

Adapting to Rising Tides project www.adaptingtorisingtides.org

Agenda

- 9:00 Welcome, review agenda, and introductions
- 9:15 Review proposed adaptation responses
- 9:30 Discuss evaluation criteria
- 10:00 Evaluate proposed adaptation responses
- 11:30 Next steps for the study

Meeting Objectives

- Share evaluation criteria for the study based on resilience goals
- Evaluate proposed adaptation responses for the study area
- Discuss a path forward for the working group and individual agencies

What have we been up to?

- Draft Phase I Report: Vulnerability and Risk Assessment
- · Refining adaptation responses after field trips
- Meetings with City of Oakland and ACFCWCD on Coliseum flooding

...What have you been up to?



Introductions and group updates



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.

Asset and Age	n	cy Responses			1	
Vulnerability	Act	tion	Process		Actors	
GOV1: Childcare centers with out-of-date or inadequate emergency preparedness	em to a	view and update childcare center ergency preparedness and response plans address sea level rise and storm event ntingencies	Emergency and Hazard Planning		Childcare centers	
and response plans, or that do not implement plan action items, are more vulnerable to storm event and earthquake hazards.		wide technical assistance to childcare iters to support the development and intenance of emergency response plans, luding storm evacuation procedures and elter-in-place guidelines	Emergency and Hazard Planning		City of Oakland, City Alameda, DSS	
Vulnerability		Action		Process		Actors
vanorability		Prioritize resurfacing vulnerable trail segment erosion-resistant materials	Capital Planning, Project Planning and Design		EBRPD	
		Prioritize maintenance and repair of barrier- access to the shoreline and recreation facility order to minimize re-routing or closure	Operations		EBRPD	
PHYS1: Although the Bay Trail is paved in N Shoreline, some of it is on top of poorly maintained levees that are vulnerable to	1LK	Stockpile materials to create ramps or path maintain safe access for those with limited during and after flooding events	Operations, Emergency and Hazard Planning		EBRPD	
erosion, which undercuts the trail.		Stockpile and use sandbags to minimize flo damage to vulnerable structures (e.g., boat meeting space)	Operations, Emergency and Hazard Planning		EBRPD	
		Effectively communicate trail closures, e.g., specific notification practices	Long-rang Operations	EBRPD		

Actions for individual agencies or asset managersm, still multiple types of actions, some policy, some planning, some project/built



- Grouping around the coliseum with a particular focus on transportation assets, community flood risk, and Damon Slough. Need participation from FEMA, AECOM, Caltrans, BART, CCJPA, Oakland, OES
- 2) BFI Group, focus on Airport and Island shoreline protection and access. Need FEMA, AECOM, EBRPD, Caltrans, OAK, City of Alameda



Actions we would have to take together, because of ownership, governance issues, etc...

FOCUS of the field trips was understanding these relationships.

We did not address end of century storm issues-as you will see as we walk through the KPIs.

- 1. 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.
- Doolittle Drive improvements*
- Bridges, Hegenberger, 98th not a consideration before MHHW+48"

- 2) Housing, community members, and community facilities are vulnerable to current and future flooding as well as seismic events. Impacts to these facilities could result in major consequences for people where they live, work, and recreate.
- Doolittle Drive improvements*
- Tide gate in Harbor Bay Isle
- Veteran's Seawall
- Hazard planning
- Damon Slough/Coliseum improvements*

- 3) The Oakland Coliseum facilities, transportation assets, and neighborhood are vulnerable to both current and future flooding due to at-capacity flood control channels and rising Bay water levels.
- Hazard planning
- Damon Slough/Coliseum improvements*

- 4) Oakland International Airport (OAK) is vulnerable to future flooding and seismic events both within its facilities and through its dependence on other assets.
- Doolittle Drive improvements*
- Perimeter Dike improvements
- FEMA work with ACFCWCD

- 5) 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.
- Doolittle Drive improvements*
- Damon Slough/Coliseum improvements*
- Marsh measures

- 6) Overarching: Permitting and regulatory issues along shoreline and with multiple owners and jurisdictions may delay or impede adaptation.
- Doolittle Drive improvements*
- Hazard planning
- FEMA work with OAK and ACFCWCD
- Damon Slough/Coliseum improvements*
- Policies for a Rising Bay
- Flood Control 2.0
- CHARG

What are evaluation criteria?

- An essential tool that agencies, organizations, and communities can use to develop a balanced hazard mitigation + climate adaptation plan to help achieve community goals
- A way to gain perspective on how different strategies affect society and equity, economy, environment, and governance
- The balance of the "four frames" highlight benefits and trade-offs, which can be very useful when gathering political, community, and financial support for implementation
- Drawn from study resilience goals



Society & Equity

Effects on communities and services on which they rely, with specific attention to disproportionate impacts due to inequalities.

Econom

Economic values that may be affected such as costs of physical and infrastructure damages or lost revenues during periods of recovery.

Environmer

Environmental values that may be affected, including ecosystem functions and services, and species hindiversity

Governance

Factors such as organizational structure, ownership, management responsibilities, jurisdiction, mandates, and mechanisms of participation that affect vulnerability to impacts.

What are evaluation criteria?

Evaluation criteria are an essential tool that agencies, organizations, and communities can use to develop a balanced climate adaptation plan that meets established resilience goals. They can help ensure there is a clear, transparent and replicable process for making potentially challenging decisions, and can support decision making across sectors, geographies, jurisdictions, which can often feel like trying to compare apples to oranges. Although evaluation criteria alone may not provide sufficient support for making final decisions, their use will help in selecting and refining alternative adaptation responses, in recognizing and weighing trade-offs, and in determining which adaptation responses should be carried forward into implementation.

Developing evaluation criteria with input from community members and other stakeholders will help ensure a broad range of values are considered in evaluating how to respond to climate change. A robust set of evaluation criteria will provide perspective on how different adaptation responses could affect society and equity, economy, environment, and governance. The balance of these "four frames" will not only help determine which responses should move forward, but will also help highlight the benefits and trade-offs which could be very useful when gathering political, community, and financial support for implementation.

Why Evaluate and Select?

- This process can help decision-makers and community members understand tradeoffs and consequences among different strategies options and build the case for action
- Determine which strategies are high priority for implementation based on the agreed upon criteria
- Improve strategies to reduce impacts to the environment, economy, and society and equity.



Evaluation criteria play a central role in ensuring transparent decision-making and help decision-makers and community members understand tradeoffs and consequences of adaptation responses. Evaluation criteria should consider all four sustainability frames: society and equity, the environment, economy and governance, so that working group members and their stakeholders, including elected officials, grant funders, project financers, the broader community, and other interested and affected parties, have a framework to identify actions and responses that will increase the resilience of communities and the assets and services on which they rely.

Outcomes

A set of evaluation criteria to weigh benefits and trade-offs of each strategy against the community goals and the four sustainability frames

A description of the process of applying the evaluation criteria to the strategies Strategies evaluated based on the agreed upon criteria

Resilience Goals

- Maintain neighborhood function by preserving access to roads and transit, goods and services, safe and affordable housing, and outdoor recreational opportunities
- Maintain the function of the airport as a regionally significant passenger, cargo, and employment hub
- Build resilience in all phases of the disaster lifecycle-from mitigation and preparedness to response and recovery-by protecting critical community facilities, supporting community awareness, ensuring assistance through mutual aid agreements, and building capacity for effective recovery
- Preserve environmental quality by protecting endangered species, ensuring good water quality, and providing appropriate wildlife habitat
- Protect local and regional economy by preserving major employment centers, airport services, regionally significant transportation, and local infrastructure investments

SLR and storm combos – Todays 100 yr = 36" SLR = landscape-scale flooding = multi-objective solution needed

Evalua	ation ci	riteria									
Feasibility						Economic Benefits					
1 Possible with existing or expected funding sources	2 Possible within existing administrative, technical, or legal practices	3 Has high likelihood of political support		current	5 Promotes or retains jobs		6 Maintains goods and commuter movement		Maintains airpor ervices	8 Protects infrastructure investments	
Social Benefits					Environmental Benefits						
9 Protects access to jobs or services	10 Maintains shoreline access	11 Maintains recreational or educational opportunities 12 Incre awaren		ases public 13 Preserves community			14 Promotes g green (nature solutions)		Creates or aintains opropriate habita nd biodiversity	16 Maintains or improves water quality	
Governance					Builds Resilience in Disaster Lifecycle						
17 Supports or creates collaboration decision making	18 Encourages by public or private sector partnersh			20 Builds preparedness		21 Mitigates risk		22 Improves disaster response		23 Encourages resilient recovery	

Caltrans Test Case

Interstate 880 in the study area is at-grade and vulnerable to storm event flooding. Caltrans has four potential adaptation options:

- · Raise I-880 in its current alignment
- Reroute I-880 to a protected location
- Transfer traffic to other modes (rail, transit) and other roadways (I-580)
- · Do nothing, accept flood disruptions and damage

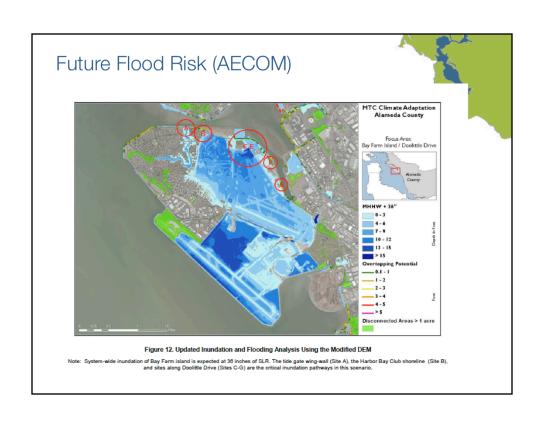
Ok, here are four hypothetical options for I-880. With your nieghbor, work through the evaluation criteria for each of the options. Mark positive/negative/neutral, you can make comments or modify the options if you wish. Take 10 minutes and then we will discuss.

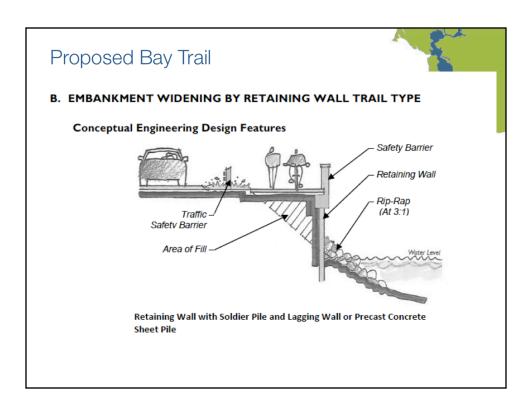
Bay Farm Island/OAK Flooding

How to address low spots along Doolittle which contribute to flooding on Port of Oakland property and in the community?

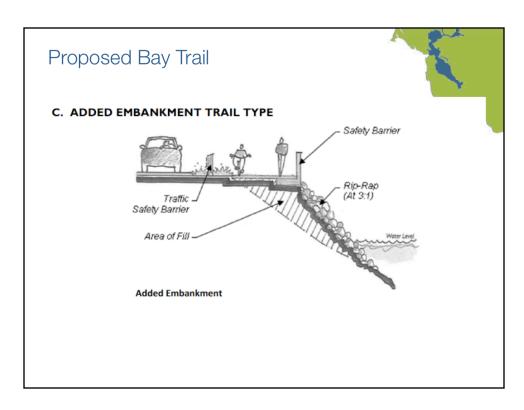
These responses do not address flooding beyond 48" of sea level rise. Higher water levels will require broader decision making about protecting or relocating the airport.

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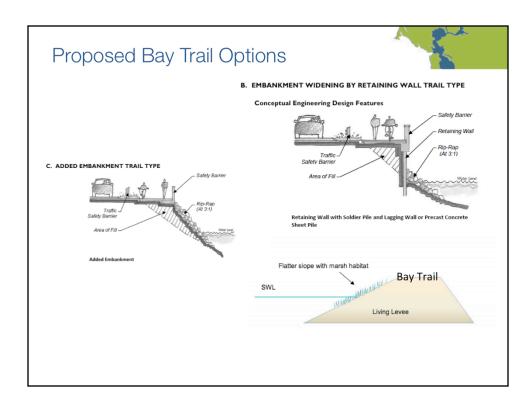
\$3800-6800/linear foot (21-38 Million total). Could provide flood protection improvements



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



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



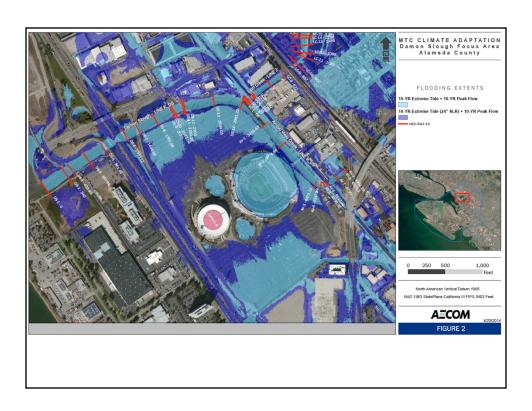
\$5100/linear foot, \$29M total, could provide flood mitigation benefits.

Coliseum Area Flooding

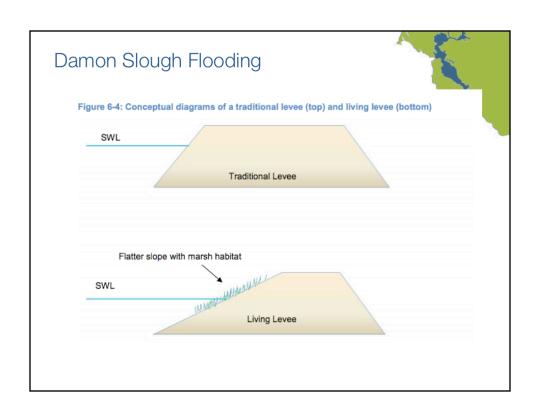
How to address joint coastal and riverine flooding?

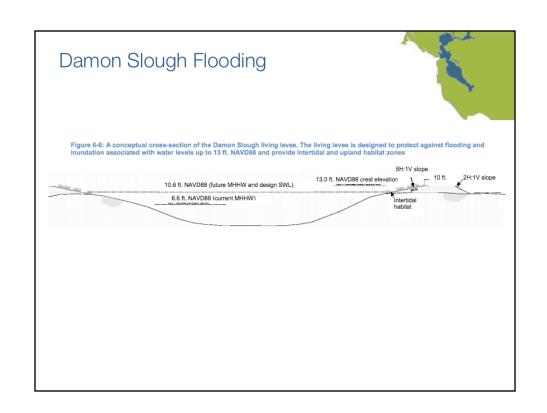
How to make planned redevelopment more resilient?

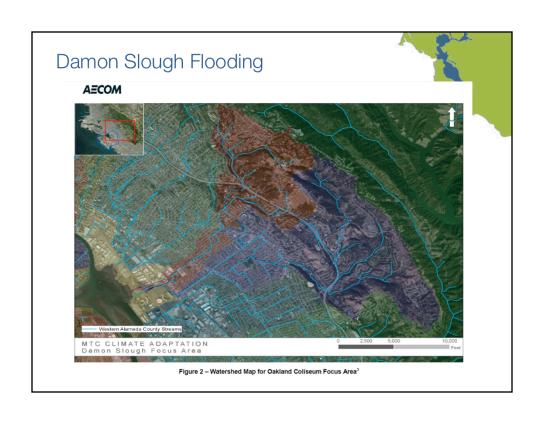
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Next Steps

- Phase 1 Report-draft posted next week?
- Next meeting on path to implementation in January
- Resilience by Design
- CHARG
- The Resilient Oakland Initiative
- 100 Resilient Cities: San Francisco, Oakland, Berkeley

Feel free to contact us with questions or input.

Oakland/Alameda Resilience Study

For more information:

http://www.adaptingtorisingtides.org/working-group/oakala/

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