

**San Francisco – Oakland Bay Bridge  
East Span Seismic Safety Project**

**DEEP OCEAN DISPOSAL  
SEABIRD AND MARINE MAMMAL MONITORING**

**REPORT #2 – AUGUST 2002**



**SEPTEMBER 2002**

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## INTRODUCTION

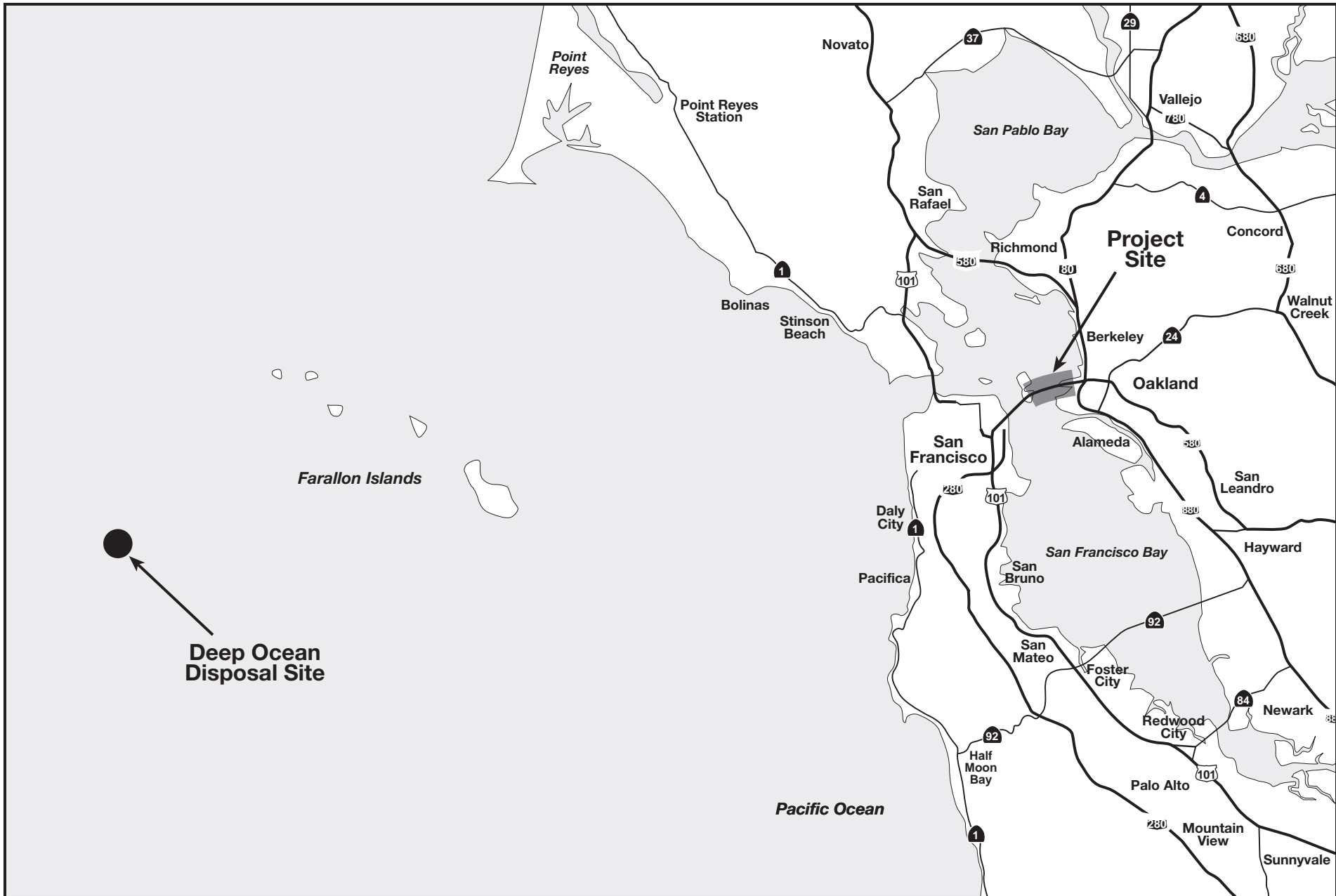
In order to improve the seismic safety of the San Francisco-Oakland Bay Bridge (SFOBB), the State of California is replacing the existing East Span with a new bridge immediately to the north (see Figure 1). This is a multi-year effort that will involve a number of construction activities on land as well as in the Bay. The Skyway Contract, which involves construction of the bridge component that will connect to the Oakland approach structures on the eastern shore and to the Self-Anchored Suspension portion on the west side, is currently underway. Dredging for the barge access channel along the north side of the existing bridge began on June 24 (see Figure 2). Dredging for the Skyway Contract is expected to last until September 28, 2002. During this phase, suitable dredged material is being transported and disposed of at the San Francisco-Oakland Deep Ocean Disposal Site (SF-DODS) (see Figure 1). SF-DODS is located at 37°39'N, 123°29'W, west of the Farallon Islands. Water depth at SF-DODS is over 9,000 feet (2,740 meters). There will be dredging involved with future contracts for the bridge.

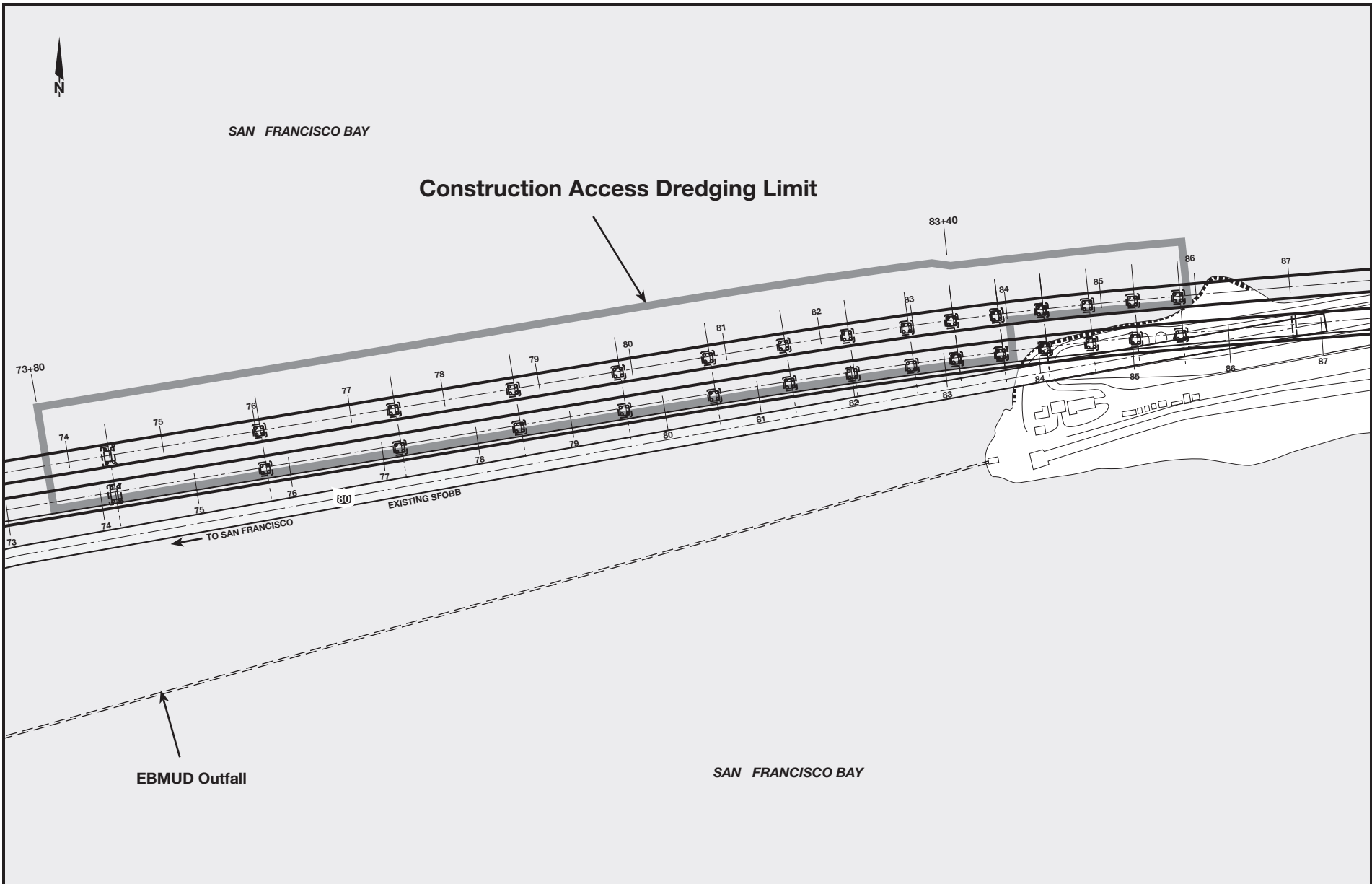
Pursuant to Section 103 of the Marine Protection, Research, and Sanctuaries Act, the U.S. Environmental Protection Agency provided the U.S. Army Corps of Engineers (ACOE) with Ocean Disposal Special Conditions (letter dated March 29, 2002) for inclusion into ACOE Permit 23013S for the East Span Project. The ACOE permit was modified in a letter to Caltrans on April 2, 2002.

Condition 24 of the modified permit states:

“The permittee must make arrangements for independent observers (“Independent” means not a direct employee of the permittee or dredging contractor) to be present on disposal vessels for the purpose of conducting shipboard surveys of seabirds and marine mammals. Observers shall employ standardized monitoring protocols, as referenced in the most current SMMP Implementation Manual. At a minimum, the permittee shall ensure that independent observers are present on at least one disposal trip during each calendar month that disposal occurs, and on average at least once every 25 vessel trips to the SF-DODS.”

In accordance with Condition 24 of ACOE Permit 23013S, employees from LSA Associates, Inc., Garcia and Associates, and SRS Technologies served as independent observers for Caltrans on two trips to SF-DODS during the month of August. Seabird observers accompanied a tugboat and barge on a trip to SF-DODS on August 22-23, 2002 and marine mammal observers traveled with a tugboat and barge on August 23-24, 2002.





As of August 30, 2002, there have been 127 vessel trips to SF-DODS. According to the requirement that observers be present at least once every 25 trips, there should have been seabird and marine mammal observers on five trips to SF-DODS. However, there have only been observers present during four trips (seabird observers twice and marine mammal observers twice). Each group of observers has maintained a schedule of traveling with the tugboat and barge to SF-DODS once per month. The scheduling of more frequent trips has been difficult because of the unanticipated frequency of the trips to SF-DODS and coordination problems typical to the early stages of any large construction operation. These coordination problems have now been solved and monitors will accompany the disposal vessels with the frequency required by the amended ACOE permit. It should be noted that observers have not witnessed any seabird or marine mammal behavior that indicates a response to the tugboat or dumping activities.

## **METHODS**

Surveys were conducted in accordance with the procedures outlined in the Deep Ocean Disposal Seabird and Marine Mammal Monitoring Protocol (dated August 2002).

### **Seabirds (August 22-23, 2002)**

The tugboat left Pier 7 in Oakland around 1020 hours on August 22 and returned at around 0700 hours on August 23. Surveys were initiated just west of the Golden Gate Bridge at 1247 hours and continued until dark at 2004 hours on August 22. The dredged materials were dumped at SF-DODS at 2100 hours on August 22. Total approximate observation time was 7 hours and 17 minutes in transit and 20 minutes at SF-DODS. Sea conditions and weather observations were recorded every hour during transit. No surveys were conducted on the return trip due to darkness.

Surveys consisted of recording bird species and numbers:

- within 660 feet (200 meters) of the tugboat during 15 minute intervals while in transit.
- within 660 feet (200 meters) of the barge for 5 minutes at 30 minute intervals while in transit.
- within 660 feet (200 meters) of the barge from 5 minutes before dumping until 15 minutes after dumping the dredged material.

### **Marine Mammals (August 23-24, 2002)**

Observations were conducted for approximately twelve hours on August 23 from 0815 hours (time of departure from Pier 7) until 2015 hours when observations were suspended due to darkness.

Observations were made from the tugboat wheelhouse, which gave observers a 360° view and was approximately 20 feet (6 meters) above the water, providing an excellent observation platform.

## RESULTS

### Seabirds (August 22-23, 2002)

The sky was overcast during the entire monitoring effort. The sea conditions were good during the survey period, with light to moderate breezes and a swell height ranging from 3-5 feet (0.9-1.5 meter). The water surface was somewhat choppy, but this did not hinder the observation and identification of seabirds around the tug boat. It was more difficult to see small birds on the water around the barge; however, some of the numerous common murre recorded around the tugboat may have also occurred within the 660-foot (200-meter) survey area around the barge.

Thirteen species of birds were observed within 660 feet (200 meters) of the tugboat during transit. Four species were seen within 660 feet (200 meters) of the barge. No birds were observed at the SF-DODS survey area, but visibility was poor (see below). Bird observations are summarized in Table 1.

**Table 1. Total Number of Seabirds Recorded During Transit from Golden Gate to SF-DODS on August 22**

SPECIES	TUG	BARGE	DODS
Black-footed albatross ( <i>Phoebastria nigripes</i> )	3	0	0
Pink-footed shearwater ( <i>Puffinus creatopus</i> )	5	0	0
Sooty shearwater ( <i>Puffinus griseus</i> )	65	0	0
Brown pelican ( <i>Pelecanus occidentalis</i> )	60	0	0
Brandt's cormorant ( <i>Phalacrocorax penicillatus</i> )	123	4	0
Red-necked phalarope ( <i>Phalaropus lobatus</i> )	14	0	0
Heermann's gull ( <i>Larus heermanni</i> )	203	1	0
Western gull ( <i>Larus occidentalis</i> )	378	62	0
Caspian tern ( <i>Sterna caspia</i> )	1	0	0
Elegant tern ( <i>Sterna elegans</i> )	61	3	0
Common murre ( <i>Uria aalge</i> )	1504	0	0
Cassin's auklet ( <i>Ptychoramphus aleuticus</i> )	2	0	0
Rhinoceros auklet ( <i>Cerorhinca monocerata</i> )	6	0	0

The most frequently observed birds during transit were common murre, followed by western gulls and Heermann's gulls. During transit, the number of western gulls observed loafing on the barge varied between 0 and 9. As gulls came and went from the barge the same individuals may have been recorded within the 660-foot (200-meter) survey area around the tugboat. It was difficult to keep track.

As during the previous survey (July 22-23, 2002), the only birds that appeared to be attracted to the tugboat or the barge were western gulls that used the barge as a loafing area. Gulls were not observed feeding around the barge. As noted above, no birds were seen at SF-DODS. Because it was dark, a spotlight on the tugboat was used to view the barge before, during, and after dumping. Visibility was poor, however, due to movement of the tugboat and the barge, which made it difficult to keep the spotlight on the barge.

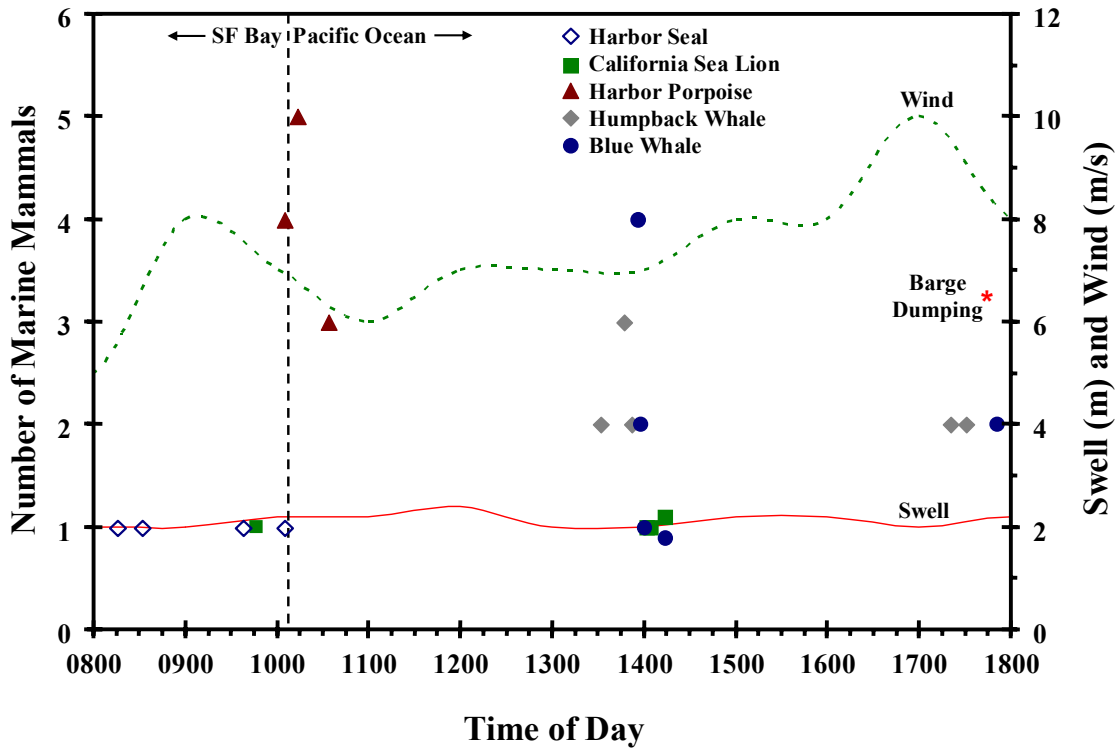
The tugboat and the barge did not appear to have any effects on birds, except that individual birds in the path of the tug were scared off. Birds on the water (e.g., common murre and Cassin's auklet) avoided the approaching tugboat by diving or flushing off the water and flying away. Birds did not appear to be attracted to the tugboat and were not observed to follow in its wake.

Incidental marine mammal observations included 8-10 harbor porpoises (*Phocoena phocoena*), near the Golden Gate, and 2 California sea lions (*Zalophus californianus*). All of these marine mammals were within 660 feet (200 meters) of the tugboat. Several whales were noted outside the study area, but they were too distant to identify species. Other incidental observations included an ocean sunfish (*Mola mola*).

### **Marine Mammals (August 23-24, 2002)**

Weather conditions were fair (Beaufort 3-5) with cloudy skies, moderate to strong wind and small swells (Figure 3).

**San Francisco Bay.** Four harbor seals (*Phoca vitulina*) and one California sea lion (*Zalophus californianus*) were sighted within San Francisco Bay as the dredge barge was being hooked up to the tugboat at the three piles from the Pile Installation Demonstration Project (PIDP) and in route to the Golden Gate Bridge (Figure 3 and Table 2). The harbor seals were all briefly resting at the surface and the sea lion was swimming west on the surface.



**Figure 3.** Plot of the observations of each California sea lion and harbor seal and each pod or individual blue whale, harbor porpoise, or humpback whale; and wind speed and swell during the trip to the Deep Ocean Disposal Site and the dredged material dumping. Only the initial observation of each animal or pod is plotted rather than multiple sightings of the same animal or pod.

**Table 2. Summary of marine mammal sightings including species, location and behavior**

Species	Number	Time	Location	Behavior
Harbor Seal	1	08:15	At PIDP Site	Resting at surface – then dove
Harbor Seal	1	08:31	At PIDP Site	Resting at surface – then dove
Harbor Seal	1	09:38	1,640 ft (500 m) east of Alcatraz Island	Resting at surface – then dove
California Sea Lion	1	09:47	0.6 mi (1 km) east of Golden Gate	Swimming west
Harbor Seal	1	10:05	1,640 ft (500 m) east of Golden	Resting at surface – then dove
Harbor Porpoise	4	10:05	1,640 ft (500 m) east of Golden Gate Br.	Swimming north-east
Harbor Porpoise	5	10:13	1,640 ft (500 m) west of Golden Gate Br.	Swimming north-west
Harbor Porpoise	3	10:33	0.9 mi (1.5 km) west of Golden Gate Br.	Swimming south-west
Humpback Whale	2	13:31	3.1 mi (5 km) south of S.E. Farallon Is.	Swimming north-east
Humpback Whale	3	13:46	3.1 mi (5 km) south of S.E. Farallon Is.	Swimming north-east
Humpback Whale	2	13:52	3.1 mi (5 km) south of S.E. Farallon Is.	Swimming south-west
Blue Whale	4	13:56	3.1 mi (5 km) south of S.E. Farallon Is.	Swimming north-west
Blue Whale	2	13:57	3.1 mi (5 km) south of S.E. Farallon Is.	Swimming north-west
Blue Whale	1	14:00	3.1 mi (5 km) south of S.E. Farallon Is.	Swimming west

California Sea Lion	1	14:02	3.1 mi (5 km) south of S.E. Farallon Is.	Swimming west
California Sea Lion	1	14:04	3.1 mi (5 km) south of S.E. Farallon Is.	Eating large salmon
California Sea Lion	1	14:14	3.1 mi (5 km) south of S.E. Farallon Is.	Swimming west
Blue Whale	1	14:14	3.1 mi (5 km) south of S.E. Farallon Is.	Swimming south-west
Humpback Whale	2	17:20	3.1 mi (5 km) east of DODS	Swimming south-west
Humpback Whale	2	17:30	3.7 mi (6 km) east of DODS	Swimming south-west
Blue Whale	2	17:51	0.6 mi (1 km) east of DODS	Swimming west

One pod of at least four harbor porpoises (*Phocoena phocoena*) was observed approximately 0.5 mile (0.8 kilometer) inside the northern section of San Francisco Bay. The harbor porpoises were observed for about four minutes until they were out of sight.

**Outside San Francisco Bay to SF-DODS.** Two more pods of harbor porpoises were observed just outside the Golden Gate Bridge and 0.9 mile (1.5 kilometers) west (Figure 3, Table 2). No marine mammals were sighted from approximately 0.9 mile (1.5 kilometers) outside the Golden Gate Bridge until near the South-east Farallon Islands. Beginning at 1331 through 1352 hours at least seven humpback whales (*Megaptera novaeangliae*) in small pods of two to three whales were observed. The humpback whales were within 328 feet (100 meters) to 0.6 mile (1.0 kilometer) of the tugboat and did not show any reaction to the tugboat and dredge barge (i.e., no abrupt course changes). Beginning at 1352 through 1414 hours at least eight blue whales (*Balaenoptera musculus*) in pods of one to four whales were observed. The blue whales were within 164 feet (50 meters) to 0.6 mile (1.0 kilometer) of the tugboat and did not show any reaction to the tugboat and dredge barge (i.e., no abrupt course changes). One blue whale moved across the bow within 164 feet (50 meters) of the tugboat and continued on course despite the close proximity. The whales were usually observed through several cycles of briefly surfacing and then diving for short periods before sight of them was lost as the vessel moved on toward SF-DODS.

One juvenile and two sub adult male California sea lions was observed from 1402 – 1414 hours, within about 164-328 feet (50-100 meters) of the tugboat. One sub adult male was feeding on a salmon and did

not appear to notice the tugboat. The other two sea lions stopped and watched the tugboat pass and then dove out of sight. Neither sea lion swam away rapidly on the surface, suggesting that they were not disturbed by the vessels.

No marine mammals were observed again until 1720 hours when a pair of humpback whales was observed for three minutes as they passed the tugboat. A second pair was observed at 1730 hours as they passed near the barge. Dumping of the dredged material occurred at SF-DODS at 1743 hours and no marine mammals were observed in the area. Two more blue whales were observed approximately eight minutes after the dredged material was dumped. The two blue whales were swimming in the opposite direction, 246 feet (75 meters) parallel to the tugboat and barge, for approximately four minutes. The whales did not alter their course despite being close to the tugboat and barge.

No marine mammals were observed after 1756 hours and observations ended at 2015 hours due to darkness.

The marine mammals encountered on the trip to SF-DODS showed little if any response to the tugboat and barge. No abrupt course changes by any animals were observed and several of the sea lions and whales were within 164 feet (50 meters) of the tugboat. It is unlikely that the marine mammals did not notice the tugboat and barge as the engines would alert any animal to their presence. Large ships are common in this area as it is part of the commercial vessel traffic corridor for California and the route out of San Francisco Bay. This suggests that marine mammals are habituated to the noise and presence of large ships, and therefore, continue to travel and forage through this area with little response to vessels such as the tugboat and dredge barge.