dam changed this year when Senator Roger Breske and DNR Regional Director John Gozdzialski said there would be no changes?

- Senator Breske and John Gozdzialski attended a public meeting on June 4, 2007 in Manitowish Waters. At that meeting they indicated the operating [order](#) would not change until an environmental review was completed and there was public input into the new operating requirements for the dam. There have been no changes in the operating order – it remains the same as it's been since 1939.
- The DNR considers 50 cfs to be the minimum flow that, by law, Xcel must release from the dam downstream. This is the level Xcel Energy has used and documented in their operating records. The Manitowish Waters Defense Fund, however, believes there is no minimum flow or that it is 25 cfs or less. In 2007, Xcel released the 50 cfs minimum flow for the first half of the summer, as typical, but as the drought continued, Xcel released less water and failed to meet the minimum flow. By law, DNR had to take action to require the minimum level was met, and we did.
- Xcel Energy released 50 cfs from the time of chain refill (April 20) until July 5. On July 6, Xcel reduced the flow to 30 cfs and it remained at that level until July 17. That decrease in flow spurred the DNR to issue a letter to Xcel Energy on July 18 requesting that they pass the minimum flow of 50 cfs. From July 18th until August 22nd Xcel passed the required 50 cfs flow. On August 23, DNR agreed to allow Xcel to reduce the dam discharge to 30 (actually 33) cfs. This decision was made in recognition of the continuing drought, low inflows to the chain of lakes, low lake levels and the DNR's desire to evaluate the impacts on the Manitowish River at this lower flow condition.

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#11: Has there been more flow this year downstream of the Rest Lake Dam than during other droughts?

- Yes. In past years, flows have been reduced to extremely low flows and even to NO flow in 1976. Dam operation in these instances broke [state law](#) that requires dams to release a minimum flow level. Such reduced or no flows can kill fish and be very damaging to aquatic habitat.
- It should be noted that much higher water levels have been released over the dam in years with high rainfall. In 1973, for example, flows from May through September ranged from 119 to 535 cfs. In 1979, the average dam discharge for the months of May through September ranged from 83 cfs to 162 cfs. In 1993, the discharge was 50 cfs or more every day.
- While the DNR believes 50 cfs is a good estimate of the Rest Lake Dam's minimum low flow, and that's the flow Xcel's records show it releases, the Department of Natural Resources (DNR) is now conducting research to help assure that the proper minimum flow is used for future operations.
- DNR biologists have been evaluating both downstream and upstream river flows while the dam was releasing 50 cfs and will be evaluating the flow at 30 cfs. The data from these flow evaluations will be analyzed and an explanation of the anticipated impacts of low downstream flow included in the environmental document that will be released for public review as part of the process of establishing a new dam operating order.

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Note: A number of links have been inserted into the text of the Frequently Asked Questions. You may press Ctrl + click to follow the link within the Frequently Asked Questions or the individual website addresses are listed below.

Website Addresses

- 1. Public Trust Doctrine:**
<http://dnr.wi.gov/org/water/wm/dsfm/shore/doctrine.htm>
- 2. Summary of the Operating order:**
<http://dnr.wi.gov/org/gmu/upwis/restlakedam/damoperations.htm>
- 3. Minimum Flow Statue:**
<http://nxt.legis.state.wi.us/nxt/gateway.dll?f=templates&fn=default.htm&vid=WI:Default&d=stats&jd=ch%2031>
- 4. UW-Extension Fact sheet on low water:**
http://www.uwsp.edu/cnr/UWEXlakes/ecology/LowWater-Factsheet-color_small.pdf
- 5. Section 31.02(1), Wisconsin Stats (minimum flow):**
<http://nxt.legis.state.wi.us/nxt/gateway.dll?f=templates&fn=default.htm&vid=WI:Default&d=stats&jd=31.02>
- 6. Section 31.34 Wisconsin Stats (regulating flows and levels):**
<http://nxt.legis.state.wi.us/nxt/gateway.dll?f=templates&fn=default.htm&vid=WI:Default&d=stats&jd=31.34>

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