

Knutson Dam Project Information

Project Summary

The Knutson Dam project area is located on the Chippewa National Forest, in the Mississippi River watershed, and at the Mississippi River outlet on the northshore of Cass Lake. The Mississippi River is renowned world-wide and supplies significant social, economic and natural resource benefits to the Chippewa NF, Minnesota and our Nation.

Knutson Dam was originally built in the early 1900's as a logging dam, enabling the downstream movement of harvested timber via the river corridor. In 1926, the Forest Service purchased the dam under Public Law 270 and was subsequently responsible for the management and maintenance of the dam. Since then, the dam has not been actively used for logging purposes, but rather to regulate the water levels of the immediately upstream and downstream lakes; and the river. Over the years, management of the dam and water levels involved many partners, including the Minnesota Department of Natural Resources (MN DNR), US Army Corps of Engineers and the Chippewa NF. Expanded benefits of water level management include providing appropriate fish spawning conditions, recreational access, and limiting high and/or low water level extremes.

The deteriorating physical condition of Knutson Dam, (as inventoried in 2011), and a forest-wide watershed assessment at the same time, created an opportunity to address the many structural and natural resource issues the dam has created. Subsequently, in collaboration with the MN DNR, Leech Lake Band of Ojibwe, and the Army Corp of Engineers, a Knutson Dam Improvement Project plan was developed and implemented. The project included several significant accomplishments:

- The Knutson Dam structure was removed from the Mississippi River channel, therefore restoring aquatic organism passage on the main-stem of the Mississippi River
- Improved the hydrologic function of the Upper Mississippi River by installing a fixed-crest rock weir and rock rapids structure for water level management of the Cass Lake Chain
- Restored fish passage in over 30 miles of the Mississippi River, its tributaries, and also inclusive of 72,000 acres of lakes. This is critically important in the restoration of migration routes for most warm water fish species on and between Cass Lake and Lake Winnibigoshish.
- Reduced the incidences of lakeshore erosion on Cass Lake by minimizing the duration of high water periods due to increased hydraulic capacity compared to the previous Knutson Dam structure. Improved recreational opportunities at the site. There is a popular Chippewa NF campground adjacent to the Cass Lake lakeshore and Mississippi River channel. Visitors will now be able to access both Cass Lake and the Mississippi River safely; fish off the banks and pier; and enjoy the more natural appearing lake, river and shorelines. Increased use by kayakers is also expected due to the presence of the rapids.
- Safety improvements due to the elimination of the dangerous hydraulic conditions associated with the swift flow and under-currents that existed with the former gate openings. Hydraulic energy dissipation now occurs within the rapids.
- Creation of spawning habitat for fish species such as walleye and white sucker. Both have been documented in Minnesota using similar structures to spawn.

- Successful engagement and collaboration with many diverse stakeholders. Stakeholders included the Leech Lake Band of Ojibwe; MN DNR; Army Corp of Engineers; Ottertail Power; US Fish and Wildlife Service; Midwest Glacial Lakes Partnership; and the Forest Service.



Knutson Dam Pre-Implementation



Knutson Dam Project Aqua Dam



Knutson Dam Project Rock Weir Placement



Knutson Dam Rock Arch Rapids

Project Accomplishments

The Knutson Dam Improvement project scope of accomplishment is very significant. The project plays a key role in restoring the Cass Lake watershed; providing fresh water fish and other organism passage; limiting extreme water levels and potential shoreline damage; restoring hydrologic linkages on the Mississippi River between Lake Winnibigoshish and Cass lake; and providing high quality recreation opportunities. A reduction in the frequency of operation and maintenance at this site is a future benefit that will result in savings of both personnel time and repair costs.

The Chippewa NF has been very successful in developing partnerships to accomplish critical natural resource restoration projects. Congressionally allocated forest funding is not adequate to singularly accomplish large natural resource restoration projects. These high priority restoration projects, significant to a variety of stakeholders, are achieved through collaborative efforts. The total cost of the project is estimated to be approximately 1.1 million dollars, with approximately half of the total cost contributed by the collaborative efforts of all partners.

The successful outcomes of this regionally significant, high priority project were only achieved through the collaborative hard work and financial contributions of people in different agencies; non-profits; and tribal government and natural resource managers.

Partnership Collaboration

Successful collaboration with a wide variety of stakeholders has resulted in a project that is extraordinary in its positive effects on the Mississippi River watershed. The Knutson Dam Improvement Project has extensive external collaboration and engagement with numerous stakeholders, including the Leech Lake Band of Ojibwe; MN DNR; Army Corp of Engineers; US Fish and Wildlife Service; Ottertail Power; and the Midwest Glacial Lakes Partnership throughout all phases of the project.

Collaboration started during the initial planning phase of the project by Chippewa NF employees reaching out to all the local stakeholders and Leech Lake Band of Ojibwe members affected by the project. Numerous public meetings were held in the Cass Lake area to ensure all the issues were brought forward by the stakeholders and addressed by the Chippewa NF while planning the project.

The Chippewa NF engineering and fisheries staff have also worked very closely with the MN DNR Fisheries and Ecological Resources Division staff groups in the planning, funding and design of the new structure. Early consultation and site review with Luther P. Aadland, PhD, River Ecologist of the MN DNR resulted in the initial concept design for the rock arch rapids. Dr. Aadland is a nationally recognized river restoration expert and with his input and guidance the Chippewa National Forest engineering and fisheries staff produced a final design for this structure that is truly inclusive of the most modern and innovative restoration concepts currently known.

Additionally, an ongoing external cooperative effort throughout the project has involved actively working the local public television station and print media to update our communities on the progress of the project. Lakeland Public TV links are: <http://www.lptv.org/knutson-dam-replacement-project-set-to-begin/> and <http://www.lptv.org/knutson-dam-replacement-project-update-lakeland-news-at-ten-november-24-2015/>

Also, a local retired film maker has been documenting the project and those videos are available on the Chippewa NF home page at: https://ems-team.usda.gov/sites/fs-r09-cnf/_layouts/15/start.aspx#/

A very high degree of collaboration occurred to fund the project. The Knutson Dam Improvement project could not have been accomplished without the support of our partners who recognized the significant economic, social and natural resources value of this project. Partners include:

- The Minnesota DNR contributed almost 40% of the project through the Lessard Outdoor Heritage Fund. The Lessard Outdoor Fund is directly supported by the voters of Minnesota through a legislative appropriation to the MN DNR.
- The Leech Lake Band of Ojibwe, supporting the natural resource restoration of the Mississippi River watershed, contributed \$25,000 toward the project.
- Midwest Glacial Lakes Partnership, a nonprofit that works through partnerships to protect, rehabilitate and enhance sustainable fish habitats **in** glacial lakes **of the** Midwest for the use and enjoyment of current and future generations, also contributed \$25,000.
- Ottertail Power, an electricity provider for residential, commercial, and industrial customers in Minnesota, North Dakota, and South Dakota, contributed \$130,000 through its wetland mitigation funding.