U.S. Department of the Interior
U.S. Geological Survey

California Coastal Conservancy

National Oceanic and Atmospheric Administration

Scientific Investigations Map 2987

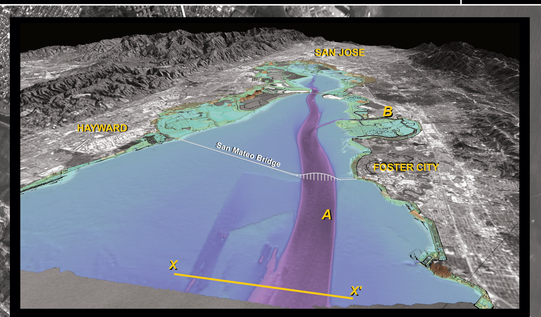
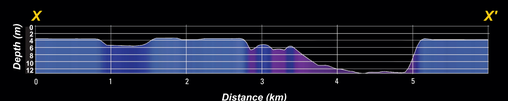


Figure 1. Perspective view looking southeast down south San Francisco Bay. The bay is dominated by a single main channel and expansive shallows. The channel is about 2.0 km (1.2 miles) wide at the northern end of the survey area (profile ***X-X'***) and decreases to about 200 m (660 ft) wide at the very south end of the bay. The deepest part of the channel is about 17 m (56 ft) north of the San Mateo Bridge (at ***A***), whereas most of the bay is shallow enough to stand in during low tide. Large container ships travel along the channel and into the Port of Redwood City (***B***). The distance across the bottom of the image is 13 km (8 miles) and the vertical exaggeration is 1.5x.



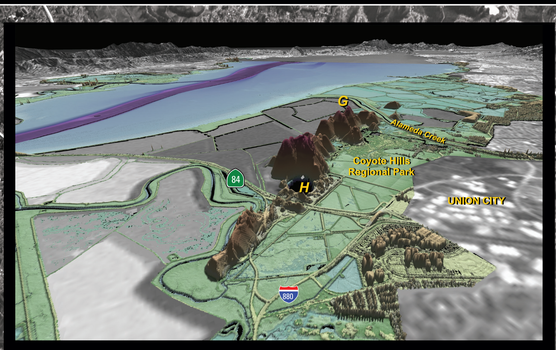


Figure 4. Perspective view looking northwest over the Coyote Hills. The highest point within the hills (***G***) rises over 88 m (289 ft) above the surrounding bay. In the Dumbarton Quarry at the south end of Coyote Hills (***H***) the lidar data captured elevations as low as 91.5 m (300 ft) below sea level, lower than Badwater Basin in Death Valley that is 86 m (282 ft) below sea level. The distance across the bottom of the image is about 2 km (1.2 miles) and the vertical exaggeration is 1.5x.

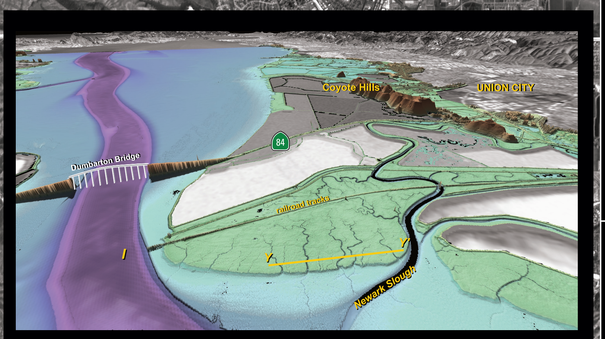
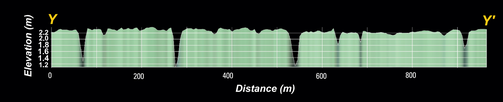


Figure 5. Perspective view looking north toward Newark Slough and the Coyote Hills. A number of 1-m (3.3 ft) tidal channels bisect the marshland just west of Newark Slough (profile ***Y-Y'***). The depth of the main channel south of the Dumbarton Bridge (at ***I***) is about 15 m (49 ft). The distance across the bottom of the image is about 3 km (1.9 miles) and the vertical exaggeration is 1.5x.



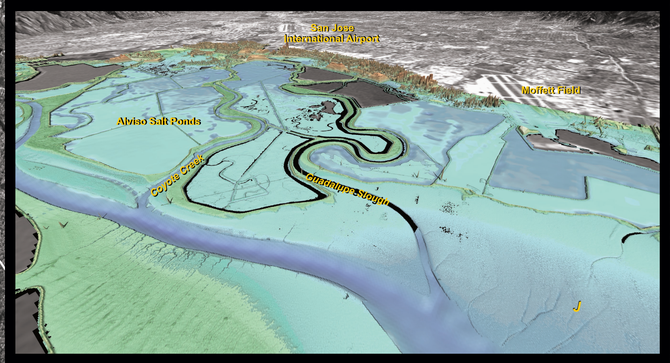


Figure 6. Perspective view looking southeast toward Coyote Creek, Guadalupe Slough, and the Alviso Salt Ponds. The intricacies of the dendritic channel networks can be seen in the intertidal mud flats in the foreground (***J***). Some of the levees surrounding the Alviso Salt Ponds have been in place since the late 1800s. The distance across the bottom of the image is about 4 km (2.5 miles) and the vertical exaggeration is 1.5x.

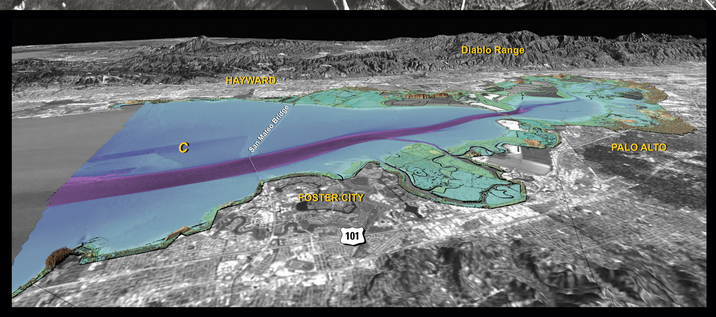


Figure 2. Perspective view looking east with the Diablo Range in the distance. The pan-shaped depression (marked ***C***) to the east of the main channel (also see fig. 1) is a remnant feature from sediment mining activities in which sediment from the bay floor is extracted for uses in cement production and as bay fill. The part of the depression located within the survey area covers 10.5 km^2 (4 mile^2) and is about 1.0 - 2.5 m (3.3 - 10.2 ft) deeper than the surrounding bay floor. The distance across the bottom of the image is about 13 km (8 miles) and the vertical exaggeration is 1.5x.

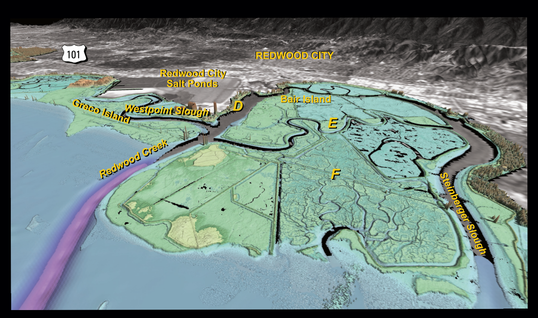


Figure 3. Perspective view looking southwest over Bair Island toward Redwood City. The Port of Redwood City (***D***) with its container ship terminals is built off Redwood Creek. Corkscrew Slough (***E***) separates Bair Island from the outer marshland complex (***F***), whereas Steinberger Slough separates Bair Island from populated Foster City and Redwood City. Westpoint Slough separates Greco Island from the Redwood City Salt Ponds. The distance across the bottom of the image is about 3 km (1.9 miles) and the vertical exaggeration is 1.5x.

0 5 10 Kilometers
0 1 2 3 4 Miles

High-Resolution Bathymetry and Topography of South San Francisco Bay, California

By

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2007

Base from U.S. Geological Survey digital data, 1:24,000 and 1:100,000, 1989-85, Universal Transverse Mercator projection, Zone 11, WGS84 ellipsoid.

The color-coded South Bay Digital Terrain Model (DTM) was created from three different data sets;

1. Topographic lidar survey was conducted by TerraPoint USA in May of 2004. The survey time corresponded with extremely low tides and collected more than 250 million elevation points covering tidal flats, marsh, levees, and surrounding areas including the 100-year flood plain extending from just south of the San Francisco and Oakland International Airports to the Alviso Salt Ponds. For more information, visit http://pubs.usgs.gov/of/2005/1284/ and to view FGDC metadata, visit http://walrus.wr.usgs.gov/infobank/f/f204st/htm/f-1-2-04-st.meta.htm.

2. South Bay bathymetric survey was conducted by Sea Surveyor Inc, from January 10 - April 5, 2005 using a single-beam sonar. The survey times corresponded with higher tides so that there was ample overlap between the bathymetric and topographic surveys. This survey collected over 20 million soundings. For more information and to download the data and FGDC metadata, visit http://pubs.usgs.gov/of/2007/1169.

3. Salt Pond bathymetric surveys were conducted by the U.S. Geological Survey Biological Resources Discipline between the summer of 2003 and the spring of 2004 using single-beam sonar. To view FGDC metadata, visit http://pubs.usgs.gov/sim/2007/2987/

All three survey data were converted to the NAVD88 ellipsoid and merged together at 5-m spatial resolution. The color-coded shaded-relief topography/bathymetry has an illumination angle of 315 degrees with an elevation of 45 degrees.

Land imagery generated from 10-m panchromatic SPOT satellite data from SPOT Image Corporation and California Resources Agency, CERES Program, courtesy of Robert V. Lugo, publication date 2000.

Acknowledgments: The U.S. Geological Survey, California Coastal Conservancy, and National Oceanic and Atmospheric Administration funded this research. The U.S. Fish and Wildlife Service and the California Department of Fish and Game provided logistical support.

DTM ELEVATION
Elevation in meters relative to NAVD88
100
50
10
3
2
1
0
-3
-6
-8
-15
non-linear scale

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