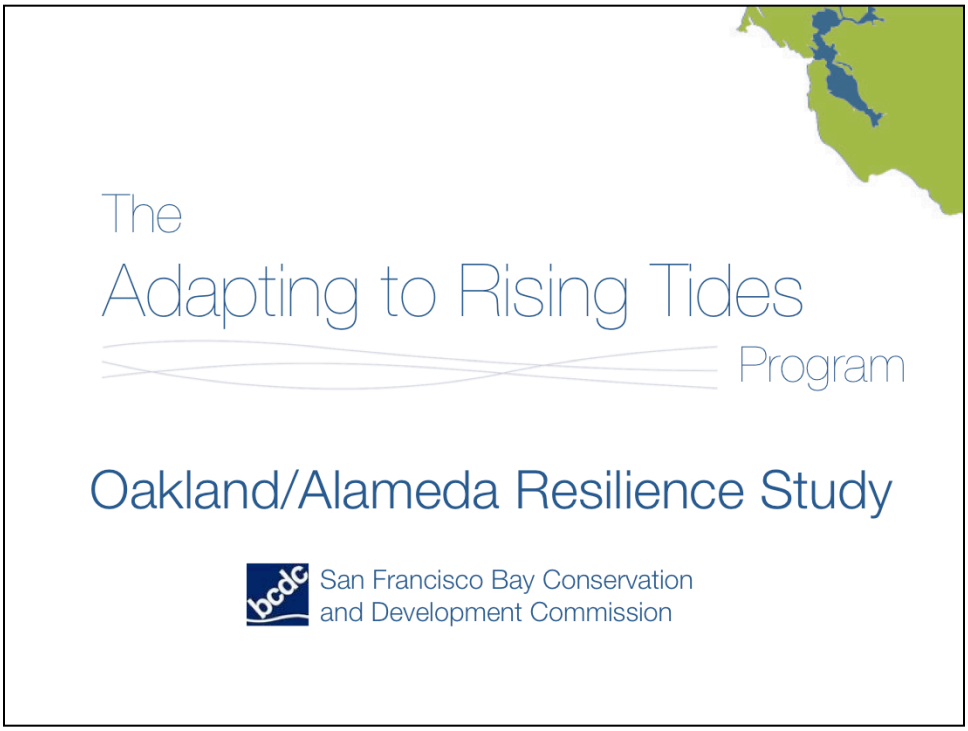


Adapting to Rising Tides project
www.adaptingtorisingtides.org

Meeting Objectives

1) Visit site-vulnerabilities in the Bay Farm Island area and understand their geographic and functional relationships

2) Explore possible actions for the Bay Farm Island Key Planning Issue

3) Develop potential adaptation responses (suites of actions) for Bay Farm Island

The Plan step is where we develop possible actions in adaptation responses, and evaluate & select the most relevant responses to move forward. Today we are focused on developing adaptation responses – we drafted responses based on what we learned during the assessment & what the ART program has learned overall – today is a chance for you to see them and give feedback to make them more relevant.

Key Planning Issues

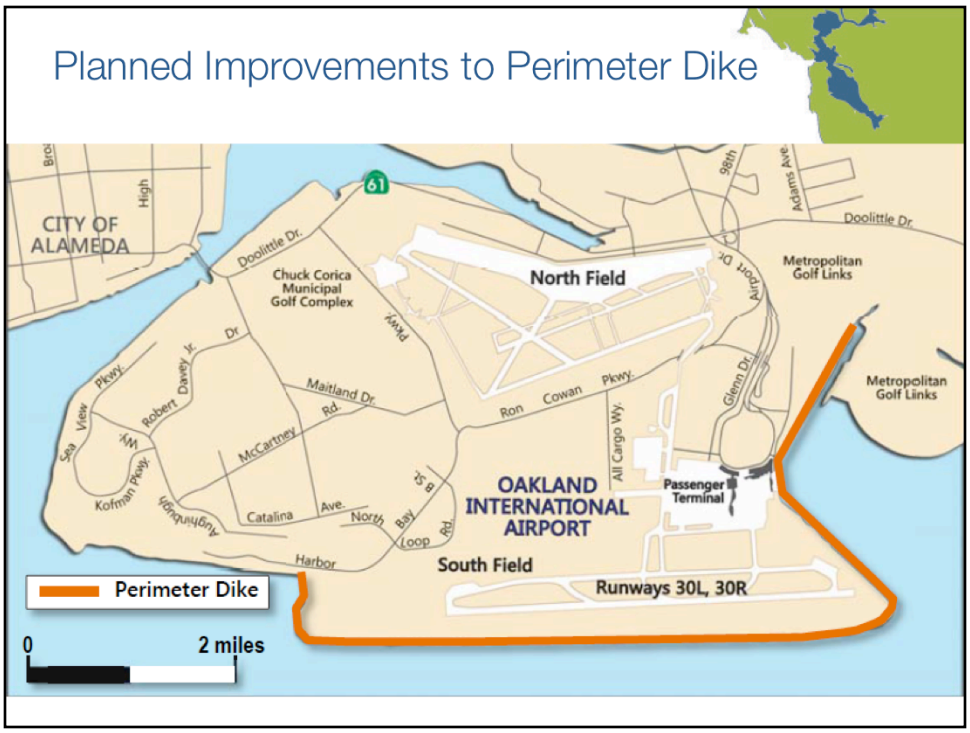
Access on and off Bay Farm Island and to and from Oakland International Airport (OAK) is already limited due to the island's geography, is vulnerable to future flooding and seismic events, and will affect the economy, public health and safety, and community function if disrupted.

Oakland International Airport (OAK) is vulnerable to future flooding and seismic events both within its facilities and through its dependence on other assets.

The Oakland/Alameda study area contains shoreline habitat, including habitat for the endangered California Ridgeway's Rail. However, much of this habitat exists in the form of fringing marshes, which are not predicted to persist given sea level rise, sediment projections and surrounding land uses.

Current Flood Risk Map

Note that South Field is protected-

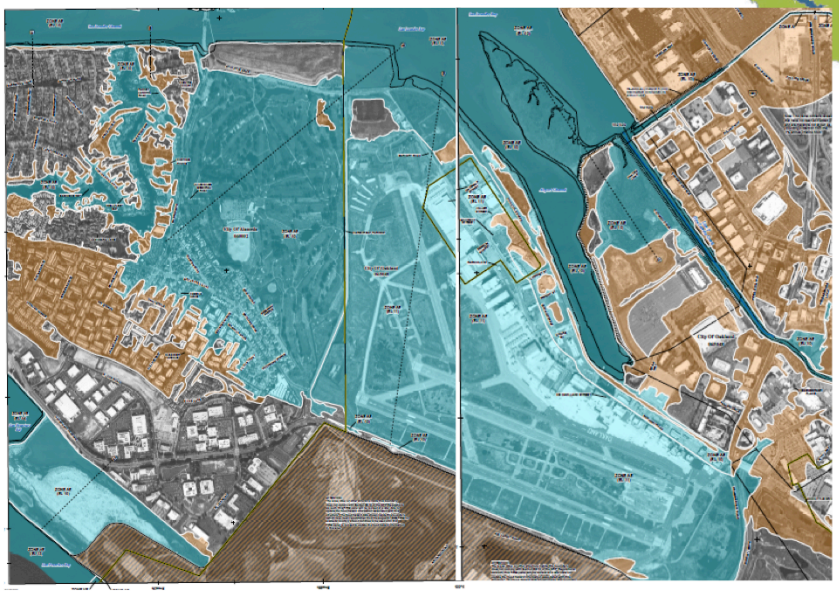


Note that South Field is protected under current and near term flood levels. Planning is underway for upcoming seismic work. Planned improvments-construction starts next year

-Raise the APD to provide shoreline and flood protection against anticipated mid -century sea-level rise, tidal and storm surges.

- Improve stability and reduce water seepage of the dike by installation of new embankments, and deep cement-soil mix walls.
- Strengthen the dike against liquefaction by the installation of underground rock columns.
- Strengthen the dike against wave action by the installation of additional rock armor.

Preliminary FIRM Update



Future Flood Risk (AECOM)

Figure 3. Sites In The DEM Contributing To Inundation In Low SLR Scenario

Future Flood Risk (AECOM)

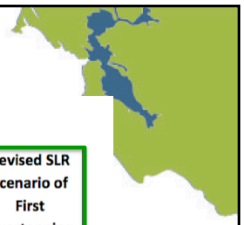


Table 3: Modified Low-Lying Areas in the DEM Contributing to Inundation

Site	Average DEM Elevation (feet NAVD88)	SLR Scenario of First Overtopping (inches SLR)	Approximate Wall Height from Ground (feet)	Average LiDAR Elevation (feet NAVD88)	Modified Elevation (feet NAVD88)	Revised SLR Scenario of First Overtopping (inches SLR)
A. Tide Gate Structure						
West Segment	10.0	36	2.0	10.0	NA	36
East Segment	9.0	36	2.0	9.5	9.5	36
B. Veterans Court Seawall						
North Segment	7.2	24	3.0	10.0	10.0	48
Middle Segment	5.9	12	3.0	10.0	10.0	48
South Segment	7.5	12	3.0	10.0	10.0	48
C. Doolittle Drive/Harbor Bay Parkway Intersection	8.5	24	NA	9.0	9.0	36
D. Doolittle Drive	8.5	24	NA	9.0	9.0	36
E. East Doolittle Drive	8.5	24	NA	9.0	9.0	36

NA = No change or not applicable

Note: Average DEM elevations indicate the average of elevation multiple DEM grid cells along each feature. Average LiDAR elevations indicate the average of multiple elevation points along each feature.

This areas aren't QUITE as low as we thought-remember Kris walking through the revised inundation? They are still very low. 36" is a 50 year water level here-48" isnt necessarily impossible in present day (although it is >100-yr coastal event).

Future Flood Risk (AECOM)

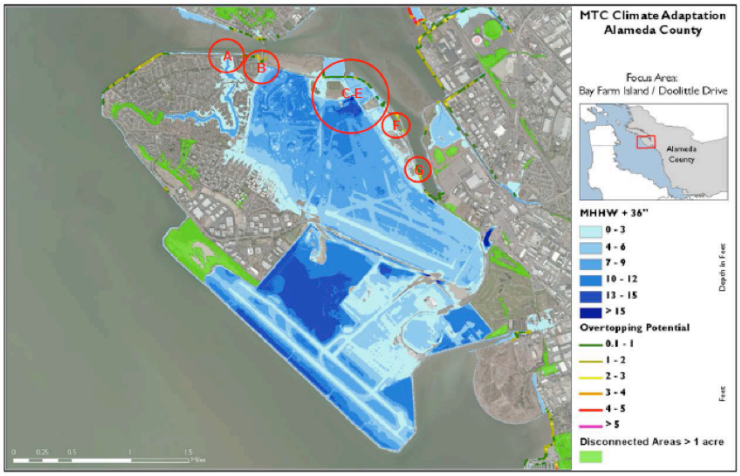


Figure 12. Updated Inundation and Flooding Analysis Using the Modified DEM

Note: System-wide inundation of Bay Farm island is expected at 36 inches of SLR. The tide gate wing-wall (Site A), the Harbor Bay Club shoreline (Site B), and sites along Doolittle Drive (Sites C-G) are the critical inundation pathways in this scenario.

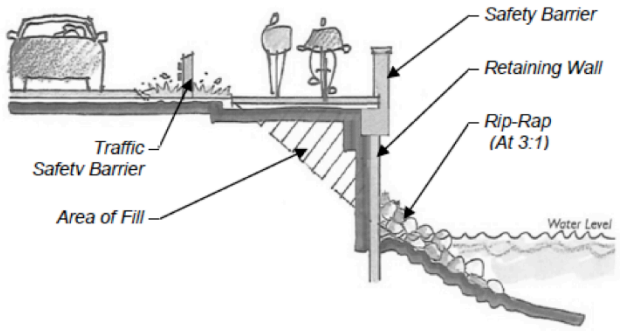
Proposed Bay Trail Alignment

COASTAL ALIGNMENT

Proposed Bay Trail

B. EMBANKMENT WIDENING BY RETAINING WALL TRAIL TYPE

Conceptual Engineering Design Features

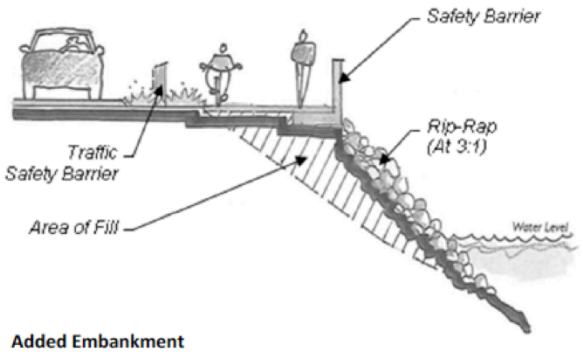


Retaining Wall with Soldier Pile and Lagging Wall or Precast Concrete Sheet Pile

$3800-6800/linear foot (21-38 Million total). Could provide flood protection improvements

Proposed Bay Trail

C. ADDED EMBANKMENT TRAIL TYPE

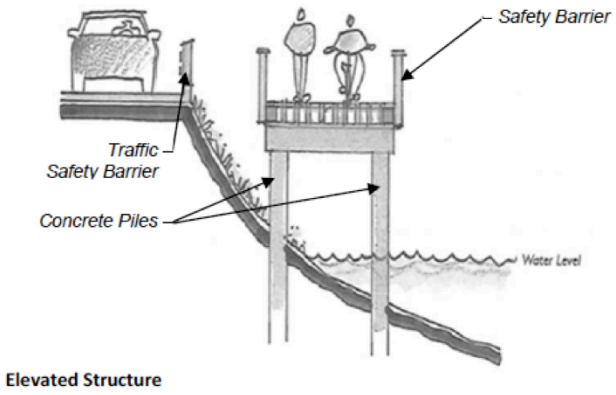


Added Embankment

$2800/linear foot, $15M total, could provide flood mitigation benefits

Proposed Bay Trail

D. ELEVATED STRUCTURE TRAIL TYPE

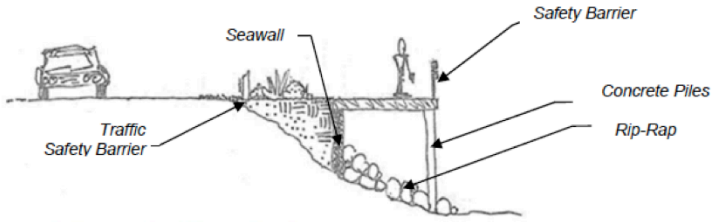


Elevated Structure

$2900/linear foot, $16M total, no flood mitigation benefits.

Proposed Bay Trail

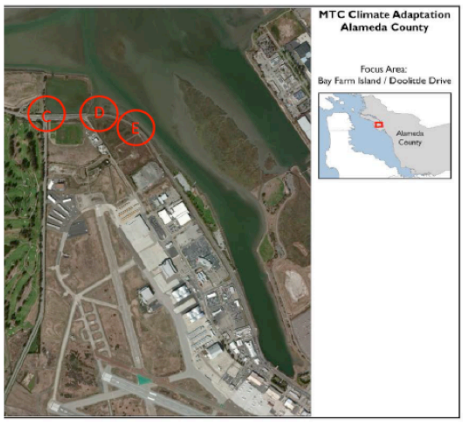
E. SEAWALL AND ELEVATED PLATFORM TRAIL TYPE



Seawall and Elevated Platform

$5100/linear foot, $29M total, could provide flood mitigation benefits.

Bay Trail and Flood Protection



How do we coordinate EBRPD and the Port/Caltrans/City of Alameda around these low points?

Segment C1 will use the existing sea wall
Segment C2 proposes elevated structure (D) which doesn't provide flood protection

Trails as Flood Protection

Michigan example, trail replacing cement flood wall. Normal river conditions are contained and the trail functions. The berm landside of the trail is the extreme flood protection.

Adaptation Responses

- How to address near term risk along Doolittle?
- Multiple property owners
- Port of Oakland and ACFCWCD mapping

Adaptation Responses

What is the long term plan?

Next Steps

- Writing Vulnerability and Risk Assessment Report
- Synthesizing three adaptation response meetings (June, July and August)
- Meetings this fall to evaluate responses and develop path to implementation