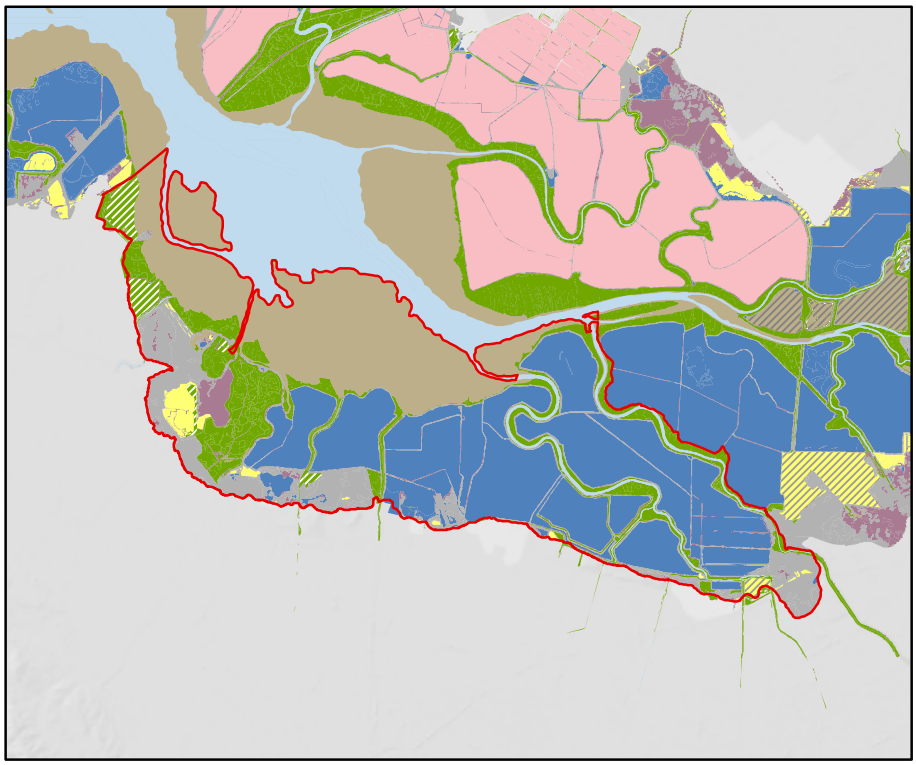

MOUNTAIN VIEW AREA

Western edge of San Francisco Bay between Dumbarton Bridge and Alviso Slough

Baylands 2009

- Bay/Channel
- Diked Wetland
- Salt Pond
- Managed Pond
- Tidal Flat
- Tidal Marsh
- Agriculture and Other Undeveloped Areas
- Developed Areas

Red line shows the boundaries of Segment O.

Hatching indicates areas where restoration activities had occurred as of 2009. For managed ponds this included habitat enhancement.

By: San Francisco Estuary Institute

Data: Wetland data from SFEI includes BAARI (v1, 2009) Baylands and Wetlands, NLCD 2006, and wetland tracker data.

Imagery: ESRI World Imagery (updated 2015)

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Miles

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Unique Opportunities

Segment O presents opportunities to enlarge existing marshes and to provide dispersal corridors (where none now exist) that link the eastern and western parts of South Bay for tidal-marsh-dependent species. Ponds could be managed for the benefit of large numbers of shorebird species that forage on nearby mudflats. Retaining and modifying managed ponds would also benefit nesting snowy plovers, postbreeding least terns, and waterfowl. Enhancing tributary streams such as San Francisquito Creek and the Guadalupe River could benefit riparian-dependent species and could help restore steelhead runs.

Segment Features and Setting

Historically, this segment contained large expanses of tidal flats. Next to these flats were tidal salt marshes that intergraded into moist grasslands in the adjacent uplands. These marshes supported extensive channel systems and an abundance of tidal pans. Many of the marshes had backshore pans along the transition zone. Much of the moist grassland habitat supported seasonal ponding in the rainy season. Streams that drained the coastal hills were bordered with riparian vegetation. Many of the streams did not reach the bay, and streams in some willow groves and ponds terminated near the baylands. Limited zones of brackish marsh were present along the tidal reaches of San Francisquito Creek and the Guadalupe River, both of which supported steelhead runs.

Today, most of the segment is managed ponds, sewage-treatment ponds, managed flood basins, or urban development, except for a few tidal marshes in the Palo Alto area. These tidal marshes are limited in extent, but they are the most productive and densely populated marshlands in the Bay Area for Ridgway's rails. These marshes are essentially "islands" isolated from other tidal marshes by managed ponds and human development. The mudflats along the bay margin in this segment provide important feeding and roosting habitat for shorebirds.

Since the initial Goals Report, all the managed ponds in this segment have become part of the Don Edwards San Francisco Bay National Wildlife Refuge and the South Bay Salt Pond Restoration Project (SBSPRP). These ponds are particularly important for wintering and migratory waterfowl due to their depth and low salinity. The managed ponds in this area provide postbreeding habitat for least terns, and foraging and roosting habitat for shorebirds and for very large numbers of waterfowl in the deeper ponds.

California vole

The SBSPRP has initiated tidal-marsh-restoration actions in segment O. Pond A6 was breached to tidal flows on December 6, 2010, and high sediment-accumulation rates were observed in the first year with an average of 23 cm/year. These results indicate that high suspended-sediment concentrations in the South Bay can, if sediment supplies remain as they have historically, sustain marsh restoration and sustainability to some extent into the future. The SBSPRP has also begun to experiment with reconfiguring ponds to increase habitat quality for foraging, roosting, and nesting waterbirds and restoring muted tidal action to ponds with

legacy mercury contamination; it is also planning further tidal marsh restoration in the Mountain View area. The San Francisquito Creek Joint Powers Authority is also developing both fluvial and tidal flood-control projects in segment O.

The SBSPRP, in the first 10 years that ponds have been managed to benefit waterbirds, has seen greater numbers of shorebirds and dabbling ducks and steady numbers of diving ducks. The project has also constructed features that could enhance the carrying capacity of the managed ponds to benefit migratory, wintering, and breeding waterbirds.

Implications of Drivers of Change

Managed ponds in this segment will become increasingly difficult to maintain and operate at their specified elevations and salinities. As sea levels rise, levees protecting the ponds will need to be maintained and raised. Tide gates will have to be modified, and gravity-driven systems supplemented by pumping. The outboard levees in particular will be subject to greater wave action as water depths increase, allowing larger waves to propagate inshore. Increasing wave action will also accelerate the erosion of marsh edges, resulting in a narrowing of marshes. Sedimentation rates on existing and restored tidal wetlands are expected to slow over time as suspended-sediment concentrations in the bay decrease.

Considerations for Implementing the Actions

NEAR TERM (NOW TO MIDCENTURY, PRIOR TO SLR CURVE ACCELERATION)

The near term presents significant opportunities to restore tidal marsh in managed ponds that will help create a continuous corridor of tidal marsh along the bayshore. The SBSPRP planning process has identified ponds A1 and A2W as potentially suitable for restoration. This restoration would include the reconnection of complex channel networks, incorporating topographic variation by placing material to mimic features such as natural levees and islands, and could incorporate shallow pans. To accelerate the accretion of marsh surface in the subsided ponds, dredge sediment could be placed either directly within the ponds or on adjacent mudflats to be taken by wave and tidal action into the ponds. Slopes to create elevation gradients along the transition zone between tidal marsh and terrestrial areas could be created next to existing levees to provide buffers and high-tide refugia as well as habitat in its own right. Charleston Slough could also become marsh habitat by increasing tidal flows and connecting a restored pond A1.

While rates of sea-level rise are low, some of the managed ponds could continue to be managed to provide habitat for shorebirds and waterfowl by changing their water levels and salinity (within the infrastructure limits). Levees surrounding the ponds would have to be built up to maintain these ponds as sea levels rise further.

LONG TERM (LATTER HALF OF THE CENTURY, AFTER SLR CURVE ACCELERATION)

In the longer term, if the sea-level rise increases and sediment supply decreases as projected, it seems likely that the marsh plains will give way to narrower fringing marshes. Tidal marshes may be unable to keep up with the rising sea level, resulting

in increased inundation of the marsh surface. This may lead to habitat conversion, perhaps to low marsh and mudflat. In addition, landward migration of the marsh is expected, and a gently sloping transition zone bayward of the levee would facilitate such a migration. Since there is considerable infrastructure in this segment, consideration should be given to filling in some of the managed ponds with material to create a gently sloping transition zone bayward of the levee. This would create space for marsh migration in the long term (and high-tide refugia in the short term).

At some point in the future, the degree of sea-level rise may make it unrealistic to maintain the managed ponds to benefit waterbirds. Prior to that point, a plan for restoring or relocating the functions of these ponds should be implemented that would move them outside the hazard zone. Simply restoring tidal action to the managed ponds late in the century may result in the creation of deep tidal ponds. To alleviate this, "warping up" the ponds could be undertaken during the earlier part of the century, allowing the accretion of the pond to be managed as well.

Recommended Actions

FOR HABITATS AND THE LANDSCAPE IN GENERAL

- Restore large areas of tidal marsh prior to 2030 and create a continuous corridor of tidal marsh along the bayshore. Protect all undeveloped diked baylands as future tidal habitats and transition zones.
- Optimize the management of ponds for a diverse suite of waterbirds, including shorebirds and waterfowl. Modify pond management as necessary to accommodate sea-level rise and other changes by modifying water-control structures, managing ponds to facilitate warping, and reconfiguring or relocating ponds as necessary.
- Consider ways to increase sediment supply to the tidal baylands. Methods could include managing the sediment-delivery potential of local watersheds, placing sediment directly in marshes or placing dredged sediments on adjacent mudflats to be reworked by wave and tidal action to increase local suspended-sediment concentrations and marsh-accretion rates.
- Enhance and restore natural transition zone and landward buffers, including natural levees on creeks, while focusing on tidal marsh transitions. Create transition zone habitats on gentle slopes in front of flood-risk-management levees.
- Reestablish native vegetation and otherwise enhance the riparian corridor along San Francisquito Creek, Guadalupe River, and other tributary streams.
- Maintain current mudflat habitat and buffers from human disturbance.
- Enhance and restore native oyster beds at suitable areas.

FOR PARTICULAR WILDLIFE POPULATIONS

- Continue hazing and predator management at sensitive nesting habitats.
- Enhance the seasonal wetlands and burrowing owl habitat in the Sunnyvale baylands.
- Continue treatment of invasive *Spartina* at the Knapp Tract and other sites, and continue revegetation plantings and other enhancements, such as high-tide-refuge islands.

Restoration Benefits

Linking the eastern and western portions of South Bay and restoring tidal marsh along the bayshore would provide dispersal corridors (where none now exist) for the Ridgway's rail and the salt marsh harvest mouse, allowing these species to move between neighboring segments while minimizing predation and decreasing their vulnerability to local extinction. Restoring and enhancing tributary streams would improve riparian habitat and benefit anadromous fishes, amphibians, small mammals, and birds.

Enhancing managed ponds would provide high-tide foraging and roosting habitat for shorebirds and waterfowl. This could also provide postbreeding foraging habitat for least terns and nesting habitat for the snowy plover and other resident shorebirds and terns.

Challenges

Challenges in this segment include legacy mercury contamination, PG&E transmission lines and other utility corridors, flood-protection considerations, historical land subsidence, freshwater outflow from wastewater-treatment facilities, and predator management. Invasive *Spartina* remains a critical priority, constraint, and consideration for some existing marshes and for restoration planning. Oyster drill populations may limit native oyster restoration. The SBSPRP is one of the key regional plans for this segment. Planning will require coordination with local agencies and organizations, including NASA Ames; the cities of Santa Clara, Mountain View, and Palo Alto; the San Francisco Public Utilities Commission; the San Francisquito Creek Joint Powers Authority; the US Fish and Wildlife Service; and the Santa Clara Valley Water District.