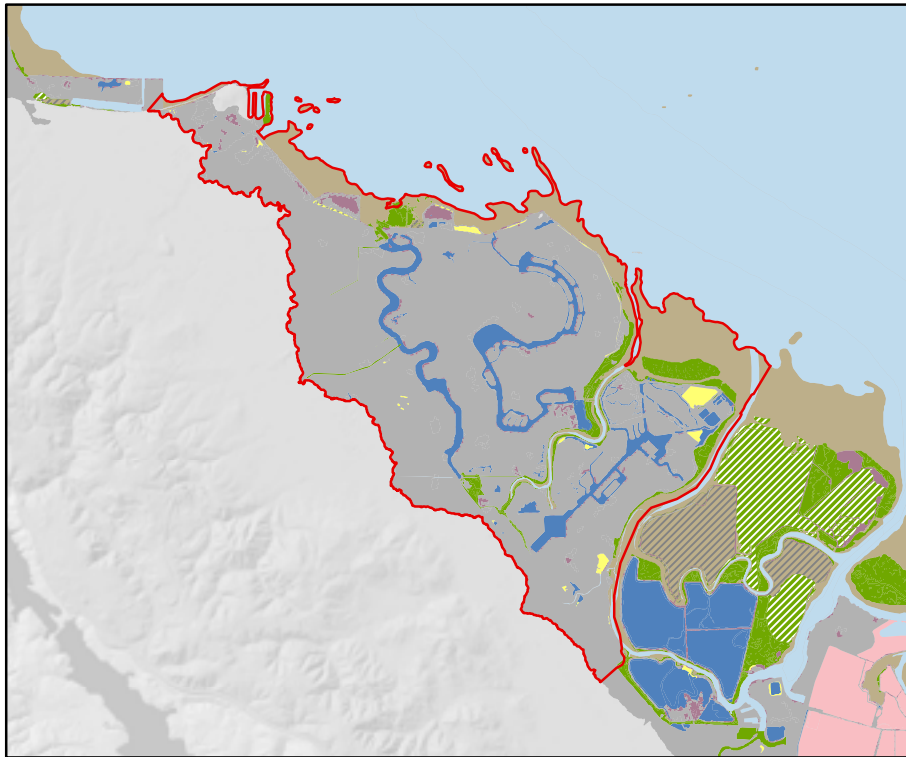


# BAYLANDS SEGMENT M



## SAN MATEO AREA

Western edge of San Francisco Bay between Coyote Point and Steinberger Slough

### Baylands 2009

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

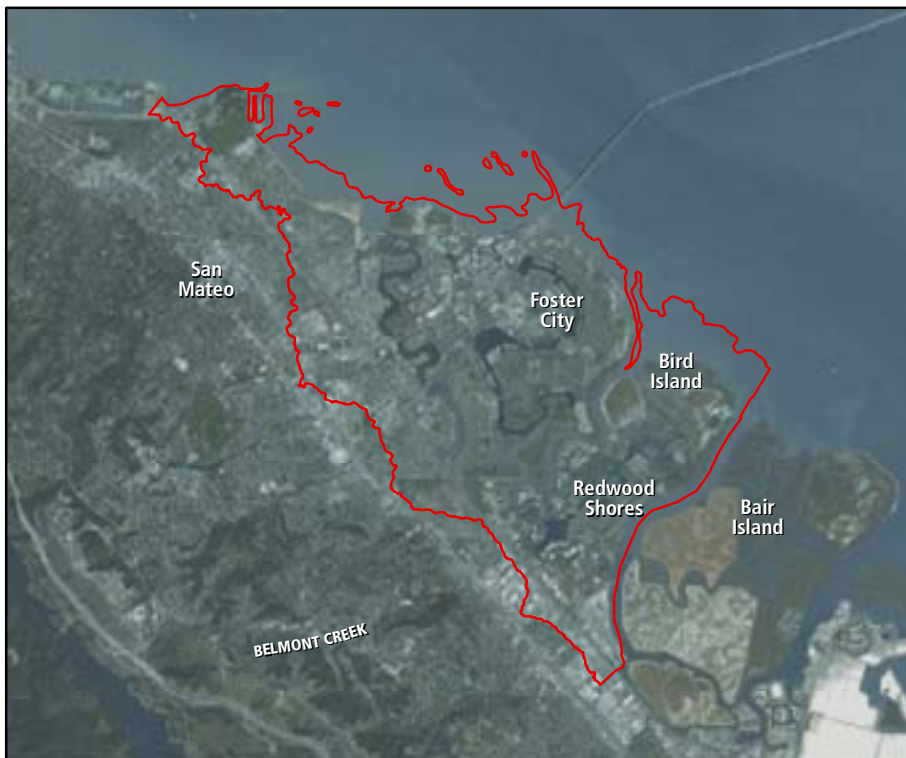
Red line shows the boundaries of Segment M.

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)



## Unique Opportunities

Segment M offers limited but important opportunities to protect and enhance remaining tidal marshes and other wetlands. The California sea-blite and associated rare high-marsh plant species could potentially be reintroduced around sheltered shell beaches. Historically, this segment supported extensive oyster beds, presenting an opportunity to restore the subtidal habitat offshore. This could be done by building artificial reefs to create breakwaters to protect fringing marshes, or using artificial rock groins to capture coarse material to form small beaches such as those at Seal Slough. Additionally, green infrastructure such as horizontal levees could be built as the residential communities along the shoreline invest in flood protection against future sea-level rise.

## Segment Features and Setting

Most of this segment was once tidal marsh, and the marshes in this relatively flat area of the baylands included a transition zone of varying width into the coastal hills. Many of the tidal marshes had oyster shell ridges or beaches along their foreshores. Tidal flats and moist grassland were limited, as they are today.

Today, most of the former wetlands are developed urban or industrial areas (Foster City, Redwood City, and San Mateo). Because of the extensive development along the shoreline, there are few restoration opportunities in this segment. The wetlands that remain are fragmented narrow marshes, mostly along sloughs. Bird Island and the adjacent strip marshes along the levees are the most significant tidal wetlands in the segment. Generally, the transition zones of these tidal marshes exist in narrow strips along steep flood-protection levees. Small areas of diked marsh and seasonal wetlands persist in some of the developed areas (area H and the Redwood Shores Ecological Reserve in Redwood City, and Sun Cloud Park in Foster City), and at Seal Slough Mouth in San Mateo, at Bird Island, and along the Foster City shoreline at the mouth of Belmont Slough. Shell mounds and beaches were once prominent in this segment, and remnants can still be found.

## Implications of Drivers of Change

The developed areas in this segment will become increasingly difficult to protect as sea levels rise. 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 the small remaining marsh edges, resulting in the narrowing and potential loss of marshes and other unique habitats such as coarse beaches.

## Considerations for Implementing the Actions

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

In the near term, when sea-level rise rates will still be relatively low, actions enhancing the baylands will provide immediate ecological benefits and maximize their resilience. Breakwaters could be created around fringing marshes to preserve unique features like shell mounds. Introducing fine sediment through mudflat and marsh recharge could

increase vertical accretion rates. The remnant oyster shell beaches provide a unique opportunity for the restoration of adjacent subtidal habitats, including native oyster and eelgrass beds. Effort should be placed on creatively building environmental considerations into flood-protection projects and upgrades and protecting small habitat pockets only where feasible. A patchwork of small habitat nodes may provide some support for particular wildlife species. Opportunities exist to partner with the residential communities along the shoreline to develop green infrastructure such as horizontal levees, which would create habitat bayward of their flood-protection levees.

One small pocket of opportunity for restoring transition zone exists along the Foster City shoreline at the mouth of Belmont Slough, where restoration could create an estuarine–terrestrial transition zone and beach habitat along the bayward edge.

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

In the long term, sea-level rise rates will likely outpace vertical accretion rates, and marshes will need to migrate landward to survive. Prior to that point, a plan for restoring or relocating the functions of the existing tidal marshes should be implemented. Creating wetlands bayward of the flood-protection levees, possibly using wastewater to enhance habitat on the slope, could provide space for landward migration. The planned communities built over former wetlands at Foster City, Redwood Shores, and portions of San Mateo along Seal Slough will be at risk for flooding as sea levels begin to rise. If opportunities for managed retreat become available, options should be pursued to restore these areas to marsh.

### **Recommended Actions**

#### **FOR HABITATS AND THE LANDSCAPE IN GENERAL**

- ◆ Maintain and enhance tidal marsh and marsh connectivity along the shoreline.
- ◆ Protect subtidal habitat including mudflats, native oyster beds, and eelgrass beds. Protect and improve oyster shell ridges near Foster City, Seal Slough, and on the Redwood Shores Peninsula.
- ◆ Protect open space adjacent to the baylands, including developed areas that may become available in the future due to flood risk.
- ◆ Create transition zones on gentle slopes in front of flood-risk-management levees (or other high-ground areas).
- ◆ Reduce nearshore wave energy by constructing low-crested berms of gravel and shell (similar to the natural breakwaters at Seal Slough Mouth), which could roll landward as sea levels rise. Enhance existing unique features such as shell mounds and coarse beaches.
- ◆ Connect wastewater and storm water to bayland habitats where appropriate to enhance the transition zone slope and reestablish a salinity gradient within marshes
- ◆ Increase local sediment availability by placing fine sediment in areas that will be reworked by wave and tidal action to accelerate the vertical accretion of marshes.

Dredge at sunset



#### FOR PARTICULAR WILDLIFE POPULATIONS

- ◆ Improve the Foster City and Redwood Shores canal systems for wildlife support and water quality.
- ◆ Protect and enhance seasonal wetland areas for shorebirds and waterfowl.
- ◆ Implement aggressive control measures for invasive *Spartina*, and for the invasive plants black rush and Algerian sea lavender, which could become a serious problem.

#### Restoration Benefits

Restoring oyster shell ridges would enhance habitat for some unique and rare plants and would provide roosting sites for shorebirds. Providing an enlarged tidal marsh corridor may facilitate the dispersal of Ridgway's rails northward from population centers in segment N to the south. The nearest northward location with significant habitat is in Marin County. However, Ridgway's rails have been known to breed in small tidal marsh pockets such as Heron Head's Park.

Restoring native oyster and eelgrass beds offshore would provide habitat for birds and fish and may provide some flood protection in the near term for developments on the shoreline.

#### Challenges

Challenges in this segment include an extensive urban interface, major transportation corridors, flood-control considerations, predator corridors, limited opportunity for predator management, and intensely used public access along the Bay Trail. The presence of the Atlantic oyster drill in the South Bay may inhibit the restoration of native oyster beds. Planning will require coordination with local agencies and organizations, including San Mateo County.