



# MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

*Rely on us.*

TO: Commissioners Simpson, Helgeson, Manning, Mital and Brown  
FROM: Mark Zinniker, Generation Engineering Supervisor  
DATE: November 23, 2016  
SUBJECT: Leaburg Dam Roll Gate Hoist Improvements  
OBJECTIVE: Information Only

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## Issue

In recent years, EWEB experienced the catastrophic failure of two hydraulic motors used to hoist the Leaburg Dam Roll Gates. The hydraulic motor for Roll Gate No. 2 failed in January 2012. EWEB was in the process of completing replacement of that hoist system with an electric motor-driven system when the hydraulic motor for Roll Gate No. 1 failed in December 2014.

## Background

Following failure of the second hydraulic motor, the Federal Energy Regulatory Commission's (FERC's) Regional Engineer for Dam Safety directed EWEB to replace the failed hoist system for Roll Gate No. 1 with an electric motor-driven system as soon as possible and prior to the 2015/2016 wet weather season. The FERC also directed EWEB to proactively replace hydraulic motor hoist system for Roll Gate No. 3 with an electric-driven system due to the demonstrated unreliable performance of the hydraulic motors. The FERC required that EWEB accomplish the Roll Gate No. 3 hoist system replacement prior to the 2016/2017 wet weather season.

The Board of Commissioners approved contract amendments for Knight Construction to replace the hydraulic-motor driven systems on May 5<sup>th</sup>, 2015. Knight Construction was successful in completing replacement of the failed Roll Gate No. 1 hoist system prior to onset of the 2015/2016 wet weather season.

## Discussion

Knight Construction mobilized back to Leaburg Dam for replacement of the third and final hydraulic motor-driven hoist system in June 2016. Their work went well and EWEB approved dry testing of the new Roll Gate No. 3 system on November 2<sup>nd</sup>. Following final inspections of the gate systems in early November, Wildish Construction completed removal of the isolation bulkheads in front of the roll gate on November 16<sup>th</sup>. EWEB has commenced wet testing of the new hoist system and will continue to test the equipment over as broad of a range of gate openings as winter river flow conditions allow. Performance of all three electric-driven systems has been satisfactory to date and

EWEB staff are very pleased with the enhanced reliability, operational capabilities, and expected service life of the new hoists.

During testing of the new hoist systems, EWEB staff observed indications of excessive wear on the ‘teeth’ of the racks and cog wheels of all three gate systems. These teeth are what the gates use to ascend and descend as necessary to vary gate opening with changes in river flow. The observed locations and levels of wear are not unexpected on gates with 88 years of service life. Based on investigations and measurements taken during the recent construction work, EWEB’s engineering consultants are developing repair plan options for the worn teeth. EWEB expects to select a repair approach in the next few months for implementation on one of the gates during the summer of 2017. This work will result in another construction period at Leaburg Dam, but the duration is expected to be weeks in length rather than the five to six month construction periods that have occurred during the last three years.

Regarding the overall cost of the Leaburg Dam hoist replacement work, total spending for work on all three gates is expected to reach \$7.4 million by the end of 2016. Litigation between EWEB and the hydraulic-motor system designers, construction contractor, and equipment supplier is underway to recover costs associated with recovery from the catastrophic failures. EWEB is unable to publicly comment on the litigation at this time.

**Recommendation**

None – Information only

**Requested Board Action**

None – Information only