WATERWAYS COUNCIL, INC.

Emsworth Locks & Dams

Waterways Council, Inc. is the national public policy organization advocating a modern and well-maintained national system of ports and inland waterways.

Location	On the Ohio River downstream from Pittsburgh, Pennsylvania. Emsworth: Mile 6; Dashields, Mile 13.3; Montgomery Mile 31.7
Existing Structures	Each project has a 110’ x 600’ main lock and 56’ x 360’ auxiliary lock. Emsworth was built in 1921, Dashields in 1929 and Montgomery in 1936.
Annual Tonnage and Projected Traffic Growth	In 2008, 25.5 million tons of commerce worth $2.6 billion transited one or more of these locks. 74% of this traffic was coal. Other important commodities included aggregates, petroleum and iron/steel. Projected Traffic Growth is 40 million tons by 2030 *(source: Ohio River Main Stem Systems Study – Interim Feasibility Report)*
Summary of Problems	Emsworth, Dashields and Montgomery are the only projects on the Ohio River without 110’ x 1200’ main chambers. The costs associated with major rehabilitation and major maintenance over a 50 year economic design life may exceed the cost of replacement with new larger facilities. Any closures of the main chambers for repairs force greater future reliance on the very small auxiliary chambers.
Corps of Engineers Actions	Miter gate repair will proceed and the scheduling of future inspections will be evaluated.

Emsworth Locks and Dam

Project Description

Emsworth Locks and Dams are located on the Ohio River immediately downstream of the City of Pittsburgh. The main channel dam and locks are located at river mile 6.2 and the back channel dam is located at river mile 6.4. The Emsworth locks consist of a 110 ft wide x 600 ft long main chamber and 56 feet wide x 360 feet long auxiliary chamber. The structural components of the project are the oldest of any project on the Ohio River, dating back to 1919 to 1922 when Emsworth was constructed.

The Emsworth Dams are presently in an exigent situation. Prior to temporary, emergency repairs to the erosion protection downstream of the dams, there were 10 foot deep scour holes and 65 percent of the erosion protection was in a failed state. A temporary repair of the erosion protection was completed in January 2005 by infilling the scour holes with stone. Due to the temporary nature of the repair, soundings are required on an annual basis and following major flood events until a permanent repair is in place. Due to the extreme corroded state of the dam gates, failure of any one of the thirteen lift gates would most likely cause a portion of the stilling basin to fail and possibly undermine the dam. There is presently a 74 percent likelihood of failure of one of the dam gates. The systems are proven to be unreliable due to multiple failures within the past four years. Both sets of the original emergency bulkheads are in a red tag status for use where people will be working behind them. The nature of the deterioration is un-inspectable corrosion and thinning of plies of connected plates and shapes. A failure of a connection would be rapid in comparison with our ability to give ample warning time (with the use of instrumentation) to workers protected by the bulkheads, creating a plausible loss of life scenario. As a result, replacement of the bulkheads was approved.

Transportation Importance to the System

Emsworth L/D is the first of six navigation facilities on the Ohio River operated by the Pittsburgh District. In 2008, 25.5 million tons of commerce worth $2.6 billion transited one or more of these locks. 74% of this traffic was coal. Other important commodities included aggregates, petroleum and iron/steel. Other important commodities included aggregates, petroleum and iron/steel. Electric utilities move coal from mines in Pennsylvania and Ohio to power plants serving the mid-Atlantic, southeastern and Midwestern regions of the country. Steel companies move coal from West Virginia and Kentucky mines to coking facilities above Emsworth. Construction companies use the project to move materials like stone, sand and gravel, and cement into the Pittsburgh area.

Risk & Reliability, Economic Impacts of Unscheduled Outages

Failure of any of the dam lift gates could cause a portion of the stilling basin to fail, possibly undermining the dam. Reliability analysis shows that the dam gates, which were not yet replaced, have a 74% likelihood of failure. Loss of Emsworth Pool and navigation may occur as a result. Shippers using Emsworth have estimated annual transportation savings of $130 million. During low

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flow conditions loss of the pools of the Ohio, Monongahela and Allegheny Rivers at the Point of Pittsburgh may occur and all navigation would cease. If the Emsworth pool is lost, two major facilities dependent on river transportation are impacted – the US Steel Clairton Works, the largest coke plant in the United States and the Bailey/Enlow Fork Complex owned by Consol Energy, the largest underground coal mine in the United States. Disruption in coal supply and transportation would also impact steel plants and coal-fired electric power plants. The impact of the loss of Emsworth pool on the local economy and other communities would be substantial. Approximately 11,700 jobs would be directly at risk due to loss of navigation and disruption to services and material. Lost wages alone would range from $1.5M to $2.2M per day.

The project is undergoing major rehabilitation work. The project received $33.287 in ARRA (stimulus) funding, and $23.619 was appropriated in FY 10. $11.5 million was requested in FY 11.

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