



Garcia and Associates
1512 Franklin Street, Suite 100
Oakland, CA 94612
Phone: (510) 891-0024
Fax: (510) 891-0027

To: Stefan Galvez, Caltrans

From: Jason Minton

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RE: Caltrans Bay Bridge Project - SAS Temporary Pile Driving
Incidental Bird Predation and Fish Monitoring Notes for 03/19/2009

To improve the seismic safety of the San Francisco-Oakland Bay Bridge (SFOBB), the California Department of Transportation (Caltrans) is replacing the existing East Span with a new bridge immediately to the north (Figure 1). As part of the construction for the Self-Anchored Suspension (SAS) portion of the project, it is necessary to build temporary towers. These temporary towers, Temporary Towers D, F and G are marine based and require driving of temporary piles to support the SAS portion of the bridge during construction (Figure 2).

This memorandum documents bird predation and/or fish mortality observed incidental to hydroacoustic monitoring conducted on March 19, 2009 in association with temporary pile driving for the East Span Seismic Safety Project. The protocol of the bird predation monitoring was not followed explicitly, but was implemented to the best of the observer's ability given the other duties required during the hydroacoustic monitoring. This particular hydroacoustic monitoring was completed during pile driving for Temporary Tower G south node in support of the SAS portion of the East Span Seismic Safety Project. Although the day's monitoring was primarily dedicated to hydroacoustic monitoring, bird predation monitoring was performed as an incidental effort.

Methods

Incidental observations were made from a research vessel anchored within 100 meters of two pile driving work sites and at approximately 500 meters from a third pile. Observations were made before, during and for a 20 minute period after pile driving ceased. The extended monitoring after pile driving ceased was an effort to document any delayed fish mortalities or bird predation. A

*SFOBB SAS Pile Driving
Bird Predation Memorandum*

standard pair of 8 X 40 binoculars was used to observe actual feeding activity and to help identify fish taken. In addition, general bird activity and behavior during pile driving and throughout the day were noted and recorded.

Results

A total of three 42-inch steel pipe piles were driven between approximately 1400 and 1818 hours. The initial pile was first driven with the APE “Super Kong” vibratory hammer followed by the Delmag D100-13 impact hammer. The second and third piles were driven only with the Delmag D100-13 impact hammer. The approximate start and end times and durations for each pile driving event were recorded and are provided in Table 1 below. Table 1 also provides the bird feeding/activity/predation observed.

During all of the pile driving efforts, only limited circling and searching by gulls was observed. However, there was one observation of a gull that picked up small fish, approximately 3 inches long during the impact hammering of the second pile at about 1658 hours. This was likely a northern anchovy. The vessel was positioned down-current from the work site, so any affected fish floating to the surface or any associated bird predation would have likely been observed. The crew also continued to watch for any delayed fish losses/bird predation between pile driving events and after the third pile was driven at the end of the day. No delayed activity was observed.

Table 1. SAS Pile Driving Durations and Bird Predation Observations (March 19, 2009).

Pile #	Pile Driving Duration		Hammer Type	Bird Predation/Feeding Observed (Y/N)	Predation Counts	General Bird Activity (Gull Numbers)
	Start Time	End Time				
1	1430	1500	Vibratory	None Observed	No Counts Done	A few gulls circled.
	1552	1621	Impact	None Observed	No Feeding @ (1555-1556)	A few gulls circled.
	1625	1628	Impact	None Observed	No Counts Done	A few gulls circled.
2	1649	1718	Impact	Single gull observed taking a 3” fish @ 1658	No Counts Done	A few gulls circled and/or landed periodically.
3	1741	1818	Impact	None Observed	No Feeding @ (1804-1805)	A few gulls circled.

Figure 1. SFOBB East Span Seismic Safety Project Area



Figure 2. Detail SAS Project Area

