

Diking District 5 Dike Repairs Zero-Rise Analysis Report

Draft Submittal

Submitted to:

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Section 1—Executive Summary

The purpose of this report is to document the zero-rise analysis for the flood hazard permit application for the Diking District 5 Dike Repairs project. The project limits for the dike repairs extend along Union Slough from approximately one-quarter mile upstream of the Interstate 5 (I-5) bridge, to the northbound State Route 529 (SR 529) bridge at the downstream end of the project (See Figure 1).

The hydraulic modeling is based on the effective FEMA model, that has been subsequently modified for existing conditions in recent studies and was further updated to reflect current conditions for this project. The updates in the existing conditions model include the setback dike constructed across Smith Island from the Conditional Letter of Map Revision (Otak, 2016), recent bathymetric data and topographic survey, and the addition of the I-5 bridge geometry to the hydraulic model. The proposed conditions model was developed using the updated existing conditions and using the proposed dike and erosion protection dimensions within the project limits. The results of the zero-rise analysis for the Diking District 5 Dike Repair project indicate that no increase in 100-year water surface will result from the proposed improvements. The proposed repairs will shift the dike centerline landward by a small amount landward and reduce slopes on the waterside in some areas. Riprap erosion protection will be added to the waterside, and the dike will be constructed to a 15.0' top elevation (NAVD88) and to a minimum 15' top width. The additional top width is proposed to extend on the landside to minimize encroachment on the waterside to the extent feasible. The toe of the proposed riprap erosion protection presents a minor encroachment into the slough on the waterside at some locations, such as under the I-5 bridge.

However, due to the small shift in dike centerline landward and the reduced slopes on the waterside, the results of the analysis indicate that no increase in the 100-year water surface elevations will occur as a result of the project.