

## W-1-11-SF Survey Summary

On January 5, 2011 personnel from the Pacific Coastal and Marine Science Center (Table 1) participated in a survey to collect nearshore bathymetry in San Pablo Bay. A total of 71 km of bathymetric data were collected between 10:30 and 15:07 PST using two personal watercraft equipped with single-beam sonar and Real-Time Kinematic (RTK) GPS (Fig. 1). Conditions during the survey were ideal with little to no wind or wind waves. Inspection of the data quality shows that elevations measured with boat boats were roughly equivalent (Figs. 2 and 3) with a small (1 cm), systematic offset between the two vessels.

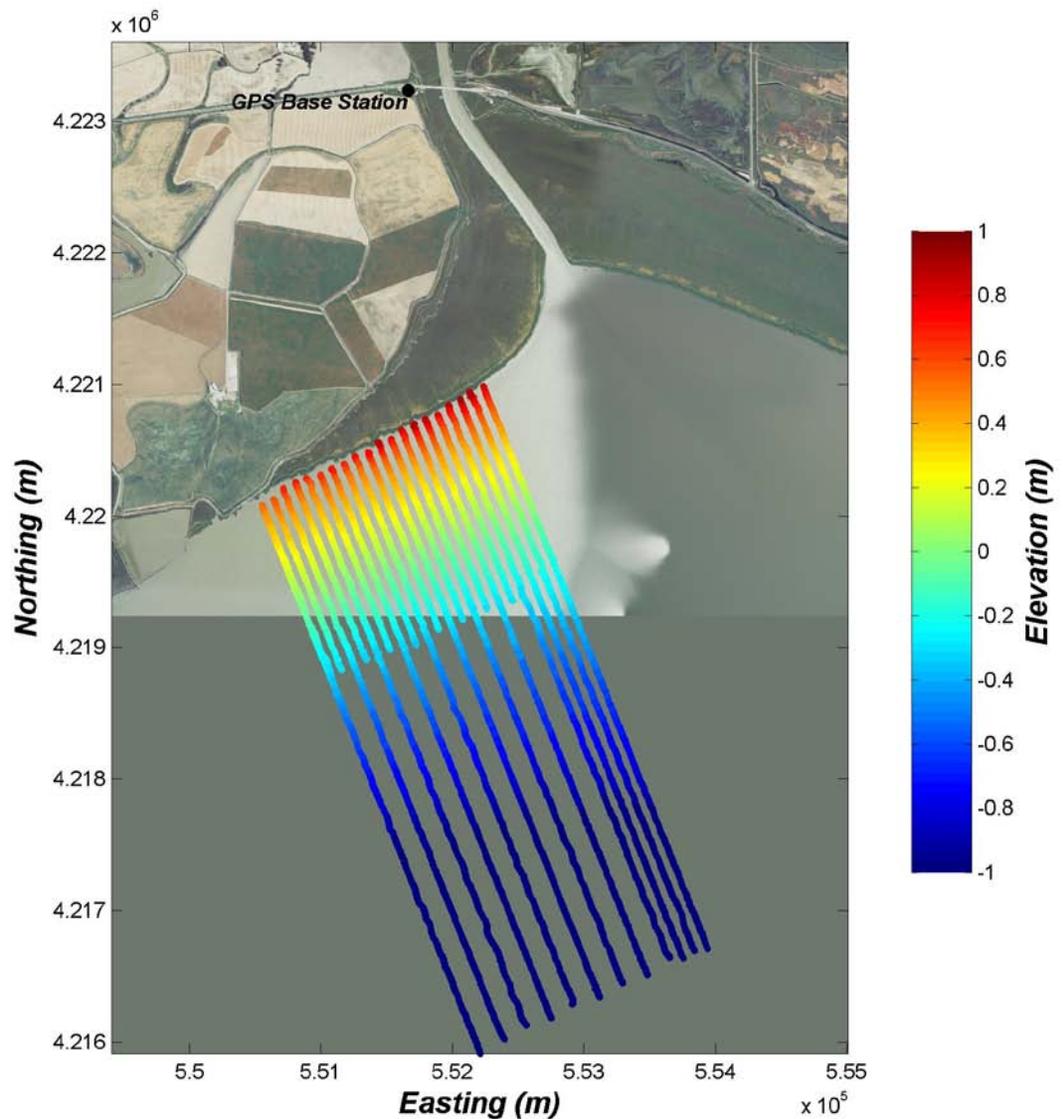


Figure 1. Map showing nearshore bathymetric data collected during W-01-11-SF. Map projection is UTM Zone 10, NAD83 and the vertical datum is NAVD88.

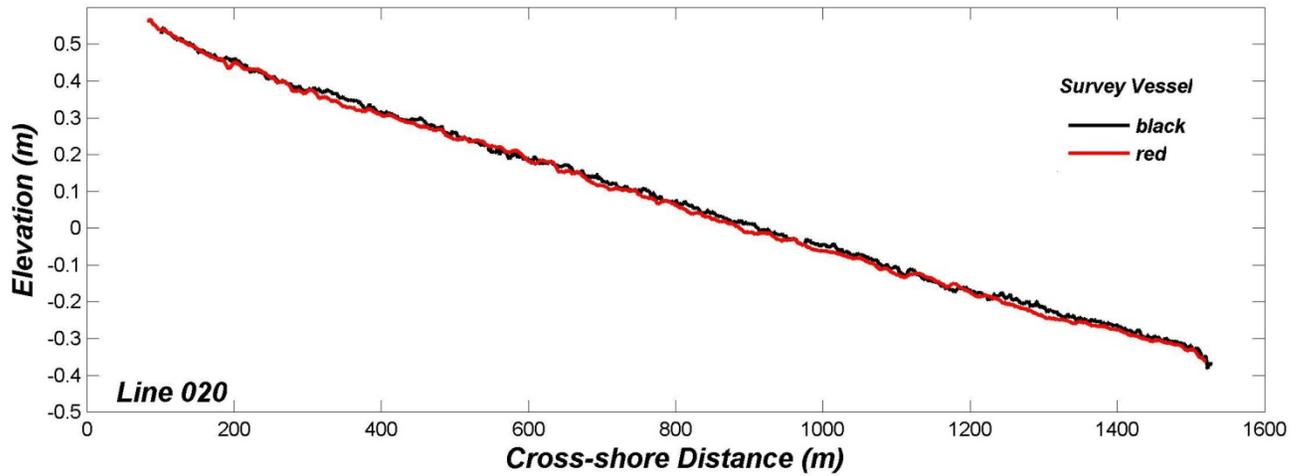


Figure 2. Cross-shore profile showing elevations from both survey vessels.

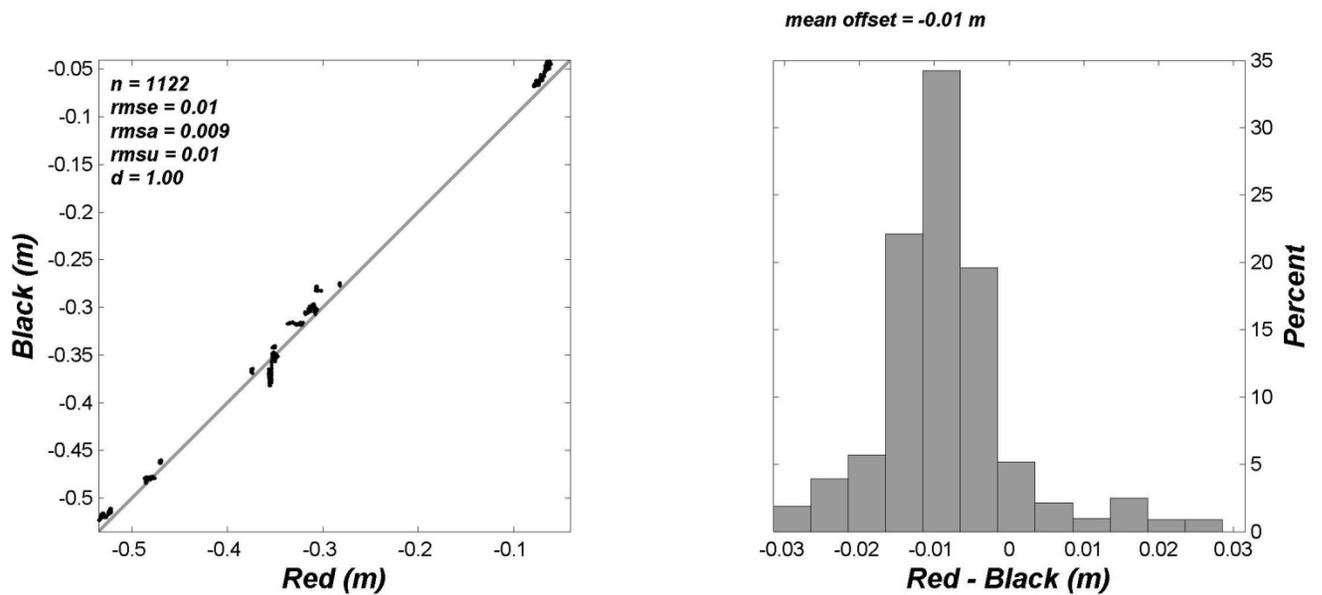
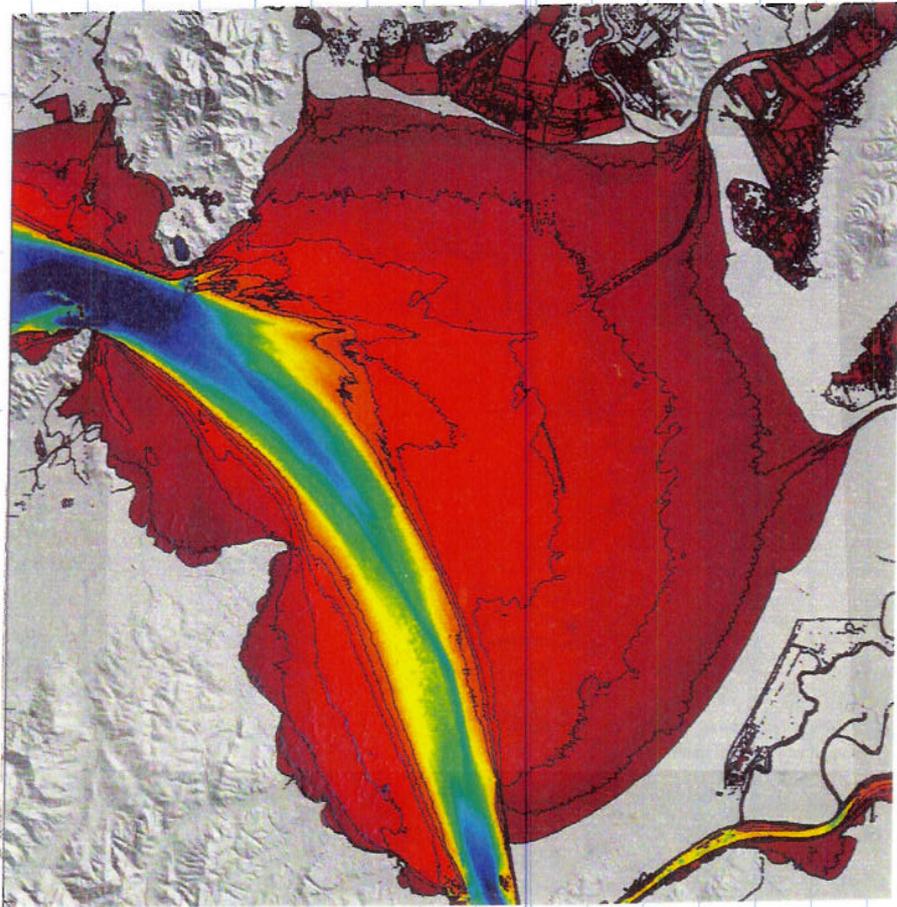


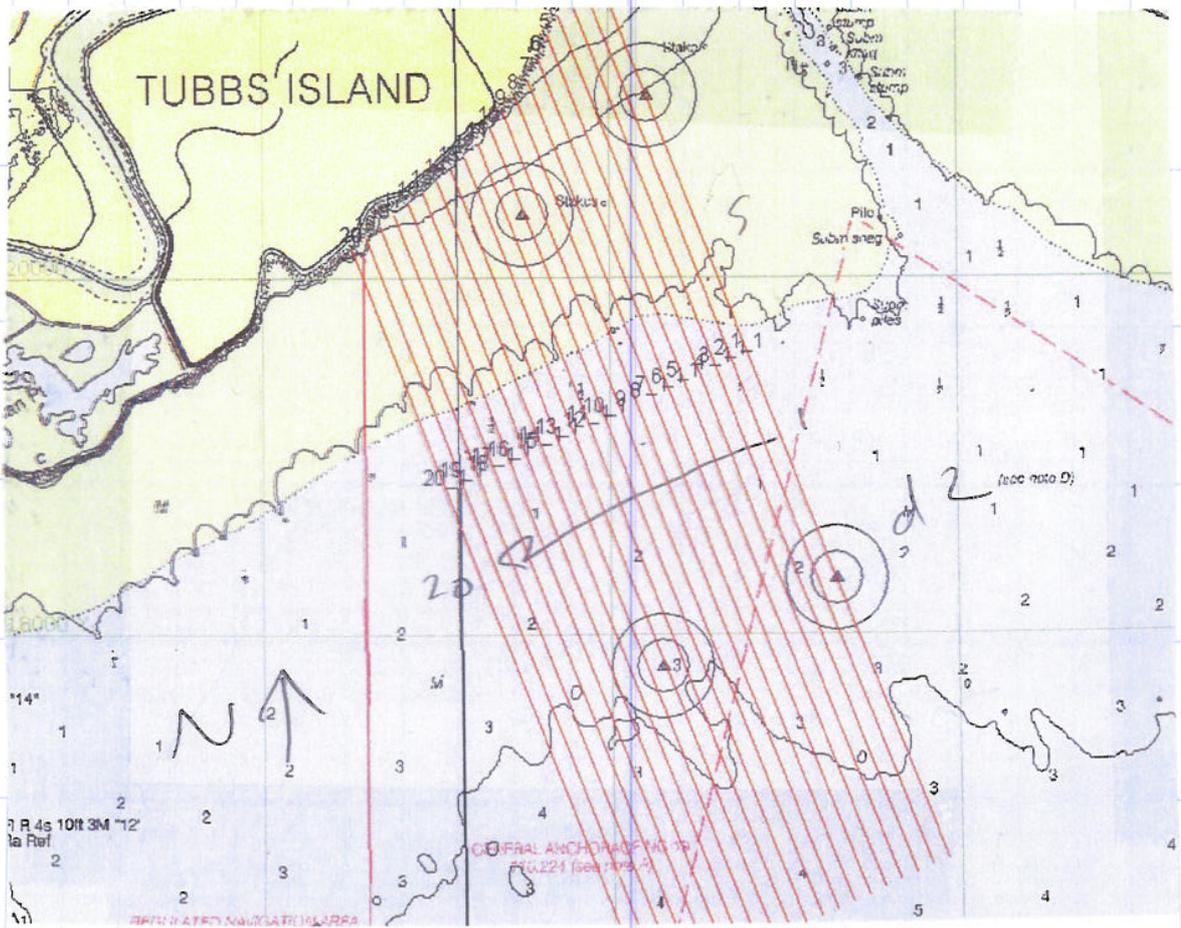
Figure 3. Comparison of elevations from the red and black survey vessels. A total of 1122 overlapping points were compared. Point sets that occurred within 0.5 m were considered overlapping.

Table 1. List of survey participants

| Name           | Responsibility         | Affiliation |
|----------------|------------------------|-------------|
| Lissa MacVean  | Chief Scientist        | USGS PCMSC  |
| Jackson Currie | Survey Vessel Operator | USGS PCMSC  |
| Tim Elfers     | Survey Vessel Operator | USGS PCMSC  |
| Tom Reiss      | GPS Support            | USGS PCMSC  |
| Andrew Stevens | Survey Support         | USGS PCMSC  |



San Pablo Bay  
 Batym Survey  
 Jan 5, 2011



~ buoys survey track  
 estimated for all lines

Planned Lines

Tides

1a (NOAA)

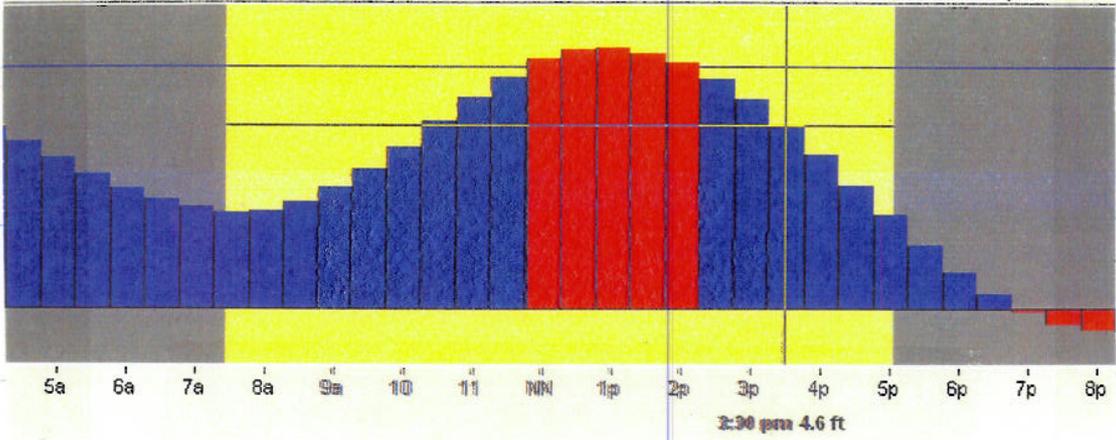
Daily Highs & Lows:  
 High 2:13 am 5.3 ft  
 Low 7:42 am 2.4 ft  
 High 12:49 pm 6.5 ft  
 Low 8:22 pm -0.6 ft

Average Tides:  
 Mean Range: 4.49 ft  
 MHHW: 6.06 ft  
 Mean Tide: 3.24 ft

Wednesday, January 5, 2011  
 Pacific Standard Time

Sunrise: 7:27 am

Sunset: 5:04 pm



Boat Setup at  
 Black Point Boat Ramp

Antenna Offsets

Red Boat: -1.172

Black Boat: -1.165

Survey Parallax Points

Jackson Currie B

Tim Elfers B

Lisa MacLean L

Tom Reiss G

Andrew Stevens L

Weather

Sunny, fog clearing  
 little to no wind

1000 Boats Leave bed  
 both, Fixed RTR  
 Shallow lines

|       |         |                       |
|-------|---------|-----------------------|
| 10:29 | Line 20 | both boats on line 20 |
| 10:52 | Line 19 | Jackson               |
| 10:57 | Line 18 | TIM                   |
| 11:04 | Jackson | Line 17               |
| 11:07 | Line 16 | TIM                   |
| 11:15 | Line 15 | Jackson               |
| 11:19 | Line 14 | TIM                   |
| 11:33 | Line 13 | Jackson               |
| 11:34 | Line 12 | TIM                   |
| 11:38 | Line 11 | Jackson               |
| 11:43 | Line 10 | TIM                   |
| 11:48 | Line 9  | Jackson               |
| 11:55 | Line 8  | TIM                   |
| 12:03 | Line 7  | Jackson               |
| 12:07 | Line 6  | TIM                   |
| 21:13 | Line 5  | Jackson               |
| 12:19 | Line 4  | TIM                   |
| 12:24 | Line 3  | Jackson               |

Jackson: Black

|      |           |                              |
|------|-----------|------------------------------|
| 1231 | Line 2    | TIM                          |
| 1236 | Line 1    | Jackson                      |
| 1257 | Line 1-1  | Jackson                      |
| 1259 | Line 2-1  | TIM                          |
| 1319 | Line 3-1  | Jackson                      |
| 1340 | Line 4-1  | TIM                          |
| 1341 | Line 6-1  | Jackson                      |
| 1344 | Line 8-1  | TIM                          |
| 1400 | Line 10-1 | Jackson                      |
| 1406 | Line 12-1 | TIM                          |
| 1424 | Line 14-1 | Jackson                      |
| 1429 | Line 16-1 | TIM                          |
| 1500 | Line 20-1 | Jackson<br>over top<br>w/TIM |

272  
 272' Line 18-1 Jackson  
 272' Line 20-1 TIM