

**WATER LEVEL ORDER FOR LAKE KOSHKONONG AND THE INDIANFORD DAM ON
THE ROCK RIVER**

Findings of Fact

History

Lake information

1. The Indianford Dam is located on the Rock River in Rock County. The dam affects water levels on the Rock River, Lake Koshkonong, and their tributaries, including segments of the Crawfish River and Bark River.
2. Lake Koshkonong is a natural widening of the Rock River. Most of the surface area of the lake lies in Jefferson County, though parts also lie in Rock and Dane counties. The mouth of the Rock River flows into Lake Koshkonong about four miles downstream from the City of Fort Atkinson. The lake outlets into the narrow channel of the Rock River about six miles upstream of the Indianford Dam.
3. The Rock River and Lake Koshkonong are navigable waters under the laws of the State of Wisconsin.
4. Lake Koshkonong is one of the larger inland lakes in the state of Wisconsin with a surface area of approximately 10,460 acres.
5. Lake Koshkonong is a shallow lake. When the water level is at 776.20 msl, the lake has a maximum depth of about seven feet, with an average depth of about 5 feet. Most of the shoreline has a very gentle slope into deeper water, and in places water depths of only a foot or two can extend hundreds of feet into the lake.
6. The lake has approximately 27 miles of shoreline. Approximately 10 miles of the shoreline is developed, predominantly for residential use, with some commercial uses as well. Approximately 12.4 miles of this shoreline is undeveloped wetland shoreline. Estimations of areal coverage of the riparian wetlands range from 3,080 to over 4,000 acres.
7. The drainage basin of the Rock River at the outlet of Lake Koshkonong has an area of approximately 2,560 square miles, larger than the state of Delaware. The drainage basin of the Rock River at the Indianford Dam is slightly larger at approximately 2,630 square miles. The surface area of Lake Koshkonong is 16.3 square miles, which amounts to 0.6% of the Rock River drainage basin at the lake's outlet.

Dam information

8. Today, the Indianford Dam consists of three sections: (a) a powerhouse on the west bank that contains two wicket gates (which were formerly used to regulate water inflow for turbines for power generation); (b) a 40-foot long slide gate section on the east bank consisting of six slide gates; and (c) in between the powerhouse and the slide gates, a fixed-crest concrete spillway section approximately 277-feet long, with an average crest elevation of 775.27 msl. NGVD.

9. The powerhouse has not been used to generate power since 1962, and the turbines and generators were long ago removed. The two wicket gates that controlled the flow to the turbines, however, remain in the powerhouse. There is no present intent to re-employ the powerhouse for the generation of hydroelectric power.
10. Rock County owned and operated the Indianford Dam from December 1965 to December 2004, when the Rock-Koshkonong Lake District (“District”) accepted the county’s conveyance of the dam. The District is a public inland lake protection and rehabilitation district, established pursuant to Chapter 33, Wis. Stats.
11. In its July 16, 2013 opinion on this case, the Wisconsin Supreme Court included a chart (point 22 in the decision) that provided the average water levels on Lake Koshkonong from 1965 to 2002. This chart illustrates water levels over those years ranged from an average of 779.16 ft in 1993 to an average of 776.10 ft. in 1988. The median of these average water levels over this 38 year time span is 776.75 MSL. Persons engaged in economic activity during this period, including buying and selling of residences, establishment of businesses along the lake, and recreational and other uses may be presumed to have made decisions based on these historic water levels.

Litigation

12. On April 21, 2003, the District filed a petition with the DNR requesting that the DNR amend the then effective water level order (order number 3-SD-82-809, issued in 1991) by allowing increased water levels throughout the year, to include elimination of the ordered “winter draw down.” The District requested the following principal changes to the 1991 order:

¹ MSL LEVELS (at lake gage)	1991 Order	Petition	Change
<i>May through October</i>			
Target	776.20'	776.8'	+ 0.6' (7.2 inches)
Maximum (all gates open)	776.33'	777.0'	+ 0.67' (8.0 inches)
Minimum	775.73'	776.4'	+ 0.67' (8.0 inches)
<i>November through April</i>			
Maximum (all gates open)	775.77'	777.0'	+ 1.23' (14.8 inches)
Minimum	775.00'	776.4'	+ 1.4' (16.8 inches)

¹ Mean Sea Level (msl) NGVD. The unit of measurement for water levels in this decision are all expressed in feet above mean sea level (msl) in the National Geodetic Vertical Datum, unless otherwise indicated.

13. On April 15, 2005, the DNR issued its decision and order on the District’s petition of April 21, 2003, in which the DNR determined not to change authorized water levels for the months May through October. The order did, however, change authorized water levels for the months from November through April as follows: (a) raised the minimum lake level by 0.5 feet (six inches) to 775.50 msl, (b) raised the maximum lake level by 0.23 feet (2.8 inches) to 776.0 msl, and (c) established a November through April “target lake elevation” of 775.75 msl. This is the

decision and order upon which the Petitioners were granted a contested case hearing. By its terms, implementation of the order was stayed during the pendency of the contested case hearing.

14. On December 1, 2006, Administrative Law Judge William S. Coleman, Jr. issued Findings of Fact, Conclusions of Law, and an Order sustaining the DNR’s decision and order. Findings of fact from the ALJ’s order were not challenged and are incorporated here by reference where they are applicable to this order.
15. On July 16, 2013, the Wisconsin Supreme Court issued a decision, ruling the DNR erred in excluding certain testimony on the economic impact of water levels in Lake Koshkonong on the residents, businesses, and tax bases adjacent to and near Lake Koshkonong. *Rock-Koshkonong Lake District v. DNR*, 350 Wis.2d 45, 833 N.W.2d 800 (2013). The Court found the excluded economic evidence was relevant to DNR’s decision-making under s. 31.02(1), Stats., and remanded the case to the circuit court for further proceedings
16. On February 28, 2014, the circuit court remanded the matter to DNR. The DNR issues this Order to comply with the circuit court’s remand order.
17. After considering the economic impact of water levels in Lake Koshkonong, including the previously excluded evidence, and working with the parties involved with the legal proceedings described above, the department reached an agreement that provides for the following changes:

MSL LEVELS (at lake gage)	1991 Order	Proposal	Change
<i>June 15 through September 28</i>			
Target	776.20'	NA	NA
Maximum (all gates open)	776.33'	776.55'	+ 0.22' (2.6 inches)
Minimum	775.73'	775.73'	+ 0.00' (0 inches)
<i>September 29 through June 14</i>			
Maximum (all gates open)	775.77'	776.0'	+ 0.23' (2.8 inches)
Minimum	775.00'	775.5'	+ 0.5' (6.0 inches)

Provisions are also added to provide a dam operating and maintenance plan to be approved by the department, evaluation by the department of the impacts of the increased water levels on wetlands and other natural features, and a continuing lake management strategy with input from all parties. Beginning in 2019, the maximum level during the June 15 through September 28 period will be increased to 776.75’ msl unless the department determines that the level at 776.55’ has resulted in, or significantly contributed to, severe adverse impacts to wetlands. If this determination is made, the maximum level remains at 776.55’ until the department issues a new order pursuant to s. 31.02 Wis. Stats.

18. The District has also agreed to allow the department, upon request, access to physically view the operation of the wicket gates on a bi-annual basis and to consider replacing the wicket gates with slide gates to provide less maintenance and greater ease of operation of the dam.

Jurisdiction

19. The Department of Natural Resources (DNR) regulates the operation of the Indianford Dam pursuant to Chapter 31, Wis. Stats., through the issuance of orders to the owners of dams.
20. The Department evaluates impacts to wetland water quality standards under Ch. NR 103, Wis. Adm. Code.

WEPA

21. The DNR released a draft of its EA in December 2004 and invited the public to comment upon it. The DNR held a public hearing on the draft EA in January 2005 in Fort Atkinson, which was attended by approximately 150 citizens. On March 18, 2005, the DNR certified the EA as complete and determined that development of an EIS was not required. The department further analyzed the EA from 2005 and determined that this document provided in-depth environmental analysis for the purposes of this order, and that no supplemental EA is necessary in light of the already existing review of the likely environmental consequences of the proposed order. 22. DNR has determined that the agency's review of the water levels of Lake Koshkonong and the operation and maintenance of the Indianford Dam under Ch. 31, Wis. Stats., constitutes an integrated analysis pursuant to s. NR 150.20(2)(a)16., and provides sufficient information to establish that a separate environmental process under Ch. NR 150, Wis. Adm. Code is not required.
23. The Department has complied with the requirements of Wisconsin's Environmental Policy Act, Wis. Stat. § 1.11 and Wis. Admin. Code ch. NR 150.

Evaluation

Impacts to wetlands

24. The reduced frequency of low water conditions during the summer and the increase in the average summer water levels on Lake Koshkonong account in part for the historic loss of wetlands. While some of the historic wetland loss on Lake Koshkonong has occurred in flood or high water events, the maintenance of artificially high water levels has prevented reversal of such losses during countervailing dry cycles and continued to erode the wetland margin.
25. Maintenance of water levels at 776.55 as proposed during the summer is likely to cause degradation of wetland structure, quality and functional values. This higher water level would be maintained during the normal periodic low water conditions necessary for wetland regeneration and natural maintenance.
26. Continued long term loss and degradation of riparian wetlands on the lake has allowed establishment of non-native invasive vegetation which has been observed by DNR staff.
27. Emerald Ash Borer infestation, resulting in the loss of ash trees in this system will exacerbate degradation of wetland forests around the lake by creating canopy openings. Natural regeneration of any tree species will be hindered by high water levels and competition by non-native invasive species.

Water quality

28. Nutrient and sediment concentrations in Lake Koshkonong are primarily controlled by inputs from the Rock River. The proposed change in water level would have a negligible effect on these aspects of water quality.
29. Lake Koshkonong has been identified as an impaired water body under section 303(d) of the federal Clean Water Act. The listed pollutants have been identified as phosphorous and sediments. The listed impairments are eutrophication, sedimentation, and loss of habitat. Increased water levels during the open water seasons will contribute to more sedimentation as a result of accelerated erosion and habitat loss from the destruction of riparian wetlands. Carp and recreational boating stir up sediments and increase turbidity, reducing light penetration and submergent plant growth. An increase in water levels is likely to further degrade water quality in terms of turbidity on Lake Koshkonong, but the lake is likely to remain identified as an impaired water body under either DNR's current order or the proposed water levels.
30. Additional wetland loss will incrementally reduce the system's capacity to slow flood and stormwater, and diminish the capacity to filter nutrients, sediments and other pollutants.

Aquatic plant community

31. Higher water levels are likely to lead to further loss of submerged aquatic vegetation because less light will reach the submerged plants through the deeper turbid waters.

Property impacts – Ordinary High Water Mark

32. Maintenance of higher water levels in the summer months could result in a landward migration of the ordinary high water mark on Lake Koshkonong.

Riparian Issues

33. Increasing summer water levels from 776.2 to the proposed maximum of 776.55 would allow many riparian owners to maintain shorter piers to reach depths of 2 to 3 feet.

Agriculture

34. The Jefferson County Farm Drainage Board administers certain farm drains in Jefferson County, including drains identified as numbers 24 and 39, which are available to farmers to connect their tile systems for drainage of excess water from lands. Drains 24 and 39 could both be adversely affected by the water levels authorized in this order.

Erosion Control

35. Approximately 38%, or 4.7 miles of wetland shoreline on Lake Koshkonong has been partially protected by offshore breakwater structures constructed with small rock riprap materials, which dissipate wave action. At the maximum levels in the proposed order, some of these existing structures could be subject to increased incidence of flow-through, overtopping by wave action. This would render these structures less effective at dissipating wave action and could cause the structures to degrade more rapidly.
36. Increasing the summer lake level from 776.20 to 776.55 would allow recreational watercraft to traverse Lake Koshkonong waters closer to the shoreline, with the largest improvement in navigational depth occurring along those areas with the shallowest gradient, which are predominantly near developed areas. The increased water levels could entice some boaters to travel faster and closer to shore, increasing the potential for wakes to increase shoreline erosion.

Property values

37. In issuing this Order, the Department has reviewed and considered the following economic information: the economic information from the 2006 contested case hearing that was excluded by the Administrative Law Judge; a report submitted by Kashian and Winden of the University of Wisconsin – Whitewater entitled: “An Assessment of Lake Front Property Values Based on a Decline in Water Levels: It’s Impact on Value and Taxes” dated March 29, 2015; and a report submitted by JC Johnson entitled “Lake Koshkonong, Lake Sinissippi and Beaver Dam lake, Sales Data and Lake Level Report” dated August 16, 2015. The Department has also solicited and reviewed additional comments from the public on the Lake Koshkonong water level and specifically on the economic impact of water levels.

Public interest

Fish and Wildlife

38. Floodplain forests provide valuable habitat for amphibians and reptiles (“herptiles”), and continued loss of this type of wetland would continue to incrementally diminish and degrade the existing habitat for herptiles. Continued loss of submerged aquatic vegetation would have incremental adverse impacts on turtles.
39. Additional wetland loss would result in the loss of important wildlife and fishery habitat, including habitat for rare species.
40. The floodplain forest area around Koshkonong Creek supports one bird species classified as “threatened” (Acadian Flycatcher) and several species classified as “special concern” (Bald Eagle, Prothonotary Warbler). These birds require large blocks of mature, closed canopy forest. Further loss of suitable habitat in the Koshkonong Creek area would increase the risk of local extirpation.
41. The marshes on the north side of the lake support one endangered bird species (Black Tern). Continued loss of emergent marshes would result in incremental diminished habitat for this rare bird species.

42. Any accelerated loss and degradation of the various varieties of wetlands due to the water levels authorized in this order would make Lake Koshkonong less attractive to waterfowl for staging and local production and would likely have a negative incremental impact on the diversity and density of migratory waterfowl.

Public Safety

43. Public safety and rescue watercraft are not always able to reach shallow draft boats located in shallow waters, and on occasion this has impeded emergency operations. Maintaining summer water levels at the authorized maximum may improve responsiveness of public safety watercraft in some of the shallow margins of the lake. However, even with higher summer lake levels, similar predicaments would not be wholly avoided, in that shallower draft boats would continue to be able to enter areas not accessible to certain types of public safety craft.

Recreation

44. Fishing, recreational boating, waterfowl hunting and trapping are the most common recreational uses of Lake Koshkonong and the Rock River. Higher water levels will allow for expanded opportunities for these activities. Various types of watercraft use the lake and river, from smaller craft such as personal watercraft, sail boats, canoes and skiffs, to larger watercraft such as runabouts, fishing boats and pontoon boats. Through the years, the average sizes of boats and motors on the lake has increased, as has the number of recreational boats and fishing boats. There are a number of locations on the lake where boaters tend to pull near the shoreline to bathe and socialize.

Boating/Navigation

45. Damages to boats and propellers are more common at existing water levels than at higher water levels, but careful boating practices can diminish the risk of damage. Adoption of the authorized order would not eliminate these navigational hazards from the lake as a whole but likely would mitigate them to some degree.
46. Increasing water levels as proposed would not alter the lake's morphology as a shallow lake or the navigational limitations that are inherent in such bodies of water. At the increased water level, shallow depths would continue to exist on the lake, and these shallow depths would likely continue to impede rescue and public safety responses from time to time, though possibly with reduced frequency. The evidence presented establishes some impediments to rescue and public safety responses from time to time at the DNR's proposed target level, but does not establish that inadequate depths are a chronic or persistent condition that significantly affects the responsiveness of public safety personnel and watercraft or that poses a substantial threat to public safety.
47. Increasing the authorized summer lake level would allow recreational watercraft and public safety watercraft to traverse Lake Koshkonong waters closer to the shoreline, with the largest

improvement in navigational depth occurring along those areas near the shore with the shallowest gradient, which are predominantly near the developed shoreline areas. The increased water levels could entice some boaters to travel faster and closer to shore, heightening risk factors for boating accidents.

Swimming/Bathing

48. Adoption of this order would move bathing activities closer to the shoreline. Adoption of the order would not create further distance between boat traffic and bathers who access the lake either from the shore or from watercraft, since the relative water depth necessary to support either activity remains constant regardless of the lake level.

Natural Scenic Beauty

49. Additional wetland loss and increased open water areas will diminish the natural scenic beauty of the area in the opinion of some segments of the public while other members of the public will view this as an enhancement.

Department Considerations

50. Consistent with the July, 16, 2013 decision by the Wisconsin Supreme Court, the department has considered and evaluated the economic and natural resource impacts of historic and current water levels and issues this order to balance all interests protected under s. 31.02 Wis. Stats.
51. On June 22, 2017, the Department held a public informational session and hearing on this order in Edgerton, Wisconsin. The Department received oral and written testimony at the hearing and during the public comment period and considered all comments in the course of making decisions regarding this order.

Conclusions of Law

1. The Department has the authority under Wis. Stat. § 31.02 and the foregoing findings of fact to issue this order for water levels and flows on Lake Koshkonong.
2. The Department, in the interest of public rights in navigable waters or to promote safety and protect life, health, property, property values, and economic values, may regulate and control the level and flow of water in all navigable water.
3. The Department has complied with the requirements of Wisconsin's Environmental Policy Act, Wis. Stat. § 1.11 and Wis. Admin. Code ch. NR 150, and NR 103 Wis. Admin. Code..
4. The Department has determined that the order below meets the standards of s. 31.02 Wis. Stats., ch. NR 150 Wis. Admin. Code.

THE DEPARTMENT OF NATURAL RESOURCES ORDERS:

1. This amended order supersedes water level orders 3-SD-82-809-Amended dated December 14, 2004 and 3-SC 2003-28-3100 LR dated April 15, 2005.
2. In 2017, from July 1 through September 28, and in subsequent years, from June 15 through September 28, the following water levels and dam operation shall be in effect:
 - a. Minimum lake elevation 775.73 feet, MSL
 - b. Maximum lake elevation 776.55 feet, MSL

When operating the dam to decrease outflow from the lake, the owner shall operate the dam to maintain sufficient flow in the river to prevent the river from dropping more than 6 inches in a 24-hour period, as measured and recorded on the tailwater gage at the Indianford Dam.

3. In 2019, from June 15 through September 28, the following water levels and dam operation shall be in effect:
 - a. Minimum lake elevation 775.73 feet, MSL
 - b. Maximum lake elevation 776.75 feet, MSL
4. If prior to June 1, 2019, the department has determined that the levels in paragraph 2 have resulted in, or significantly contributed to severe adverse impacts to wetlands the levels in paragraph 3 are not authorized and the levels in paragraph 2 shall continue in force until such time as a new order is issued pursuant to s. 31.02 Wis. Stats.
5. Six slide gates and the wicket gates shall be fully opened and shall remain open whenever the lake elevation exceeds the maximum level in effect (either 776.55 or 776.75 MSL).
6. The slide gates shall be opened first when increasing flow and closed last when decreasing flow.
7. The District shall provide department staff access to the wicket gate operations inside the powerhouse to confirm wicket gate settings within four hours of the department's request. The District shall provide the department with the contact information for access or another means of confirming wicket gate settings as approved by the department.
8. Upon request, the District shall exhibit to the department a direct view of the wicket gates to allow a determination that they are operating properly on a bi-annual basis.
9. From September 29 through June 14, the following water levels and dam operation shall be in effect:
 - a. Minimum lake elevation 775.50 feet, MSL
 - b. Maximum lake elevation 776.00 feet, MSL

If the lake level is higher than 776.00 feet, MSL during this time, the six slide gates and the wicket gates shall be fully opened and remain open.

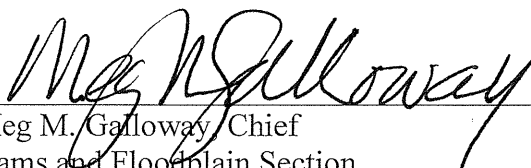
10. Lake levels shall be lowered starting on September 29 by increasing flow through the dam until the slide gates and wicket gates are fully opened and the maximum lake level is reached. As weather conditions allow, the maximum fall lake elevation level shall be reached by October 15.
11. The District shall pay the local share for continued operation and maintenance costs of US Geological Survey gages at the Rock River at Fort Atkinson, at Lake Koshkonong, and at the Rock River at Newville.
12. The slide gates shall be maintained in a condition that shall allow all of the gates to be fully opened or closed in four hours.
13. The powerhouse, wicket gates and slide gates shall be maintained in an operable condition and shall be used to achieve water levels and flows established in this order. The trashracks on the powerhouse shall be cleaned on a daily basis over their entire area when the wicket gates are passing flow to maintain maximum flow through the powerhouse. Organic debris including leaves and woody vegetation can be sluiced over the spillway. Waste such as plastics, rubber and metal shall be removed from the rack and disposed of at a proper solid waste facility.
14. In accordance with s. 31.34, Wis. Stats., a minimum of 140 cfs shall be discharged through the dam at all times.
15. The tailwater gage shall be maintained in a readable condition and replaced when necessary.
16. The District shall maintain a daily log of lake levels, gate manipulations and trashrack cleaning and make the logs available to the department upon request.
17. The District shall contact the downstream dam operator (Centerway Dam in Janesville) whenever a gate change resulting in an alteration of flow is implemented.
18. The District shall provide the Indianford Dam gate settings within four hours, by email, to the department, US Geological Survey, Eagle Creek Renewable Energy, City of Janesville, Rock and Jefferson County upon their request

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that the Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to sections 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and

serve the petition on the Department. Such a petition for judicial review must name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to section 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with section NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with section NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing does not extend the 30 day period for filing a petition for judicial review.



Meg M. Galloway, Chief
Dams and Floodplain Section
Wisconsin Department of Natural Resources

7.24.2017
Date

