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To: Stefan Galvez, California Department of Transportation

From: Jason Minton

Date: October 30, 2009

RE: San Francisco-Oakland Bay Bridge East Span Seismic Safety Project – Self Anchored Suspension Span, T1 Temporary Access Trestle Pile Driving
Preliminary Results of Daily Bird Predation Monitoring for 10/30/2009

This memorandum provides preliminary results of bird predation monitoring conducted on October 30, 2009 during pile driving for the temporary access trestle. The monitoring was conducted in compliance with the requirements outlined in the Final Hydroacoustic Monitoring Plan for Driving of Temporary Access Trestle Piles for the Self-Anchored Suspension Span (October 2009).

Monitoring during pile driving has several goals:

- monitoring to confirm the presence or absence of bird predation as an indicator of fish mortality;
- observing the level of bird predation by quantifying the number of bird strikes per minute and the duration of the event; and
- identifying the species of fish affected.

Methods

The bird predation monitor was located on a boat in the immediate vicinity [within 200 meters (660 feet)] of the temporary access trestle pile driving located between Yerba Buena Island and Pier T1 (Figure 1). The monitor recorded birds' feeding activity on standardized data sheets throughout the monitoring period, including during the pile driving events and during the intervals between piles. If feeding was observed, one-minute counts of bird strikes were initiated. Those counts were repeated throughout the duration of the pile driving activity, as needed.

The monitor was prepared to identify the species and sizes of any impacted fish either through observation with binoculars, or by collecting specimens with a dip-net. The survey protocol required the observer to collect any green sturgeon or salmonids observed for transfer to NOAA-Fisheries. In addition, general bird activity and behavior during pile driving and throughout the day were noted and recorded.

Results

Pile Driving Data

On October 30, 2009, a total of one (1) steel pipe pile of 36-inch diameter was driven with the Delmag D 32-30 diesel impact hammer. The pile was identified from Figure 1 as pile number 9. The pile was driven from 1359 to 1403 hours. The total duration of active pile driving was approximately four (4) minutes. Table 1 shows the approximate period of the impact driving, and the occurrence of bird feeding/activity/predation when observed.

Pile driving occurred along the relatively shallow shoreline of Yerba Buena Island. An air bubble curtain sound attenuation system was used to reduce sound pressure and exposure levels during impact driving.

Bird Predation Data

The monitors were on-site from 1358 to 1426 hours. No bird predation events were observed during the monitoring period.

A single western gull (*Larus occidentalis*) was observed circling during the pile driving event. The bird did not forage on the water.

Fish Observations

No dead or injured fish were observed. Observations did not indicate that pile driving had impacted fish.

Table 1. Pile driving periods for the SAS temporary access trestle on October 30, 2009. Bird strikes are recorded per one-minute interval during impact pile driving, the interval between piles, and at least 20 minutes following the end of driving.

Pile #*	Pile Driving Duration		Air Bubble Curtain (Y/N)	Bird Predation Observed (Y/N)	Strikes per Count Interval	General Bird Activity/Behavior (Gull Numbers)
	Start Time	End Time				
<i>October 30, 2009</i>						
9	1359	1403	Y	N	0	1 gull circled

* Intervals between piles are recorded on separate rows if bird predation was observed.

Figure 1.

