

Project Partners Workshop: Subregion Adaptation Planning

Project: OAAC Adapt
Meeting Date: 04/24/2024
Meeting Time: 10:00 am – 12:30pm
Location: Zoom
Attendees: Gail Payne (City of Alameda), Danielle Mieler (City of Alameda), Brad McCrea (City of Alameda), Robert Vance (City of Alameda), Andrew Nowacki (City of Alameda), Cam Foley (City of Alameda), Jan “Yon” Novak (Port of Oakland), Joshua Polston (Port of Oakland), Ed Manasse (City of Oakland), Hoi-Fei Mok (City of San Leandro), Elizabeth Shipley (USGS), Paul Beusterien (community representative, Bay Farm Island), Jennifer Ku (EBMUD), Rohin Saleh (Aquaflows Engineering, retired County Flood Control), Hank Ackerman (County Flood Control), Sarah Church (Alameda County), Sami Harper (Water Board), Jeff Manley (EBRPD), Devan Reiff (EBRPD), Becky Tuden (EBRPD), Drake Hebert (EBRPD), Lisa Brodtmann (EBRPD), Ellen Plane (SFEI), Jeremy Lowe (SFEI), Erik Alm (Caltrans), Vishal Ream-Rao (Caltrans), Ramya Tanikella (Caltrans), Lucius Wu (Caltrans), Dana Brechwald (BCDC), Keta Price (The Hood Planner), Victor Flores (Greenbelt Alliance), Zoe Siegel (Greenbelt Alliance), Victor Flores (Greenbelt Alliance), Lauren Eisle (CASA), Lily Brown (MTC/Bay Trail), Chris Guillard (CMG), Jamie Phillips (CMG), Julia Price (CMG), Amy McCosh Leonard (CMG), Corbett Belcher (CMG), Emma Ng (CMG), Dan Matthies (Wood Rodgers), Dan Schaaf (Schaaf & Wheeler), Dane Behrens (ESA), Dilip Trivedi (Moffatt & Nichol), Delaney McGuinness (Moffatt & Nichol), Mark Northcross (NHA Advisors), Amir Zand (Earth Mechanics), Kris May (Pathways Climate Institute), Maryellen Hearn (Pathways Climate Institute), Meagan Brown (Pathways Climate Institute)

Total: 50 participants

Welcome and Introductory Presentation

Gail Payne welcomed participants to the workshop and encouraged them to indicate their affiliation in their Zoom name field.

Maryellen Hearn gave a [presentation](#) reviewing: the hazards and risks of the subregion, opportunities to change for the better, and today’s task.

Group Co-Creation Activity and Discussion

Maryellen provided overview of the interactive [Miro board](#) to facilitate discussion.

Participants walked through the activity, reach by reach. For each reach, they reviewed local considerations and preliminary concepts developed to-date, and participants were asked to share what resonates with them and what they would add or change.

Below is a screenshot of the Miro Board at the end of the meeting.



Framing for the activity (see slides):

- This activity is intended to improve our **shared understanding** of the adaptation options available for each reach and to **expand the list of options** on the table. This activity was not intended to evaluate or select options at this early stage.
- For today, we’re trying to focus **primarily on coastal flood risk**, though we recognize it is very hard to fully separate this from inland flood risk, as they are part of an interconnected system.
- We’re trying to focus as best we can on **long-term options** – think 2100 and beyond, 3.5-7 feet of SLR. Based on the SLR criteria for the long-term project, we’re looking at designing to 14-16’ NAVD88 and considering adaptations that could reach 17-19’ NAVD88.

The following captures key discussion points by reach. Items under the “discussion summary” subsections reflect comments spoken aloud as well as written comments in the Miro and Zoom chat.

Reach 18: BFI Western Shoreline

Local considerations on Miro

- Waves – larger, more energetic waves to the south, less so to the north.
- Current shoreline is largely rock revetment.

- The offshore is relatively steep, which limits the range of applicable natural + nature-based features.
- Bay Trail runs along entire reach.
- There are large undeveloped parcels to the south, constrained space to the north (residential area).
- Existing elevations of developed parcels are relatively high (13-15 NAVD88).

Preliminary concepts on Miro

- Concept 0 – No action / react + repetitive loss
- Concept 1 – Levee along shoreline + wave energy reduction w/ nature-based feature + [inland approaches]
 - Floodwall where constrained
- Concept 2 – Adding short floodwall on top of levee of Concept 1
- Concept 3 – Like Concept 1, but keep the shoreline levee lower and floodproof or elevate homes to residual risk of waves
- Concept 4 – Reserve future space for (tbd) using policy tools
 - For more pump stations? Floodable parks/plazas? Stormwater detention? Habitat and corridors?

Discussion summary

Reserving space

- Consider reserving undeveloped areas for common needs such as stormwater management, open space, or habitat.
- City of Alameda may need to acquire parcels to reserve them; can be expensive.
- North of ferry terminal – city owned; south of terminal – private.
- Develop a Land Use Zoning strategy that requires a large set back 100-150' that would create High Ground and New Parks and Open Spaces. Not a Levee! This would also allow for more nature-based coastal conditions that could evolve over time and it would allow space for management of inland storm drainage. Include seismic improvements to respond to liquefaction concerns.

Costs

- Clarify who will bear the costs of these options, especially in terms of maintaining levees over time, which could be expensive if only benefiting homeowners.
- Considering financial constraints too soon might limit exploring various solutions that could otherwise qualify for grant funding.
- In particular we need to focus on the maintenance piece for solutions long term. Capital costs are manageable with grant funding, but long-term maintenance remains an issue since entities

like the Army Corps do not cover these expenses. Local counties or recreation districts often handle levee maintenance, e.g., in Central Valley, with a focus needed on sustaining efforts.

- Maintenance costs -- existing rip rap being dislodged as happened at least once in the last decade along the southern shoreline. The federal government gave the city funding to repair the rip rap.

Lagoon and inland flooding

- Concerns about how lagoon intake might be affected; the HOA owns the lagoon and the city maintains the infrastructure, but it may require upgrades. The tide gate may not be high enough and a taller structure may need to be incorporated into any future design.
- Eventually, the entire lagoon system will need to be revamped. The lagoon is mostly an aesthetic feature and not flood control that will need to adapt as tides change.

Opportunities for nature-based features given steepness and waves

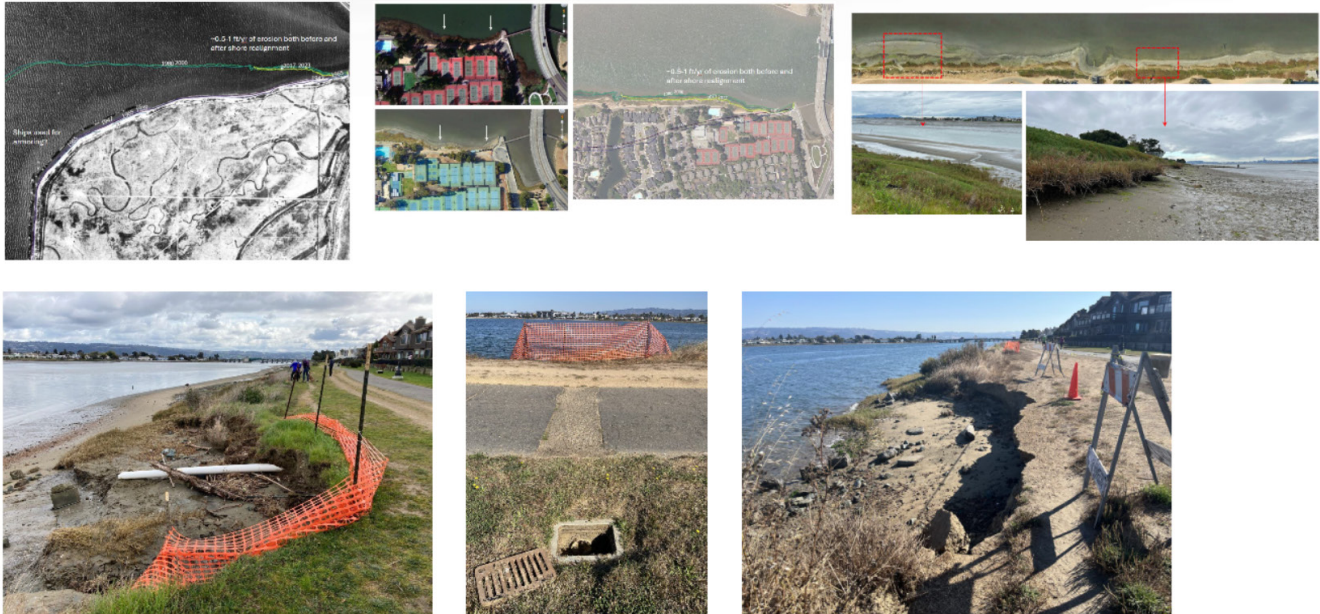
- Why the shoreline's steepness is a potential barrier to natural-based solutions noting that the seabed isn't deeper than 5 ft except right near the ferry terminal.
 - The “steepness” is evident on the contour elevation map. You can see the contour lines are much closer together to the south.
 - Northern shoreline is shallower and less steep than west-facing shoreline.
- Suggests potential for softer transitions where sea floor is relatively shallow like at parcels south of the ferry terminal, with existing park spaces being the easiest locations to modify for gentler slopes. The aim is to foster diverse habitats across different elevations.
- Not a lot of opportunity for softness here.
- Northwest-facing areas are flatter due to past fill operations.
- Questions the expectation of dynamicity and the practical value of large boulders in the environment, debating the need for cobble or rock beaches. Need to consider the habitat and maintenance value.
 - Avoid greenwashing – if this is a hard structure, call it so.
 - What do we mean by “dynamic revetment”? It depends on size of rocks, habitat value, movement of materials, cost of maintenance.
 - Limited space for rock movement landward, suggesting that dynamism is restricted. Proposed evaluating lower portions for environmental value creation with cobble flat structures down at the base.
- Suggested a long-term strategy that includes creating higher ground for new parks and spaces, which would not involve traditional levee constructions but rather developed high grounds.

Reach 16: BFI Northern Shoreline

Local considerations on Miro

- Active erosion, visible from DEMs, notable erosion near where the stormdrain pipes are located.

- Erosion occurring at places of historic fill, spilling out. Potentially also related to how the island was constructed and historic channels reappearing.
- “Ample” space landside between residential buildings and shoreline (includes Bay Trail).
- Navigation channel used by the Coast Guard is relatively close to the shoreline. Appears to maintain itself naturally (i.e., we don’t know of active dredging operations here).
- Lagoon pump station located in this reach.



Preliminary concepts on Miro

- Concept 0 – No action / react + repetitive loss
- Concept 1 – Levee along shoreline + wave energy reduction w/ nature-based feature + [inland approaches]
 - Renamed “dynamic revetment” to “wave energy reduction w/ nature-based feature” based on discussion.
- Concept 2 – Adding short floodwall on top of levee of Concept 1
- Concept 3 – Reserve future space for (tbd) using policy tools

Discussion summary

Opportunities for natural and nature-based features

- Discussed potential for oyster beds due to the presence of mud flats.
- Importance of considering interactions between landside and bayside, and across the water to Elsie Roemer Bird Sanctuary and Crown Beach, ensuring that we don’t treat them separately in our approach.

- Opportunity providing habitat for oysters and other species that might support them.
- Necessity of enhancing habitat functions along the existing shoreline marshes.
- Suggested this area as a pilot site to experiment with different restoration techniques such as sediment retention features and vegetation that can adapt to a range of water levels.
 - Good opportunity for capturing sediment for fringe marshes – they don't bring much habitat value, but good for pilot / demonstration.
 - Adjacency of navigation channel. Is there sufficient space for sediment placement? Sediment moves west to east. Sediment retention structures will help retain at higher levels without infringing on channel.
 - Channel allows access for beneficial reuse of dredged sediment.
- Suggested integrating beach features with marshes to reintroduce plant species such as the native California Seablite.
- Recommended further investigation into the widths and elevations for effective restoration.
- Suggested that historical sloughs and creeks can be studied through historical photos to develop techniques to mitigate erosion, considering how the natural system operates.
- The water is almost never calm in this area – with half a foot tall waves
- Suggested the recreation of challenging habitats along the shoreline and investing more heavily in the restoration concepts around the sanctuary parts.
- We can add this thinking to Concept 1 or create new concepts (pilot studies, etc.)
- Adjacent areas (comments from Miro board)
 - Could transform Aeolian Yacht Club into a floating home community (across the water on Alameda Island, east of the bridge)
 - Some of the golf course could be converted to future habitat area with walking trails. Could be mitigation for other adaptation work. Need for collaboration with various stakeholders, consider air strikes, etc.
 - Could we enhance habitat value of the new informal "Pelican Island"? Pelican Island exists in the Bay by Elsie Roemer area off of the main island of Alameda.

Spectrum of Change – resistance to transformation (reflecting back to intro presentation)

- Underscore this idea of transformative thinking regarding long-term strategies. In the context of the navigation channel, for example, we don't know what this will look like in 20-50 years.
- Tolerance of regulatory agencies is increasing and suggested that legislative changes will likely expand, which necessitates innovative approaches.
- Albert Einstein quote (approx.) – "The world we have created today as a result of our thinking thus far has problems which cannot be solved by thinking the way we thought when we created them."
- Bay Farm and San Leandro Bay are good locations to look at the big picture transformation and how ecosystem function and public access and recreation can be provided by adaptation for flood protection.

Recreation

- If there were a tide gate at Aughinbaugh Way to the main island of Alameda, could it include a bike/ped bridge? The City of Alameda's Mobility Element highlights the desire to consider a bike/ped bridge between Bay Farm Island and South Shore shopping area. Plus, could it be a facility that generates tidal energy?

Reserve (and expand??) concept

- Look at elevations, drainage, infrastructure, land ownership to consider opportunities.
- Given more openness with regulation, and we've already filled this area (and it's eroded) can we consider more building outward to expand habitat benefits?
- "We can put houses anywhere but can't do the same with marshes... habitat should be prioritized"
- Look for options for *tidal* marsh.

Reach 15: Veterans Court

Group agreed to shift to Doolittle to ensure Port participants could be present for this discussion. We did not return to Veterans Court during this meeting as it is under discussion in other meetings (albeit generally with more near-term focus).

- The need for a potential channel may not be there in 15-20 years.

Reach 13: Doolittle

Local considerations on Miro

- Airport channel is navigable (currently).
- Concerns regarding bird strikes.
- Doolittle is an emergency access route.
- The Bay Trail has a gap along this shoreline that is a priority to connect.
- Behind Doolittle drive is a mix of marshes (e.g., Fan Marsh, industrial land, and airport facilities).

Preliminary concepts on Miro

- Concept 0 – No action / react + repetitive loss
- Concept 1 – Floodwall with concrete cap
- Concept 2 – Fringe marsh from the lagoon down to ~ Sikorsky St. (too steep further south)

- Concept 3 – Marsh expansion bayward: create wetlands in the lagoon and between lagoon and fan marsh
- Concept 4 – Marsh expansion bayward: create wetlands in the airport channel - the challenge with this concept is FAA re creating avian habitat near an airport - need to make the case that wetlands provide habitat for smaller birds than open water.
- Concept 5 – Reroute Doolittle (reminder – long term)
- Concept 6 – Reserve future inland space for marsh expansion

Discussion summary

Rerouting Doolittle Drive

- That there were several options for rerouting Doolittle Drive in previous study, acknowledged that moving infrastructure is a significant endeavor but might become the most feasible solution over time.
- It is a challenging geography: Doolittle road is between the Bay and wetlands, making road relocation complex.
- The road is very near the water, with 8 to 9-foot low points that can experience overtopping in “king tides.”
- Moving the road could require sharp turns or encroaching on wetlands.
- Moving the road inland could be an option for long-term adaptation.
- Road is an “effective dike” at the moment.

Connecting and expanding marshes, closing Bay Trail gap

- Could elevate Doolittle Drive.
- Raising the road significantly will introduce a lot of fill and sediment. May be better to move the road inland and add habitat to the bay side.
- Fan Marsh is an area of interest.
- Could close the gap in the Bay Trail by incorporating it into a nature-based levee of a sort.
- There is lots of urbanite outboard of SR-61 (bayside) where Old Earnhart Rd. intersects with SR-61. Maybe opportunities to explore to remove urbanite, thereby creating space to do a nature-based buffer along the beach at this location?
- What is known about the site south of Fan Marsh and contamination? What are opportunities here? Potentially valuable restoration opportunity?
- Beneficial reuse- Port dredges around there on a regular basis, so it is a cost-effective way of moving material into this area.

Connecting near- and long-term concepts

- The 2022 SFEI document includes near-term and long-term strategies (see Miro board) concerning the wall and road, with a focus on marsh areas that could benefit from restoration in the interim.

- In near term, low roadway and opportunities for recreation / transit on Bay Trail (if we close the gap).
- Could maintain the current road while managing the marsh behind it in preparation for a future long-term project where Doolittle road is rerouted. It can take a long time for marshes to develop / establish.
- Suggested constructing a setback levee for the future road as part of a nearer-term project.

Reach 12: Arrowhead Marsh

Local considerations on Miro

- Arrowhead Marsh anticipated to convert from mid marsh to mud flat by 2100 (if no action taken).
- San Leandro Creek is fed by a large watershed.
- Bay Trail runs through this area.
- Park and marsh area to north of this reach (Arrowhead, MLK), industrial to south, further up the creek – residential, industrial, commercial, and parks.

Preliminary concepts on Miro

- Concept 0 – No action / react + repetitive loss
- Concept 1 – Thin layer sediment on marshes
- Concept 2 – Reroute Bay Trail and reconfigure facilities (See 2022 SFEI report)
- Concepts WIP for San Leandro Creek
 - Creek shoreline barriers?
 - Mute SLR with Creek tide gates?
 - Mute SLR with San Leandro Bay tide gate?

Discussion summary

Marshes

- The western side of Arrowhead Marsh is eroding more rapidly than the eastern side.
- Desire to add more sediment to Arrowhead Marsh to support rail populations.
- Advocated for a longer-term strategy to reroute trails, recognizing community interest in this area. Emphasizes that conversations with community groups and habitat considerations will inform the strategy.
- Sea level rise was not considered in the 1990s project at MLK Marsh. Elevations at MLK are comparable to Arrowhead (SFEI).

- With the Bay Trail work out there last year, there's an additional pond at MLK. Next plan is to focus on building out the bird sanctuary more.
- Add a water launch by Arrowhead Marsh.
- EBRPD is investing in marsh islands for habitat – this is also a mitigation site for the Doolittle project.
- Consider connecting airport channel, MLK marsh, and San Leandro Creek.

San Leandro Creek

- Tide gate, perhaps at intersection of San Leandro Creek and Elmhurst Creek, could accommodate up to 3 feet of sea level rise, as opposed to building floodwalls or levees along the entire length of San Leandro Creek. Important to understand pros and cons of different options as they develop.
- If we end up needing to locate a tide gate at San Leandro and Elmhurst Creek outlet, this will affect Arrowhead and MLK marsh with potentially reduced sediment loads.
- The Southern end of the levee that separates Arrowhead Marsh from San Leandro Creek protects the marsh from the creek's storm flows.

Reach 11: Coliseum

Local considerations on Miro

- Bay Trail runs along the shoreline.
- Rail and 880 are at low elevation.
- Too steep for fringe marsh.
- Commercial along shoreline, park near the slough.
- Sloughs are “pinned” by the Coliseum parking lots and the rail / 880.

Preliminary Concepts on Miro

- Concepts WIP
 - Slough shoreline barriers?
 - Raise rail and 880?
 - “Floodproof” rail and 880?
 - Slough tide gates?
 - Reroute rail and 880?
 - San Leandro Bay tide gates?
- Action needed: connect with Alameda County on recent drainage studies in this area.

Discussion summary

Process / stakeholder engagement

- We need to make sure these discussions include City of Oakland representatives, including development groups.
- There is a discussion about a temporary soccer stadium in a triangular lot near the Coliseum, noting this is not a long-term arrangement (perhaps 10 years?).
- Suggested restore coliseum area to a retention basin and upland wetland.

Elevation changes

- Look also at concepts of balanced cut and fill as more localized strategies to manage environmental impact, focusing on balancing different needs in the area.
- There's a lot of surface parking in the higher-ground area between 880 and the shoreline, and lower ground near the Coliseum.

Creek-Bayland reconnection

- Additional option – a creek-bayland reconnection project. This could open up space for marsh at one of the slough connections to SL Bay.
- By the time we anticipate these longer-term SLR elevations, these land uses may be outmoded and we could consider land elevation / balancing using the fill material available.