Lock & Dam 3, Mississippi River, MN/WI

Location

Mississippi River mile 797, 6 miles upriver from Red Wing, Minnesota. Goodhue County, Minnesota, and Pierce County, Wisconsin.

Existing Structures

Lock and dam consists of a 110' x 600' chamber, a gated control section with four 80' long roller gates, and a series of low overflow embankments on the Wisconsin side.

Annual Tonnage

7,057,358 tons of cargo passed through Lock and Dam 3 in 1,086 commercial vessels during the 2007 navigation season. Commodities shipped included grain, fertilizer, aggregates, petroleum, and coal.

Summary of Problems

An outdraft current has resulted in many navigation accidents. The embankments on the Wisconsin side are deteriorating. A navigation accident can lead to embankment overtopping and failure. An accidental drawdown would close navigation and force shutdown of two large power plants.

Corps of Engineers Actions

St. Paul District will expend $1,400,000 in FY08 to develop the scope for a pile-load test in support of guidewall design, develop plans and specifications for the first stage of construction (spot dikes), and real estate acquisition. The total project cost is $78,600,000 for construction in FY10-FY13. The highest priority work is the channel improvements and guidewall extension at a cost of $25,000,000 and the embankment repair which is estimated at $26,000,000.

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Transportation importance to the system

Lock and Dam 3 is located on the Mississippi River six miles upstream from Red Wing, Minnesota. The project was authorized as part of the Upper Mississippi River 9-Foot Channel Project by under the Rivers and Harbors Act of 1930. Lock and Dam 3 is a navigation dam completed in 1938 with four moveable roller gates and a single 110' wide by 600' long lock. Lock and Dam 3 underwent major rehabilitation during 1988 through 1991. About 1,100 commercial tows and 11,000 recreational boats pass through the lock each year.

Risk and Reliability, Economic Impacts of Unscheduled Closure

Lock and Dam 3 is connected to high ground on the Wisconsin side primarily by low-lying ground consisting of natural river levee banks, a series of sheet pile and rock overflow weirs called spot dikes and sections of constructed embankments that overtop during higher levels of river discharge. The constructed parts of the embankment system were not built to modern standards of engineering design, and have been deteriorating since the dam was completed despite a series of repairs.

The outdraft conditions have resulted in several tow accidents that endangered the dam structure. The Wisconsin embankment conditions have reached an unacceptable level of instability and the system is subject to eminent failure. The estimated cost of a 35-day unscheduled loss of pool is $34,400,000 for tow delay costs and $36,000,000 for shut down of the Prairie Island nuclear power plant and the Alan S. King Power Plant (Bayport, Minnesota – St. Croix River). These costs do not reflect the adverse impacts upon the extremely high volume of recreation traffic that uses Lock and Dam 3. Nearly 11,000 recreational craft were locked through Lock and Dam 3 in 2007.

Scope of work and cost

An extended landward guidewall with channel modifications has emerged as a preferred navigation safety improvement. The embankments restoration alternative that was approved in the GRR/EIS is to reconstruct the spot dikes in the upper embankments, raise the embankment near the dam, and construct two overflow spillways along the lower embankment. St Paul District will expend $1,400,000 in FY08 to develop scope for pile-load test in support of guidewall design, develop plans and specifications for first construction contract on upper embankments, and real estate acquisition. The total project cost is $78,600,000 for construction in FY10-FY13. The highest priority work is the channel improvements and guidewall extension at a cost of $25,000,000 and the embankment repair is estimated at $26,000,000. These estimates do not include environmental enhancements such as a fish passage.

The Project is cost-shared 50/50 with the Inland Waterways Trust Fund. Through FY 07, approximately $6,000,000 has been expended for the project. Work in FY 07 included gaining approval of the General Re-evaluation Report (GRR), Environmental Impact Statement (EIS), design development, and site investigations. **Efficient funding in the amount of $6 million could be used in FY 2009 to award pile-load test contract in support of guidewall design, develop plans and specifications for the first stage of construction (spot dikes), and real estate acquisition.**

Summarized Financial Data	FY 2009 Construction
Total Estimated Project Cost	$78,600,000 [1]
Allocations thru FY 2007 (CG)	$6,418,000
Allocation for FY 2008(CG)	$986,000
Budget Request for FY 2009 (O&M)	0
Balance after FY 2008 (O&M)	$71,196,000

In accordance with the cost-sharing and financing concepts reflected in WRDA 1986, 50 percent of the total cost of construction will be derived from the Inland Waterways Trust Fund. Source US Army Corps of Engineers

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