



# McNary Lock and Dam Interim Risk Reduction Measures

U.S. ARMY CORPS OF ENGINEERS

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## Project Description

McNary Lock and Dam is located in Oregon and Washington at river mile 292 on the Columbia River. It is owned and operated by the Walla Walla District of the U.S. Army Corps of Engineers. McNary is a multipurpose project providing navigation, hydroelectric power generation, recreation, wildlife habitat, and incidental irrigation. The project includes a powerplant, navigation lock, and fishways. The McNary powerhouse has a total capacity of 980 megawatts. The Corps designed and supervised its construction, which began in 1947. The project was dedicated in 1954. All power units were in operation by February 1957.



McNary Dam is 7,365 feet long and approximately 183 feet above the streambed. This includes an earth embankment 1,620 feet long between the Washington shore and the navigation lock and an earth embankment 2,465 feet long between the Oregon shore and the powerhouse. Lake Wallula behind the dam is 63 miles long with 242 miles of shoreline and a water surface area of 38,800 acres.

## Dam Safety Program & Public Safety

The U.S. Army Corps of Engineers owns and operates 635 dams nationwide. These dams serve a variety of purposes including navigation, flood risk management, water supply, irrigation, hydropower, recreation, and environmental enhancement. As part of the responsibility for managing these dams, the Corps has a comprehensive Dam Safety Program with public safety as its primary objective.

In 2005, the Corps initiated the Dam Safety Action Classification (DSAC) System as part of its overall dam safety program to optimize public safety. The DSAC system is a method of screening Corps dams to identify dam safety issues and deficiencies and establish a relative ranking of their potential risk to the public. The Corps then uses this rating system to establish a nationwide prioritization to focus funding first on dams and navigation locks that pose the greatest risks to the public.

## Dam Safety Screening & Interim Risk Reduction Measures

The Corps is screening all its dams and assigning safety classification ratings based on two key factors: 1) an assessment of the probability (high, medium, low) of dam failure (based on confirmed or unconfirmed dam safety issues), and 2) the consequences if failure were to occur.

In May 2007, the Corps released Engineering Circular (EC) 1110-2-6064, *Interim Risk Reduction Measures (IRRM) for Dam Safety*. The circular includes a Dam Safety Action Classification Table to rate critical aspects of the dam based on known or suspected dam safety issues and engineering judgment. Using the DSAC rating system, each dam is classified from I to V, with DSAC-V being the “most safe” and DSAC-I posing the “most urgent” risk. The rating system also describes a policy for developing and implementing Interim Risk Reduction Measures (IRRM) to reduce the probability or consequences of unacceptable performance. These risk reduction measures may be either structural or non-structural. These interim measures are designed to minimize short-term risk to public safety while pursuing long-term, permanent solutions or further investigation reveals a potential failure mode is not probable.

## McNary Lock and Dam Status

McNary Lock and Dam was classified as a DSAC-III “High Priority (Conditionally Unsafe)” because of potential failure of the navigation lock embankment area due to overtopping during maximum flood event conditions. Although the probability of dam failure is low, the consequences of failure are high. Currently there is no evidence to suggest an emergency situation exists or is about to occur. However, the Corps identified conditions that don’t meet industry dam safety standards, and the risk to public safety is unacceptable. Therefore, we’re taking priority actions to address potential dam failure.

## Response to the DSAC Rating

In response to McNary’s DSAC-III rating, the Walla Walla District assessed the lock and dam’s safety and developed an Interim Risk Reduction Measures Plan to address high priority risks identified in that assessment.

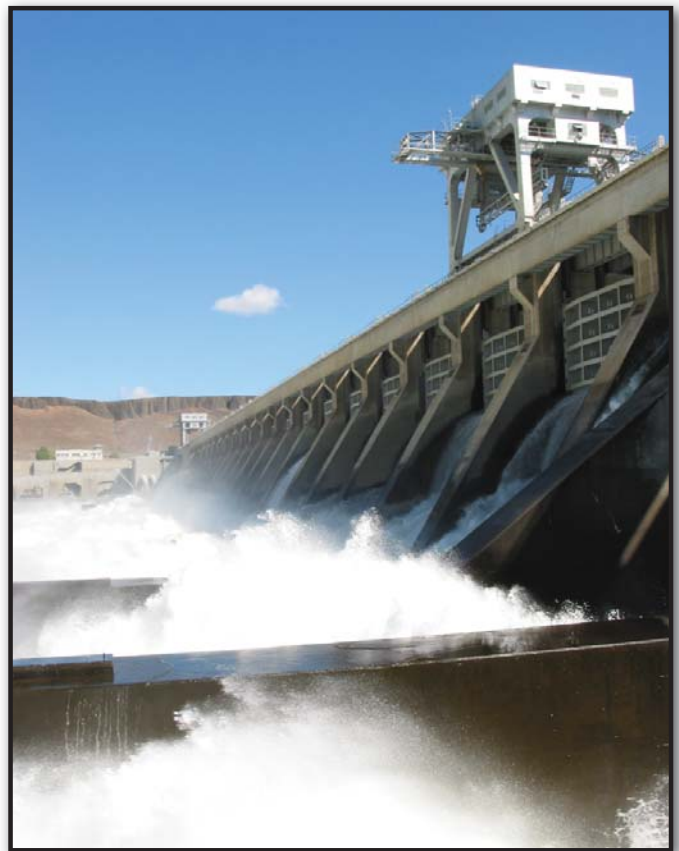
Interim measures include immediate, short-term and ongoing initiatives to minimize public risk. They are designed to better evaluate and reduce the probability of dam failure as well as reduce consequences of a failure. Prevention of loss of life is the first and foremost objective, followed by prevention of economic and environmental losses.

## What the Corps is Doing Now

To optimize public safety at McNary, we are taking the following interim risk reduction measures to reduce the potential of dam failure, loss of life, and economic and environmental impacts:

1. Repair navigation lock derrick cranes. Feb. 2011  
Status: Completed, derrick cranes are back in service.
2. Complete navigation lock stoplog inspection and repairs. Feb. 2011  
Status: Downstream stoplogs have been inspected and repaired. Upstream stoplog inspection is planned, pending receipt of funding.
3. Develop and implement north side protection procedure. Feb. 2011  
Status: Engineering scope currently being developed.
4. Reduce emergency turbine intake gate closure times. Feb. 2011  
Status: Intake Gate Closure Study Report prepared and is currently in review.
5. Install additional powerhouse foundation instrumentation.
6. Develop an Oregon and Washington fish ladders closure plan.
7. Perform potential failure mode analysis.
8. Perform spillway end sill undermining inspection and study.
9. Stockpile emergency sand and gravel.
10. Update the dam surveillance plan.
11. Conduct emergency exercises.
12. Update the emergency action plan.

These and other short-term actions allow us to operate the dam, meet public safety objectives, and continue to review the lock and dam while pursuing long-term repairs as appropriate.



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