



DAM SAFETY UPDATE

ICE HARBOR LOCK AND DAM

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG.

What residents near dams should know

Living with dams and along rivers comes with risk. Know your risk. One of the Corps' (USACE) primary missions is to ensure that inland navigation traffic can move safely, reliably, and efficiently and with minimal impact on the environment.

Living with locks and dams is a shared responsibility of residents, local emergency management, and USACE. Know your role. Listen to and follow instructions from local emergency management officials. Contact your local officials to learn about flood risk management decisions in your area. Consider purchasing flood insurance.

For additional information, see:

http://www.damsafety.org/media/Documents/DownloadableDocuments/LivingWithDams_ASDSO2012.pdf.

<http://www.usace.army.mil/Missions/CivilWorks/DamSafetyProgram.aspx>.

<http://www.nww.usace.army.mil/Missions/DamSafety.aspx>.



Project Description

Ice Harbor Lock and Dam is a run-of-river dam that maintains a navigable pool for river traffic but does not store flood waters. It is located on the Snake River about 10 miles above its confluence with the Columbia River. Lake Sacajawea, which lies directly upstream of the dam and has a drainage area of 109,000 square miles, extends upstream 32 miles up the Snake River until it reaches Lower Monumental Lock and Dam. Ice Harbor provides navigation, hydroelectric power generation, recreation, and incidental irrigation.

Ice Harbor consists of a spillway, powerhouse, navigation lock, an earth fill embankment, and fish passage facilities. Construction of Ice Harbor began in March 1956 and the project was placed in operation in December 1961. The dam is 2,822 feet long with a normal operating hydraulic height of 100 feet. The powerhouse has 603 megawatts of electrical generation capacity. The lake is surrounded by 3,576 acres containing recreation and wildlife habitat management areas.

Risks Associated with Dams in General

Every day, thousands of vessels move people, animals, and products across the country via the nation's inland rivers and harbors. This water traffic is a vital component of the nation's economy. However, the navigation infrastructure is aging. Over half of the locks and dams are over 50 years old, and the consequences of this aging infrastructure are increasing incidents of downtime with disruption to river navigation, and a higher risk of major component failures, both of which have significant economic risks. To manage these risks, USACE has a routine program that inspects and monitors its locks and dams regularly. USACE implements short- and long-term actions such as interim risk reduction measures (IRRM), on a prioritized basis, when unacceptable risks are found at any of its dams. The status of Ice Harbor Lock and Dam IRRM is provided below.

Risk Associated with Ice Harbor Lock and Dam

Based upon the most recent risk assessment of Ice Harbor Lock and Dam in 2014, USACE considers this dam to be a moderate to high risk dam, among its more than 700 dams. The risks are primarily driven by navigation lock and spillway gate failure modes, such as a lock gate hoist failure or spillway gate failure due to a significant seismic event. If one of these rare events occurs, loss of life risk would be low, but the economic consequences would be moderate to high.

Status of Interim Risk Reduction Measures

Completed/Resolved Interim Risk Reduction Measures (as of January 2016)

- Perform spillway tainter gate fit-for-service evaluation: Evaluation completed June 2012. Updates will be required as future inspections and data collection warrant.
- Update probable maximum flood: Update completed and approved August 2013.
- Perform potential failure mode analysis: Completed April 2014.
- Complete a spillway hydraulic study: Cancelled; no life safety risk reduction benefit.
- Conduct a spillway (service) bridge study: Cancelled; no life safety risk reduction benefit.

Ongoing/Remaining Interim Risk Reduction Measures (as of January 2016)

- Relocate spillway backup power generator and provide seismic bracing.
- Conduct upstream navigation lock gate reliability analysis.
- Develop a navigation lock operation plan: Recommended to be incorporated in next emergency action plan revision.
- Conduct navigation lock monolith 6 analysis: Recommended to be incorporated in next emergency action plan revision.
- Develop right abutment closure plan: Recommended to be incorporated in next emergency action plan revision.
- Stockpile emergency material such as sand and gravel.
- Develop a dam surveillance plan for high water events.
- Update emergency action plan inundation maps and generate water surface profile.
- Conduct emergency exercises.
- Update the dam safety emergency action plan.