

Hydropower Project License Summary

CHIPPEWA RIVER, WI

JIM FALLS HYDROELECTRIC PROJECT (P-2491-025)



Photo: A.Tornes, National Park Service

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Hydropower Reform Coalition

And

River Management Society

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DESCRIPTION:

This project was originally built in 1923 and redeveloped in 1988. The original project included a 9,500-foot long diversion dam with spillway control structures, a reservoir and power canal with a total water surface area of about 890 acres and a powerhouse containing three identical turbine-generator units. After reconstruction in 1988, the project now includes an 8,700-foot long dam, an enlarged reservoir (950 acres) and a new powerhouse containing three-turbine generator unites, each of 16.2 MW capacity. The main spillway also contains a small turbine-generator with a rating of 600 kW. The project creates a 4,500-foot long bypass section on the river channel.

There are six projects on the Lower Chippewa: Holcombe (P-1982), Cornell (P-2639), Jim Falls (P-2191), Wissota (P-2567), Chippewa Falls (P-2440) and Dells (P-2670) from upstream to downstream. All projects, except the Dells project are owned by the Northern States Power Company- Wisconsin (NSPW). The Dells project is owned by the City of Eau Claire but leased to NSPW for operation. The NSPW reached an agreement with several stakeholders in 2001 called the Lower Chippewa River Settlement Agreement (LCRSA), which governs the operations and non-operational protection and enhancement measures covering six hydropower projects located on the Chippewa River.

The signatories to the settlement agreement are: Northern States Power Company (dba Xcel Energy), US Fish and Wildlife Service, Wisconsin Department of Natural Resources, National Park Service, River Alliance of Wisconsin, Wisconsin Conservation Congress, Chippewa Rod and Gun Club, Lake Holcombe Improvement Association, Lake Wissota Improvement Association, and Lower Chippewa Restoration Coalition.

This summary only pertains to the license issued (and subsequent amendments) for the Jim Falls Hydroelectric Project. The amendments were related to license conditions pertaining to recreational flows on the Chippewa River.

A. SUMMARY

1. License application filed: July 15, 1983
2. License issued: July 24, 1984; Amended February 12, 2003 and February 24, 2016
3. License expiration: September 30, 2033
4. Capacity: 59.8 MW
5. Waterway: Chippewa River
6. Counties: Chippewa County
7. Licensee: Northern States Power Company – dba Excel Energy
8. Licensee contact: 1-800-895-4999

9. Project website:
https://www.xcelenergy.com/energy_portfolio/electricity/power_plants/jim_falls
10. Project area: The project area contains about 13 acres of federally owned land managed by the Bureau of Land Management. All are islands in the river channel.
11. Project facilities: The project consists of
 - a. An 8,660-foot-long earth-fill dam with concrete spillways consisting of 214.6-foot-long main spillway flashboard section, a 358-foot-long main spillway gated section, and a 147-foot-long auxiliary spillway gated section;
 - b. A reservoir with storage capacity of 11,400 acre-feet;
 - c. A main powerhouse with intake structure containing three turbine generators
 - d. A 70.75-mile-long 15-kV underground cable, and
 - e. Supplementary facilities.

B. IMPORTANT PROVISIONS AND REQUIREMENTS IN LICENSE

The following plans are required by the license for protection and enhancement of fish, wildlife, recreation, cultural, and aesthetic resources at the project.

1. Instream/Recreational Flows [Reference: License Article 42, License Amendments of 2001 and 2016]

The original license (1984) required a continuous minimum flow measured in the bypass reach as follows:

From the time of ice-out in the Spring through October 31	240 cfs
November 1 through the time of ice-out in the Spring	20 cfs

Or inflow to the reservoir, whichever is less.

The minimum flows requirement was meant to enhance the water quality and aquatic resources in the bypass reach, a modest warm-water fishery identified as a spawning area for lake sturgeon during the spring.

The 2001 settlement agreement modified the minimum flows to enhance the spawning of lake sturgeon and other fish species. The revised minimum flow requirements are as follows:

April 1 through May 31	850 cfs
Rest of the year	240 cfs

The 2001 settlement also increased the number of flows for whitewater boating. Specifically, the license required a minimum flow of 650 cfs in the bypass section of the river between 10:00 a.m. and 3:00 p.m. on the second and fourth Saturdays in July, and the second Saturday and the third Sunday in August.

In 2016, based on input from the National Park Service and the boating community, NSPW proposed to further increase the number of annual recreational release days. The 2016 license amendment includes the following elements:

- a) Increase the number of annual releases from four to six using the following schedule:
 - 3 releases during the month of July: one Saturday and one Sunday release on the same weekend plus one additional weekend day release.
 - 3 releases during the month of August: one Saturday and one Sunday release on the same weekend plus one additional weekend day release.
 - Jim Falls Whitewater (JFW), a local paddling club, at their discretion, may defer one of the July or August release dates to September to coincide with Sturgeon Days. A decision to do so must be made by March 31 of each year.
 - Gates will be opened such that peak flows occur at the old County Y Bridge between 10:00 a.m. and 3:00 p.m. Ramping down will begin at 3:00 p.m. at which time 450 cfs will be released and held for one and a half hours. At 4:30 p.m., flows will be returned to 240 cfs. This is consistent with the recreational release plan from 2001.

- b) The schedule for the releases shall be flexible to avoid conflicts with other recreational releases in the Midwest region. The release schedule shall be developed by Jim Falls Whitewater in consultation with the National Park Service and NSPW. The schedule shall be finalized no later than March 31 of each year. If the schedule is not provided to NSPW by the deadline, the current flow release schedule will be used.

- c) Construct a new put-in site at the Old Abe Wayside off State Highway 178 approximately 1/3 mile upstream of the existing put-in site. The Wisconsin Department of Transportation is agreeable with using their facility for the put-in location, as long as new signage is consistent with existing signage at the wayside.

- d) The new formal take-out site will be on the eastside of the river near the site of the former Jim Falls powerhouse. NSPW will make the necessary improvements at this location to facilitate take-out access for whitewater boaters.

- e) NSPW will post signs at the put-in informing readers of the release schedule dates and times. Signs will include pertinent safety information, information on take-out and restroom locations, and the significance of the channel as habitat for fish, particularly lake sturgeon.

2. Fisheries Enhancement and Remediation Plan [Reference: License Articles 42, 43, and 15; February 2001 Settlement Agreement Appendix I, Fish Stranding Remediation Plan for the Chippewa River Hydro Projects]

The major cause of fish injury and mortality related to the operation of the Jim Falls Dam was associated with stranding of fish in the bypass reach due to fluctuations of flow from the dam. Articles 42 and 43 of the license required NSPW to release flows to protect and enhance the aquatic resources in the bypass reach. Article 15 required the licensee to provide measures needed to minimize turbine related fish mortality.

The 2001 settlement agreement recognized that, prior to the 1984 relicensing, the dam's spillway gates were opened routinely to pass excess water received from hydro projects upstream. As a result, fish stranding occurred in the .75-mile-long spillway channel after spillway gate closure. Though operator inspections and fish rescues were routinely performed, fish inevitably died. Additional stranding of species such as juvenile smallmouth bass occurred when the spillway channel was "flushed" in order to move lake sturgeon and other, different types of fish downstream as flow was reduced from the 240 cfs to the 20 cfs minimum flow. This event intended to rescue certain stranded types of fish is no longer necessary, thanks to the 2001 agreement that insures a year-round minimum flow of 240 cfs. Thus, the redevelopment of the hydro project and the subsequent increase in hydraulic capacity of the turbines greatly reduced the fish stranding concerns in the spillway channel. Most spillage now occurs through the auxiliary spill gates at the main powerhouse so the spillway channel is seldom used, except for passage of the required minimum flow. In order to further remediate the fish-stranding problem, FERC staff will inspect the spillway channel after spillway gate closure during the warm weather season, and move any stranded fish back to the main channel.

The new 850 cfs minimum flow in the spring per the 2001 license amendment would enhance aquatic habitat in the bypassed reach. In particular, it would, enhance spawning conditions for the lake sturgeon, which reportedly already spawns in the bypassed reach. Lake sturgeon is a Wisconsin watch-list species, and releasing a minimum flow to the bypassed reach would contribute toward the recovery of a species of special concern. Other fishes and macroinvertebrates would also benefit from the higher year-round minimum flow, and the incidences of stranding should be reduced. The EA also notes that, per the new Amendment, water surface stability resulting from decreasing the Jim Falls reservoir fluctuations would benefit aquatic resources such as near-shore species such as centrarchids during their spawning period. The whitewater boating flows proposed in the Amendment would be of short duration (about 5 hours per release), and would be ramped down in two increments, to reduce the potential for fish stranding and other adverse effects on aquatic habitat..

3. Water Quality [Reference: License Article 42]

The Wisconsin DNR issued a waiver for water quality certification on April 30, 1981 and therefore the license does not include any specific measures for protection of water quality. It is expected that implementation of minimum flows in the bypass reach will improve the existing water quality in this section of the Chippewa River. Although requested by the EPA, the license does not require DO monitoring in the bypassed reach.

4. Threatened and Endangered Species Protection Plan [Reference: February 2001 Settlement Agreement Appendix K, Bald Eagle Management Plan for the Lower Chippewa River Hydro Projects]

The bald eagle is currently found throughout the Chippewa River system during all seasons of the year. This federal and state threatened species has established nest sites along parts of the lower Chippewa River, and due to its threatened status, the resource agencies and team associated with the February 1, 2001 settlement agreement recommended implementing the following measures to ensure protection of the species:

- Forestry Practices
 - Large canopy trees such as white pines and cottonwoods, which are primary nest and perch sites for bald eagles, located near the shoreline of flowage and river lands shall not be cut unless they pose a human safety problem or a reliability problem with transmission lines and substations.
 - Snags, which allow eagles to see considerable distances, are also preferred perches and will remain standing
 - Natural succession that dictates the location and quantity of eagle nesting and perch trees on project lands will be allowed to continue.
- Buffer Zones
 - Two zones have been identified by the FWS as vital to the nesting success of bald eagles:
 1. Primary buffer zones: Encompassing a 330-foot radius around the nest, should not be entered at any time during the critical period.
 - Critical period: Defined as the time from the arrival of the adult birds to three weeks after the fledgling of the young (generally from February 15 through August 15 in the state of Wisconsin). Eagles are most vulnerable to disturbance during the first 12 weeks of the critical period.
 2. Secondary buffer zones: Extends outside the primary buffer zone to a minimum of 660 feet from the nest, or 0.25 miles from the nest if human activity is visible to the nest-site.
 - Human activities which should be avoided in both types of buffer zones during the critical period include: the building of new homes, new roads and trails allowing access to the nest; development of new commercial and industrial sites; use of DDT, other persistent organochlorine pesticides, PCB,

mercury, and lead; logging; mining; low level aircraft operations; use of firearms; camping; and picnicking.

- Annual aerial spring survey of bald eagle nest sites throughout the state will be performed by WDNR as a means of tracking the number of nesting pairs. Each spring, licensee will obtain nest survey information and if any nests are found, primary and secondary buffer zones will be established immediately. Personnel from the WDNR and FWS will also be contacted immediately and any concerns or recommendations made at that time will be addressed immediately.
- Provisions from the bald eagle management plan will be implemented at the time that the settlement team finalizes the settlement document. Licensee will continue to work with the FWS and WDNR until such time that both parties deem it inappropriate to continue with the bald eagle management plan.

C. MAP

There are two convenient ways to become familiar with this project on the Hydropower Reform Coalition website, www.hydroreform.org.

- Go directly to the project [page](#)
- To understand the geographical context of the project, visit the *On Your River* section of the site. This [link](#) will take you to the section for rivers in the Midwest. Zoom in to western Wisconsin until you can see Eau Claire. Jim Falls is the first project upstream of Lake Wissota just north of the town of Jim Falls.
- See the full list of published hydropower license and settlement summaries [here](#).

