



# South Non-Urban Levee Evaluations Project

## Ash Slough Study Area Summary

The California Department of Water Resources (DWR) Division of Flood Management conducted a levee evaluations program to assess the existing conditions of levees in California's Central Valley from 2008 to 2015. The Urban Levee Evaluations (ULE) Project addressed approximately 350 miles of Project<sup>1</sup> and non-Project<sup>2</sup> levees protecting populations of 10,000 people or more. The Non-Urban Levee Evaluations (NULE) Project provides a non-urban level of investigation to the remaining Project levees (over 1,200 miles) protecting populations of fewer than 10,000 people. Non-Project levees for the northern and southern areas of the Central Valley (about 275 miles) are considered appurtenant and are included under NULE when these levees protect part of a basin partially protected by Project levees, or when non-Project levees may impact the performance of Project levees.

The primary objective of the evaluation was to assess if the levees meet geotechnical criteria. For the Ash Slough Study Area the assessment water surface elevation (AWSE) used for analyses was the 3 feet below top of levee (BTOL). The levees were divided into reaches/sub-reaches for evaluation within the southern central valley. For reaches/sub-reaches not meeting geotechnical criteria, conceptual remedial alternatives and screening-level cost estimates were prepared.

### The Study Area

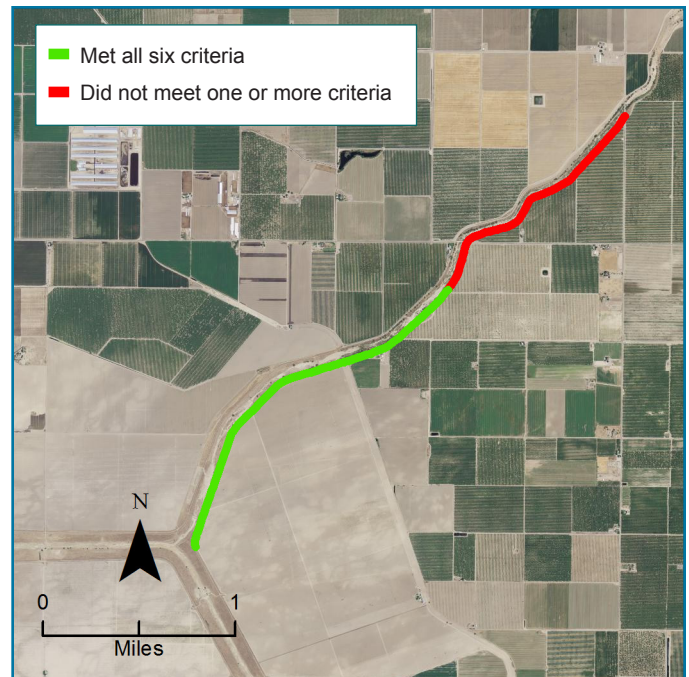
The Ash Slough Study Area levees are located on the left bank of Ash Slough in Madera County, California, approximately ten miles southwest of Chowchilla. There are a total of 3.4 miles of levee within the study area. These levees were divided into four reaches/sub-reaches for screening-level static analyses.

### The Scenarios

Levees in each reach/sub-reach were analyzed for five static NULE criteria at the AWSE: freeboard, through seepage, underseepage, landside slope stability, and waterside slope stability. No seismic analyses were performed.

### The Results

For the Ash Slough Study Area, approximately 1.36 miles of levee met all static NULE criteria at the AWSE. The reaches/sub-reaches that did not meet static NULE criteria were further evaluated to identify conceptual remedial alternatives. The dimensions of these alternatives were verified by analyses, and then a screening-level Class 4 cost estimate was prepared for planning purposes. The chart on the following page summarizes the findings of the existing condition static assessments.



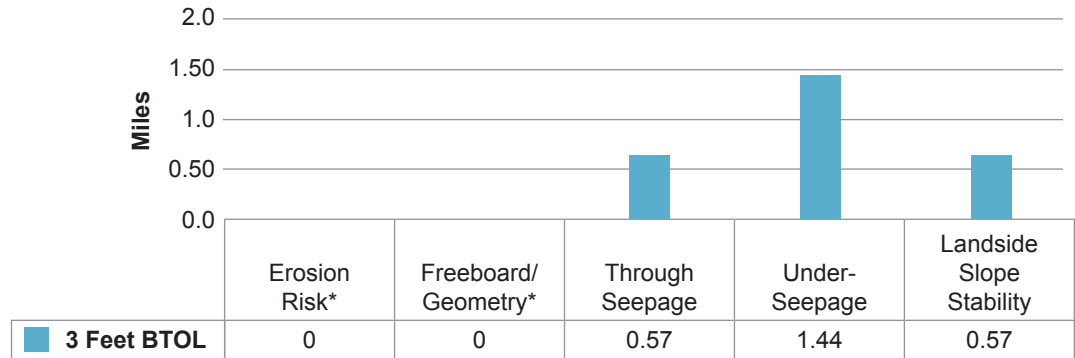
**Ash Slough Study Area Levees**

#### Footnotes:

- 1 Project Levee – A levee or flood wall that is a facility of the State Plan of Flood Control as defined in *Public Resources Code Section 5096.805*.
- 2 Non-Project Levee – A levee or flood wall that is not a project levee as defined above.

### Total Miles of Levee That Do Not Meet Static NULE Criteria

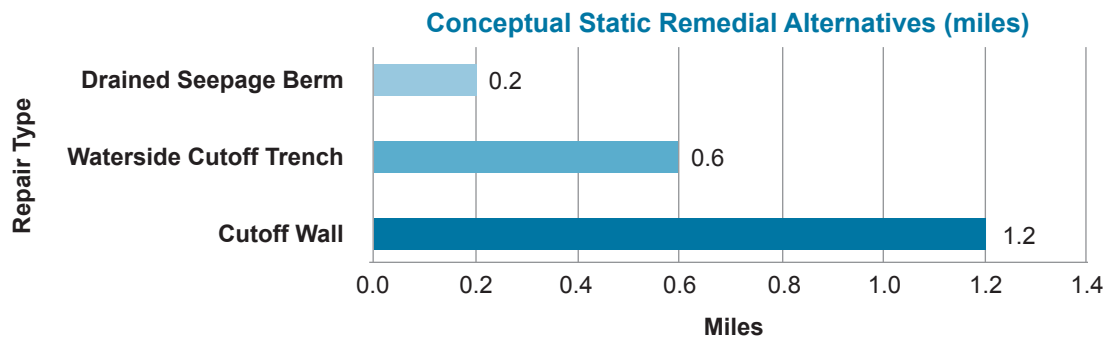
Total Miles of Levee in Study Area = 3.4



\* Erosion and freeboard are not typically deficient across an entire reach

### Conceptual Remediation

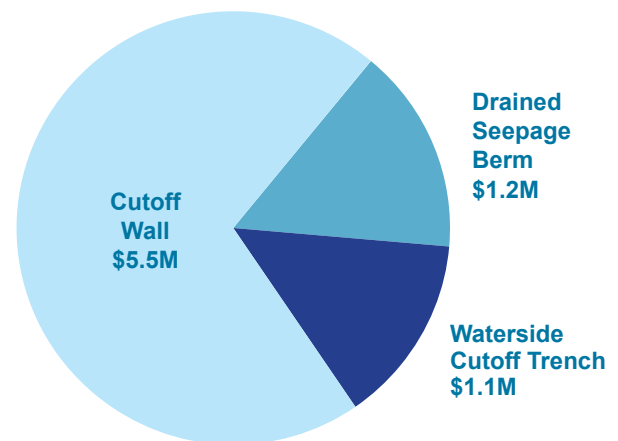
Property access on the landside of the levee is often limited, so typical conceptual static remedial alternatives in the Ash Slough Study Area consist of installing cutoff walls along the centerline of the levees, drained seepage berms along landside of levee to address seepage deficiencies and a waterside cutoff trench to address both seepage and stability deficiencies. The total length of each type of repair in the study area is depicted in the graph below.



### Costs

Screening-level Class 4 cost estimates were prepared on a 2013 basis<sup>3</sup>. Class 4 estimates are not design-level cost estimates. However, they do include construction cost and owners' "soft" costs, such as permitting, legal, environmental mitigation, and contingency. The total estimated costs of conceptual static remedial alternatives for all reaches in the study area that do not meet NULE criteria are shown in the adjacent pie chart.

### Total Remediation Costs (\$7.8 Million)



#### References:

*Geotechnical Overview Report Volume 1, Existing Conditions – Ash Slough Study Area, Non-Urban Levee Evaluations Project.* Kleinfelder, August 2014.

*Geotechnical Overview Report Volume 2, Remedial Alternatives – Ash Slough Study Area, Non-Urban Levee Evaluations Project.* Kleinfelder, January 2015.

#### Footnotes:

<sup>3</sup> 2013 Basis – Industry construction cost derived from 2008 data with a 4 percent escalation included per year.

Reference sources for this document are available at <http://www.dwr-lep.com/ath>  
 For further general DWR information or to obtain copies of DWR publications,  
 please contact DWR Public Affairs (916) 651-7512 or <http://www.water.ca.gov/publicaffairs.cfm/>

