



MEMORANDUM

1601 5th Avenue, Suite 1300
Seattle, WA 98101

To: Michelle Giguere – Summit Strategies Date: **July 13, 2018**
From: Dan Hartford, PE & Bob Riley, PE Job No. **1700288**
Subject: Willamette Falls Progress Report File No.

KPFF has been retained by Summit Strategies for the Willamette Falls Locks Commission to provide preliminary engineering services to help inform the commission regarding the current condition of the Locks.

To date, KPFF has completed the following tasks:

- Performed initial site visit and preliminary visual condition assessment on May 30, 2018
- Conducted a preliminary review of the Willamette Falls Lock Engineering Study, Large Scale Capital Costs, Prepared for Clackamas Heritage Partners by INCA Engineers in July, 2007.
- Conducted a preliminary review of the Willamette Falls Locks Evaluation Report, Prepared for USACE by INCA Engineers in August, 2011.
- Conducted a preliminary review of the Willamette Falls Locks Interim Engineering Design Report, Prepared for USACE by Tetra Tech (formerly INCA Engineers) in March, 2013.
- Received full historic documentation package from USACE on July 2, 2018
- Preparing a Draft Field Report documenting our site observations and photo documentation of the facility

Summary of initial observations:

Our May 30th site visit found the lock system in relatively good condition. All miter gates were operable and the condition of major structural, mechanical and electrical/control equipment appears to be consistent with previous reports. The only notable deterioration in lock condition is the subsidence of the pedestrian walkway on the West Linn side of lock chamber 4, and the condemning of lock control stand 3 (LCS3) adjacent to lock gate number 6. The ground subsidence at lock chamber 4 is caused by loss of backfill behind the timber crib wall that sits several feet in front of (towards the lock) an ashlar masonry wall, caused by through wall leakage noted in the 2007 report. Lock control stand 3 sits on an elevated timber tower and was condemned because the USACE has determined that this elevated structure is no longer safe for personal access. Note the loss of lock control stand 3 has minimal impact on lock operations, because lock gates 6 and 7 can be operated from lock control stands 2 or 3.

The March, 2013, report states that three of the miter gates were red tagged due to severe corrosion of the gudgeon anchorages. Our observations confirmed that the gudgeon anchorages are corroding and there appear to be some anchorage displacement issues with the miter gate gudgeon systems. We

are concerned about the loss of back fill in lock chamber 4, and this situation should be repaired prior to lock re-opening.

Note that the above statements are based only on our initial site observations and have not been fully evaluated and backed up by engineering calculations. We have also not yet had an opportunity to consult with USACE, but will do so now that this preliminary report is complete.

Next Steps for KPFF:

- Complete an in-depth review of historic documentation
 - Complete an in-depth review of previous technical calculations and analysis.
 - Prepare independent engineering analysis of critical elements.
 - Develop a detailed list of capital improvements needed prior to lock reopening (including estimated construction costs).
 - Develop a detailed list of additional capital improvements and annual maintenance expenditures needed to operate the locks (including estimated construction costs).
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