

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

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

REPORT #3 – SEPTEMBER 2002



OCTOBER 2002

**EA 012023
04-SF-80 KP 12.2/KP 14.3
04-ALA-80 KP 0.0/KP 2.1**

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Prepared by

Steve Granholm *Phil Thorson*

Seabirds

Marine Mammals

Steve Granholm

Phil Thorson

LSA Associates, Inc.

SRS Technologies

Reviewed by

Ivy Edmonds-Hess

Ivy Edmonds-Hess

Parsons Brinckerhoff Quade & Douglas, Inc.

Approved by

Mara Melandry

Mara Melandry

Caltrans District 4

INTRODUCTION

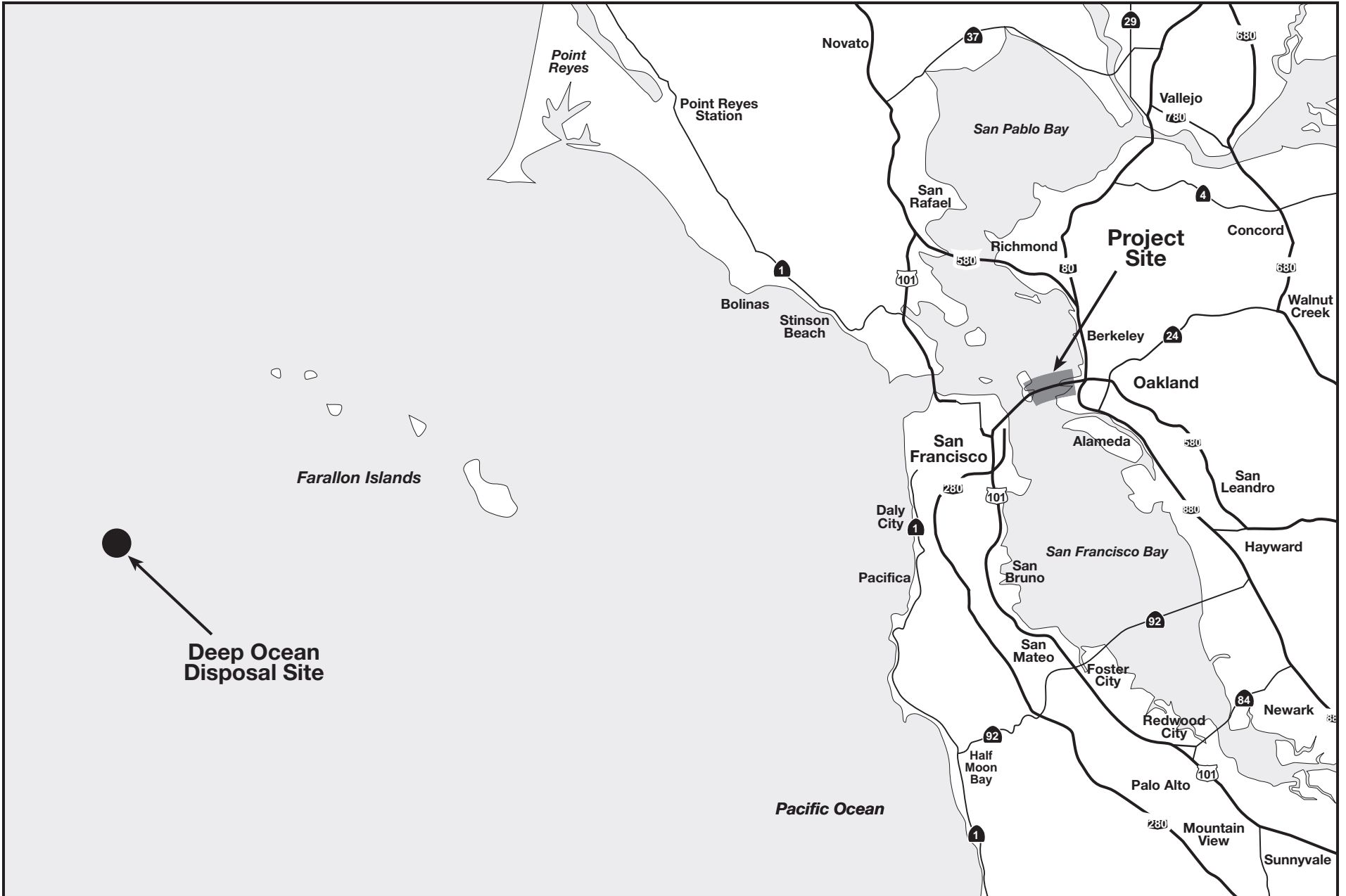
In order to improve the seismic safety of the San Francisco-Oakland Bay Bridge (SFOBB), the State of California is replacing the existing East Span with a new bridge immediately to the north (see Figure 1). This is a multi-year effort that will involve a number of construction activities on land as well 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 was completed September 27, 2002. During this phase, suitable dredged material was 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.

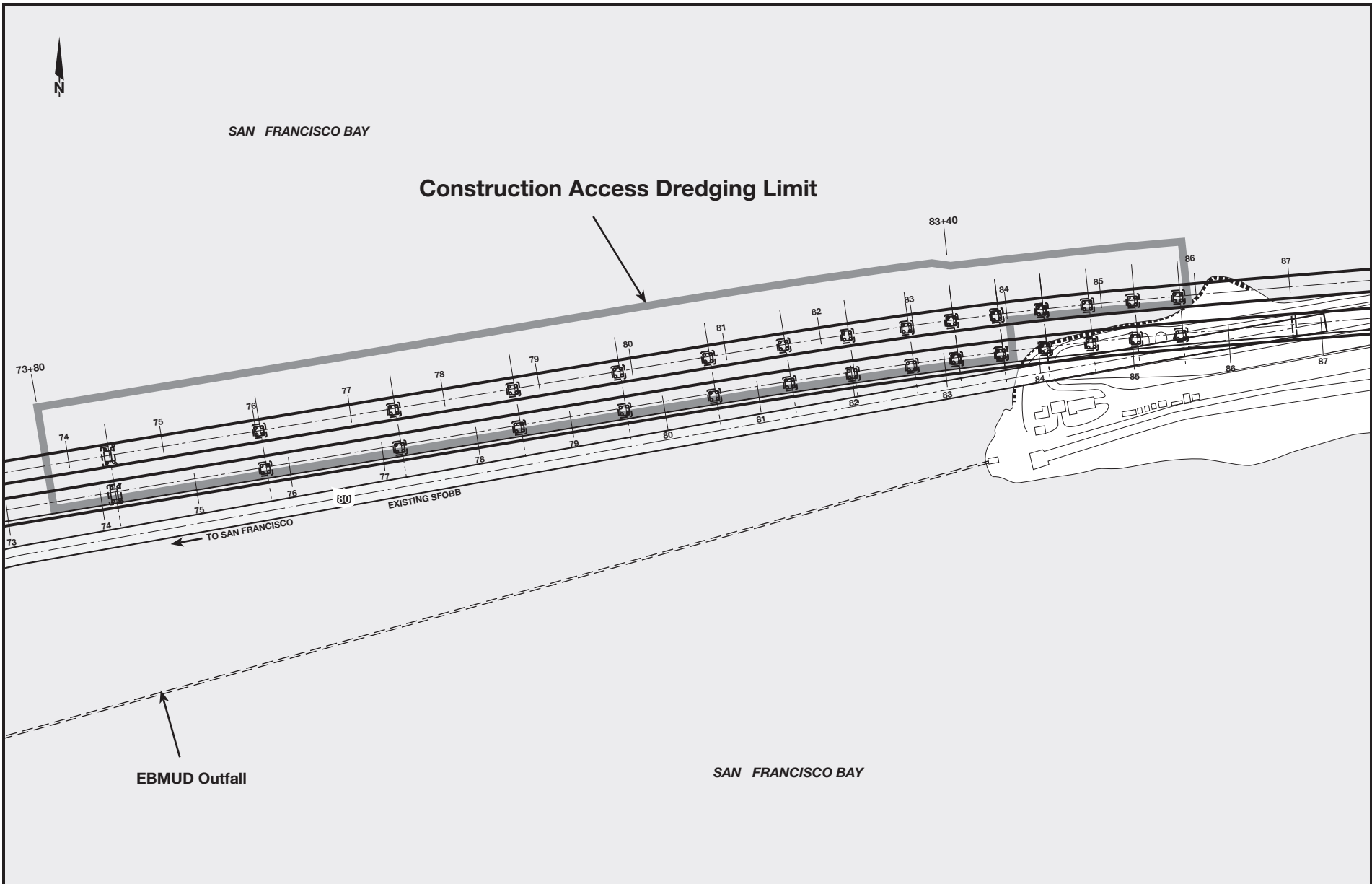
Pursuant to Section 103 of the Marine Protection, Research, and Sanctuaries Act, the U.S. Environmental Protection Agency provided the U.S. Army Corps of Engineers (ACOE) with Ocean Disposal Special Conditions (letter dated March 29, 2002) for inclusion into ACOE Permit 23013S for the East Span Project. 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. and SRS Technologies served as independent observers for Caltrans on two trips to SF-DODS during the month of September. Seabird observers accompanied a tugboat and barge on a trip to SF-DODS on September 4-5, 2002 and marine mammal observers traveled with a tugboat and barge on September 17-18, 2002. There were a total of 45 vessel trips to SF-DODS during the month of September.





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 (September 4-5, 2002)

The tugboat left Pier 7 in Oakland around 0820 hours on September 4 and returned at around 0015 hours on September 5. Surveys were initiated just west of the Golden Gate Bridge at 1030 hours and continued until dark at 2000 hours. The dredged materials were dumped at SF-DODS at 1745 hours on September 4. Total approximate observation time was 9 hours and 10 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 (September 17-18, 2002)

Observations were conducted on August 17, 2002 from 0735 hours (time of departure from Pier 7) until 2000 hours when observations were suspended due to darkness and fog. 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. The dredged materials were dumped at SF-DODS at 1718 hours on September 17.

RESULTS

Seabirds (September 4-5, 2002)

The sea conditions were very good during the survey period, with light to moderate breezes and a swell height ranging from 3-4 feet (0.9-1.2 meters). The sky was clear during the majority of the monitoring effort, but several fog banks were encountered west of the Farallon Islands. The fog was not dense enough to hinder bird observations.

Fifteen 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 and two species were observed at the SF-DODS survey area. Bird observations are summarized in Table 1.

Table 1. Total Number of Seabirds Recorded During Transit from Golden Gate to SF-DODS on September 4

SPECIES	TUG	BARGE	DODS
Black-footed albatross (<i>Phoebastria nigripes</i>)	6		1
Pink-footed shearwater (<i>Puffinus creatopus</i>)	3	0	0
Sooty shearwater (<i>Puffinus griseus</i>)	4	0	0
Shearwater sp.	1		
Brown pelican (<i>Pelecanus occidentalis</i>)	1	2	0
Brandt's cormorant (<i>Phalacrocorax penicillatus</i>)	13	1	0
Pelagic cormorant (<i>Phalacrocorax pelagicus</i>)	1	0	0
Red-necked phalarope (<i>Phalaropus lobatus</i>)	10	0	0
Red phalarope (<i>Phalaropus fulicaria</i>)	20	0	0
Red or red-necked phalarope	110	0	0
Pomarine jaeger (<i>Stercorarius pomarinus</i>)	1	0	1
Parasitic jaeger (<i>Stercorarius parasiticus</i>)	2	0	0
Jaeger sp.	2	0	0
Heermann's gull (<i>Larus heermanni</i>)	7	0	0
Western gull (<i>Larus occidentalis</i>)	75	30	0
Elegant tern (<i>Sterna elegans</i>)	5	0	0
Arctic tern (<i>Sterna paradisaea</i>)	2	0	0
Common murre (<i>Uria aalge</i>)	175	14	0

The birds observed most frequently during transit were common murre, followed by red or red-necked phalaropes and western gulls. During transit, the number of western gulls observed perching on the barge varied between zero and nine. As gulls came and went from the barge, the same individuals may have been recorded repeatedly within the 660-foot (200-meter) survey area around the tugboat. It was difficult to keep track.

As with the previous surveys, during July and August, western gulls appeared to be attracted to the tugboat, at least briefly, and they also used the barge as a perching area. Gulls were not observed feeding around the barge. Several black-footed albatrosses and jaegers also appeared to be attracted to the tugboat and barge, but just flew by and did not stay long.

A shearwater (*Puffinus* sp.) was seen near the edge of the survey area as the tugboat approached SF-DODS. This bird had bright white underparts and was brown dorsally. The top of the primaries appeared somewhat darker than the rest of the upper wing and the head was distinctly paler than the rest of the upper body. The bird was identified as a shearwater by its low flight over the ocean surface, punctuated by short glides and banks above the horizon. This bird was not seen well enough, however, to identify its species.

In general, the tugboat and barge did not appear to have much effect on birds, except for the mild attraction for some species discussed above, and the fact that individual birds in the path of the tugboat were scared off. Birds on the water (e.g., common murre) avoided the approaching tugboat by diving or flushing off the water and flying away.

Incidental observations of marine mammal and fish included four to five harbor porpoises (*Phocoena phocoena*), in the waters just west of the Golden Gate, and five to six California sea lions (*Zalophus californianus*). All of these marine mammals were within 660 feet (200 meters) of the tugboat. Two pods of humpback whales (*Megaptera novaeangliae*), totaling approximately eight individuals, were observed just before dark on the return trip. One pod of humpbacks was within the study area but near its outer edge. The tugboat also passed near a very large ocean sunfish (*Mola mola*) basking at the surface.

Marine Mammals (September 17-18, 2002)

Weather conditions were poor due to high swell and wind (Beaufort 5-7) but with mostly clear skies turning to fog in the afternoon. Swell and wind data are from the National Oceanic Atmospheric Administration National Data Buoy Center, San Francisco buoy (37.75 N 122.82 W).

San Francisco Bay. One harbor seal (*Phoca vitulina*) was sighted resting at the surface within San Francisco Bay, approximately 0.6 mile (1.0 kilometer) east of the Golden Gate Bridge (Figure 3, Table 2).

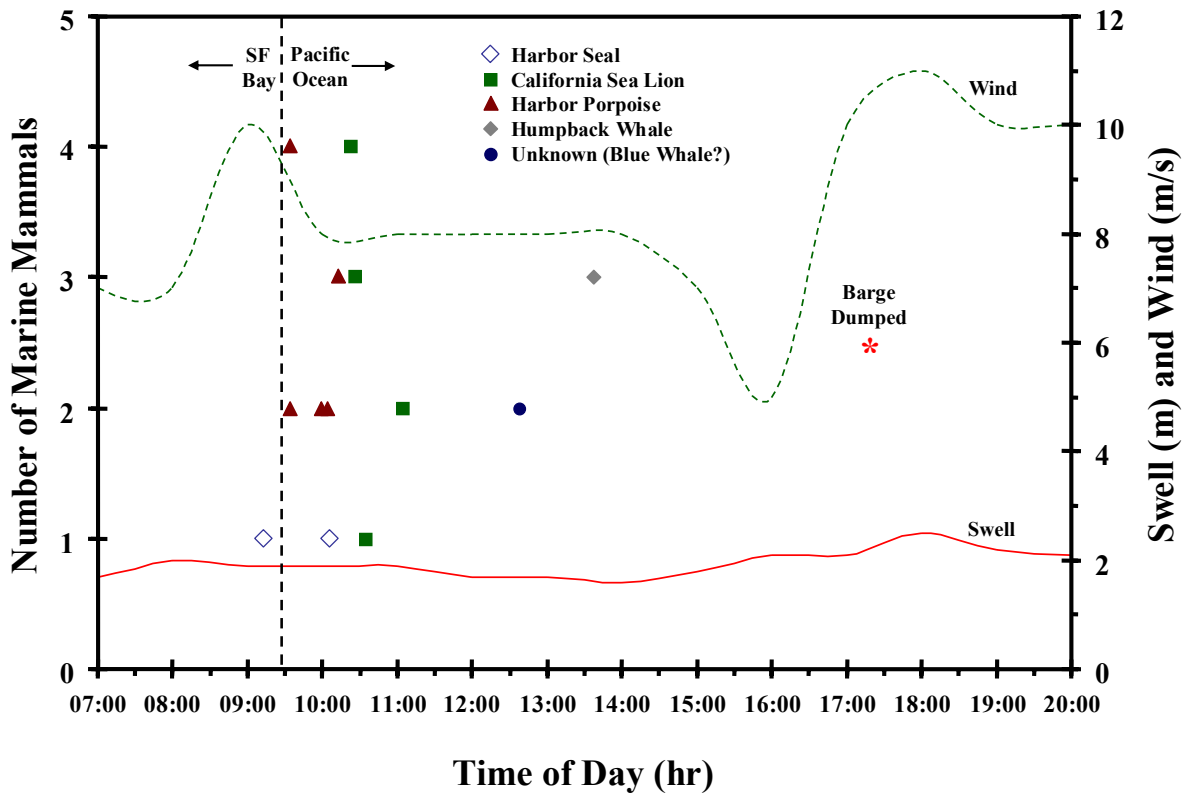


Figure 3. Plot of the observations of each California sea lion and harbor seal and each pod or individual harbor porpoise, humpback whale or unknown whale (possibly a blue whale), and wind speed and swell during the trip to SF-DODS and the dredged material dumping. Only the initial observation of each 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	09:13	0.6 mi (1.0 km) east of Golden Gate Br.	Adult resting at surface, 660 feet (200 meters) south of the tugboat
Harbor Porpoise	4	09:30	Just west of Golden Gate Br.	Swimming north west, 660 feet (200 meters) north of tugboat
Harbor Porpoise	2	09:34	0.3 mi (500 m) west of Golden Gate Br.	Swimming north west, 660 feet (200 meters) south of tugboat
Harbor Porpoise	2	10:00	0.9 mi (1.5 km) west of Golden Gate Br.	Swimming south, 980 feet (300 meters) north west of tugboat
Harbor Porpoise	1	10:04	0.9 mi (1.5 km) east of Golden Gate Br.	Swimming west, 250 feet (75 meters) south of tugboat
Harbor Seal	1	10:06	0.9 mi (1.5 km) west of Golden Gate Br.	Juvenile resting at surface 820 feet (250 meters) south of the tugboat
Harbor Porpoise	2	10:13	1.2 mi (2.0 km) west of Golden Gate Br.	Swimming south, 330 feet (100 meters) south-east of tugboat
California Sea Lion	4	10:22	7.5 mi (12.0 km) SSW of Golden Gate Br	Juveniles and sub adult males resting on green buoy # 7
California Sea Lion	3	10:26	8.7 mi (14.0 km) SSW of Golden Gate Br	Juveniles and sub adult males resting on red buoy # 6, 1,640 feet (500 meters) south of the tugboat
California Sea Lion	1	10:35	9.6 mi (15.5 km) SSW of Golden Gate Br	Juvenile resting on green buoy # 3, 1,640 feet (500 meters) north of the tugboat
California Sea Lion	2	11:04	13.0 mi (21.0 km) SSW of Golden Gate Br	Juveniles resting on western limit buoy, 1,640 feet (500 meters) north of the tugboat
Unknown whale	2	12:37	7.5 mi (12.0 km) east of the Farallons	Blows seen 1,640 feet (500 meters) south of barge – may be blue whales
Humpback Whale	3	13:37	5.0 mi (8.0 km) south east of S.E. Farallon Is.	Swimming south-west, 660 feet (200 meters) south of tugboat

Outside San Francisco Bay. From 0930 to 1013 hours, five pods of harbor porpoise (*Phocoena phocoena*) were observed. Each of the pods was composed of one to four animals. During this time, one juvenile harbor seal was observed briefly resting at the surface at 1006 hours. Many sea birds appeared to be foraging in this area and the harbor porpoises may also have been foraging. From 1022 to 1104 hours, ten sea lions (*Zalophus californianus*) were observed. There were one to four animals hauled out on four different buoys marking the boat transit lane out of San Francisco Bay. No marine mammals were observed again until 1237 hours when blows from two whales, approximately 0.9 miles (1.5 kilometers) south of tugboat, were observed. Due to the rough seas and wind it was not possible to accurately identify the species of whale, but it is suspected that they were blue whales (*Balaenoptera musculus*) due to the shape and size of the blow (Leatherwood et al. 1982). From 1337 to 1340 hours, three humpback whales (*Megaptera novaeangliae*) were observed swimming south-west about 660 feet (200 meters) from the dredge barge. No other marine mammals were observed for the remainder of the trip.

The high winds and swell made observations difficult and may account for the smaller number of whales observed as compared to previous SF-DODS marine mammal observation trip on August 23, 2002. With high winds that deform and lessen the height and shape of the whale blows, it is difficult to spot them unless they are close to the tugboat. The rough seas also appeared to cause several sea lions to use the shipping channel buoys to rest on rather than forage.

Two similar patterns of habitat use by cetaceans were seen during this trip and the August 23, 2002 trip. Several pods of harbor porpoises were observed just west of the Golden Gate Bridge and humpback and possibly blue whales were observed near the Southeast Farallon Islands.

None of the marine mammals encountered on the trip to SF-DODS showed any response to the tugboat and barge. Abrupt course changes by marine mammals were not observed. Most animals were at least 660 feet (200 meters) away from the tugboat or hauled out on buoys. The exception was one pod of harbor porpoises that was approximately 250 feet (75 meters) from the tugboat, but still did not show any response to the tugboat or barge.

LITERATURE CITED

Leatherwood, S., R.R. Reeves, W.F Perrin, and W.E. Evans. 1982. Whales, dolphins, and porpoises of the eastern north Pacific and adjacent Arctic waters: A guide to their identification. National Oceanic and Atmospheric Administration Technical Report, National Marine Fisheries Service Circular 444. 243pp.