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MEMORANDUM

Date: January 10, 2008

To: Commissioners and Interested Parties

From: Peter Douglas, Executive Director
Robert S. Merrill, District Manager – North Coast District
Melanie Faust, Sr. Coastal Program Analyst – North Coast District

Subject: **Addendum to Commission Meeting for Friday, January 11, 2008, North Coast District Item F 8a, Application CDP No. 1-07-013 (Caltrans – Highway 101 Mad River Bridges replacement)**

STAFF NOTE

The purpose of this addendum to the staff report for Agenda Item F8a set for Commission hearing on Friday, January 11, 2008 is to:

1. Attach new Exhibits, including:

   Addendum Exhibit 6: Correspondence received since the publication of the staff report, including: a letter of support from College of the Redwoods for the agricultural mitigation proposal that would be implemented by the College and letters of support for the agricultural impact mitigation plan from the Humboldt County Farm Bureau, the University of California Cooperative Extension, the North Coast Growers Association (Farmers' Market), and others;

   Addendum Exhibit 7: Memorandum of the Commission Staff Ecologist, John Dixon, Ph.D., dated January 9, 2008 with attachment (a document from Caltrans' consulting biologist), addressing the staff recommendation regarding caged fish studies during pertinent pile-driving activities;

   Addendum Exhibits FF and GG: Additional aerial photos of the Mad River corridor supplied by Caltrans that show details of the proposed Fish Exclusion Area and other related information, and the potential vegetation removal associated with the Pier 2 test-pile driving that Caltrans proposes for 2008.

2. Address comments received from Caltrans since the publication of the staff report, including providing responsive changes to the recommended conditions & findings where deemed appropriate by staff.

3. Provide other modifications of the Special Conditions and Findings staff has identified as necessary (see staff notes below) based on further review. The staff recommendation of approval of the proposed project with the 20 recommended special conditions (as modified herein) remains otherwise unchanged.

1.0 DISCUSSION.

Caltrans has applied for Coastal Development Permit 1-07-013 to construct two new highway bridges at the Highway 101 crossing of the Mad River, north of Arcata, in unincorporated Humboldt County. The staff report for the subject application recommends approval of the project, with 20 special conditions.
Caltrans staff has reviewed the staff report and generally supports the staff recommendation (the few exceptions are discussed further below). Caltrans and Commission staff met on Friday, January 4 to discuss the further questions and concerns of the Caltrans staff, and have continued to work together to evaluate possible modifications to the staff recommendation.

As a result of the further discussion, staff was able to accommodate most of the requested changes, or to develop alternative modifications which Caltrans found acceptable. This addendum contains changes that Commission staff agreed would improve the clarify of the special conditions, responds to particular concerns Caltrans discussed regarding construction feasibility (in particular the previously recommended restriction that only one section of steel shell pile be driven per day – which is revised in this addendum to allow up to two sections to be driven per day), or makes other corrections where warranted. Some areas of disagreement remain, as discussed below.

Bridge rail design clarification.

One important clarification concerns the bridge rail designs proposed by Caltrans:

Caltrans originally proposed an 8-foot-high outer picket rail style fence on the eastward side of the northbound bridge (along the pedestrian/bicycle corridor) with a solid concrete wall separating the corridor from the traffic shoulder, and ST-20 bridge rails on the outermost (westward) side of the southbound bridge. Caltrans has revised this proposal but the staff report incorrectly reflects some of the original design as the continuing proposal (including that ST-20 would be used throughout).

Caltrans has clarified that the outer picket rail is still proposed, but has been reduced in height to a maximum of 54 inches (4.5 feet) –similar to the popular pedestrian rail on the Noyo Bridge in Ft. Bragg (Mendocino County). The solid concrete wall has been replaced with an ST-10 guardrail. The outer guard rail on the western side of the southbound bridge is now proposed to be of the ST-10 design (approved more recently than the ST-20) and will be topped by a bicycle rail for a total height of 48 inches (4 feet).

Caltrans notes that the most recent Bridge Rail Subcommittee of the Coastal Commission (the "Road's Edge" Subcommittee) preferred the newer ST-10 rail which is considered more visually opaque and is shown in the illustrations within the exhibit package (See Exhibit U).

Remaining Caltrans concerns:

Caltrans continues to disagree with three general areas of the staff recommendation which staff cannot modify as Caltrans requests. These include:

1) Caltrans opposes the requirement that caged fish studies be performed (Special Condition 4) during the certain pile-driving activities.

Caltrans' consulting biologist, Samantha Hadden of Jones & Stokes, prepared a memorandum dated December 29, 2007, submitted to Commission staff by Caltrans via e-mail on January 3, 2008, arguing against the staff recommendation for caged fish studies. The memorandum was reviewed by the Commission staff ecologist, John Dixon, Ph.D. Dr. Dixon continues to recommend the caged fish studies. His reasons are explained in a memorandum attached in Addendum Exhibit 7, which also contains the memorandum submitted by Caltrans. The fisheries biologists of the California Department of Fish & Game and the National Marine Fisheries Service have also expressed support for such studies in project meetings during the past year.

2) Caltrans opposes the requirement (See Special Condition 4(C)(4)) that if hydroacoustic impact limits are exceeded during pile-driving, and if field trials of methods to restore compliance prove unsuccessful, that an amendment to CDP 1-07-013 must be approved by the Commission before pile-driving continues thereafter. Caltrans proposes to continue project activities under such circumstances without seeking an amendment of CDP 1-07-013 from the Commission.

The acoustic impacts from driving the unusually large (7-foot-diameter) steel shell piles Caltrans proposes for the foundations of the Mad River Bridges could kill significant numbers of listed salmonids. Caltrans produced preliminary, worst-case planning estimates in July 2007 showing that if such pile-driving is undertaken without any protective measures to reduce impacts on fish, as many as 50,000 salmonids could be directly killed by project construction.

National Marine Fisheries Service biologists advised Commission staff and Caltrans that such an impact to listed salmonids might warrant a "jeopardy" opinion under the Federal Endangered Species Act, and California Department of Fish & Game biologists confirmed that the new hydroacoustic impact information could also call into question CDFG's previous Consistency Determination for coho impacts (California Endangered Species Act).

In light of this information, a multi-agency analysis undertaken in collaboration with Caltrans determined that excluding fish from the area of the river that coincides with the hazard footprint generated by pile-driving would be essential to reducing the project's potentially severe impacts on the fisheries of the Mad River. Such measures are not undertaken lightly because exclusion has impacts as well, such as preventing through-migration of fish in the river, direct impacts on fish due to electro-fishing, etc. In addition, de-population of the exclusion zone would not clear all fish due to the size and complexity of the habitat.

Thus, by late summer of 2007, Caltrans developed a conceptual "Fish Exclusion Zone" proposal. The exclusion zone would be established by installing temporary structures in the river to prevent fish from entering the excluded section of the flowing river at limits matching the estimated outer boundaries of the hydroacoustic hazard footprint. Caltrans now estimates that the hazard footprint for driving up to two pile sections per day will extend 150 meters upstream and 150 meters downstream from the pile-driving location.

An exclusion project of this magnitude has not been field tested, and a number of technical challenges exist. The nets and weirs must be secured, and maintained continuously for two 60-day pile-driving seasons. Agency biologists agree that it is not certain how well the nets and weirs will function, and thus a risk exists that the exclusion measures could fail.

There is also the risk that the sound impacts produced by pile-driving could exceed those estimated by Caltrans' consulting acousticians and biologists. While little empirical data exists concerning pile-driving sound levels in riverine environments, anecdotal observations suggest the extent of potential variability and the difficulty of projecting accurate estimates. For example, a National Marine Fisheries Service biologist & habitat restoration specialist, Leah Mahan, provided the following account of her observation of a recent field incident that suggests that field conditions, the size of the impact equipment, and the material being struck may all produce unpredictable variations in the sound field generated by percussion:

> *"…In October of 2006 a 10' high x 40' long dam was removed on the main stem of House Creek, tributary to the Gualala River in Mendocino County, CA. Extensive e-fishing and seining was conducted in the pool below the dam prior to construction activities. Stream flow was diverted around the construction site but underground*

> *seepage caused some water to remain in the pool below the dam. An excavator with a hammer-arm attachment (I think it is the same thing as a hoe ram) was used to break up the concrete of the dam. As soon as the hammer-arm began pounding on the dam, approximately 10 juvenile steelhead (that must have been hiding way back in the pool crevices during e-fishing and seining) swam up to the water's edge and began trying to jump out of the water onto the shore. In addition, the shore was lined with masses of ammocetes that also could not tolerate the pounding. …. There was a noticeable change in the behavior and body movements of the steelhead…. I immediately scooped them up with a dip net and placed them in more suitable areas downstream. No hydroacoustic monitoring of the underwater sound in the pool was recorded. However, the excavator and the hammer-arm were of average small construction equipment size and the concrete was not very sturdy as it was old and hand made."*

This example illustrates the potential for a range of biological impacts from sound generation sources and thus the need to reserve the potential for Commission review of an amendment should unanticipated effects occur in the field during the proposed pile-driving, as staff recommends.

The fisheries of the Mad River within the pile-driving hazard footprint of the proposed project are considered by NMFS fisheries biologists to contain some of the richest salmonid habitat in the Mad River watershed. Substantial numbers of salmonids are present even during the lowest-flow summer months due to the favorable habitat characteristics of the river in the project area. Thus, should pile-driving continue during conditions of fish exclusion zone failure or generate hydroacoustic impacts over the threshold limits established in the recommended special conditions, significant additional adverse impacts to sensitive species could result.

For all of these reasons, staff continues to recommend that if the measures Caltrans proposes to limit adverse impacts to sensitive species do not perform as well as expected, or if the hydroacoustic impacts posed by pile-driving are more severe than presently estimated, the recommended special conditions require Caltrans to seek an amendment from the Commission before continuing pile-driving.

Moreover, staff notes that if the staff recommendation is revised as Caltrans suggests, the consequence would be to provide Caltrans with an approval to undertake the proposed project activities without a meaningful ceiling on potentially significant, adverse impacts to sensitive species.

3) Caltrans opposes the requirement that the off-site riparian wetland mitigation proposed by Caltrans at the "Old Samoa Road" parcel (a 40-acre parcel zoned Agriculture Exclusive, adjoining Old Samoa Road near Arcata) shown in Exhibits Q, R, S of the staff report) that would exclude the use of agricultural lands be limited to a maximum of two (2) acres.

The parcel, which is also mostly delineated as wetlands, is a grazed pastureland. The staff report explains that conversion of a significant amount of the pastureland to non-

grazing use for mitigation of the Mad River Bridges project would be a conversion of agriculture that could be avoided. Off-site mitigation could be accomplished in a variety of locations and thus is not unavoidable. The planting of two acres of riparian vegetation around the margins of the 40-acre parcel does not constitute a conversion of agriculture. However, planting an additional 3.5 acres (approximately) with willows, alder, etc. as Caltrans now additionally proposes would exclude livestock grazing from the planted area. The resultant conversion of grazing lands for wetland mitigation purposes is an impermissible conversion of agricultural lands that would not be consistent with the Chapter 3 policies of the Coastal Act, as explained in the findings.

Correction to previous staff summary: *The "summary" on page 4 of the staff report states that there are 21 special conditions recommended; however, there are only 20 special conditions presently recommended by staff.*

Staff is herein modifying the staff recommendation to include the changes set forth below.

2.0 CHANGES TO THE STAFF R ECOMMENDATION.

New recommended text is shown in **bold underline** and text in the existing staff report that is being deleted by these modifications is shown in ~~**bold strikethrough**~~.

Changes to Special Conditions:

To the definitions set forth on page 6 of the staff report, the following definitions are also added for "river corridor" and "water quality standards":

> ***Staff Note:*** *These additional definitions were added at the suggestion of Caltrans staff, including Caltrans environmental engineering/water quality staff.*

River Corridor: "River corridor" shall be defined as the area from top-of-bank to top-of-bank. If such reference is to the ecological context of the river corridor (for example when referring to the river corridor as a wildlife corridor or habitat), the riparian canopy will also be included and the canopy will extend further landward than the physical top-of-bank.

Water Quality Standards: references to "water quality standards" or the equivalent where used herein shall be defined to encompass broader water quality standards such as turbidity and pH but shall also include other water quality parameters such as, but not limited to, sheens, sediment deposits resulting from turbidity plumes, temperature, and visible and non-visible pollutants. These water quality standards shall also include by reference the water quality standards and site-specific water quality objectives for the Mad

River as defined in the Water Quality Control Plan for the North Coast Region (Basin Plan).

In addition, the following global change applies throughout the recommended special conditions: Wherever there is **reference to turbidity and pH standards** for de-watered effluent, or for the waters of the Mad River, or similar references, **the text is hereby changed to "water quality standards" or the equivalent in the context of the reference**, which shall incorporate the definition of "water quality standards" set forth above.

Special Condition 1. Timing of Construction Other Than Pile-Driving (in pertinent part, from pages 6 & 7 of the staff report):

> ***STAFF NOTE:*** *In addition to text changes shown below, should any minor clerical, numbering or bold/ text convention errors occur in the staff report that are not specifically corrected below, these errors will be subject to correction in the adopted findings.*

A. May 1 – June 15 annually: Project activities may be undertaken no closer to the waters of the Mad River than ~~**25 feet landward of the Ordinary High Water Mark or**~~ 25 feet landward of the Wetted Channel, **and shall additionally be setback to an area that is at least two (2) feet in elevation above the wetted channel,** whichever is the greater distance, provided that no discharges of sediment or other construction-related wastes enter waters of the Mad River **as the result of project activities authorized by this provision**. The uppermost limits of this May 1 – June 15 setback area shall be ~~**marked in the field annually by April 30**~~ **monitored in the field daily by the fisheries biological monitor and the Caltrans site supervisor**.

(1) Should **an** unauthorized discharge of sediment or wastes into the Mad River or other water quality violations (such as **a** discharge ~~**of wastewater**~~ that is out of compliance with **water quality standards and/or site-specific water quality objectives for the Mad River defined in the Water Quality Control Plan for the North Coast Region (Basin Plan),** occur during construction undertaken pursuant to Special Condition 1 (A), the Executive Director may suspend this authorization to undertake project activities during the May 1 – June 15 period within the area of the subject site described in Subparagraph A, thereafter. Under such restriction for non-compliance imposed by the Executive Director, project activities may be undertaken no closer to the waters of the Mad River than 50 feet landward from the top of bank of the Mad River, except during the June 16 – October 14 low flow construction season, unless specifically authorized by the Executive Director on a case-by-case basis. **Should the Executive Director impose t**~~T~~his limitation**, it** shall extend for the duration of the construction authorized by CDP 1-07-013.

…

(3) If rain commences while project activities are underway within the area described in Subparagraph A above, the activities shall be stopped and secured and **any necessary** Best Management Practices **(BMPs) shall be immediately** implemented to protect the **water quality** ~~waters~~ of the Mad River **and any adjacent tributaries**. Project activities within the area described in Subparagraph A shall not re-commence after precipitation commences unless all of the conditions in a), b), and c) set forth above are met.

C. October 15 to the following April 30, annually: Project activities shall not be undertaken any closer to the waters of the Mad River than fifty (50) feet landward from the top of bank of the river. Best Management Practices shall at all times be deployed throughout the limits of project activities to ensure that no discharge occurs of any wastes, materials, contaminants, or effluent produced by de-watering that ~~**exceeds turbidity or pH standards**~~ **fails to meet applicable water quality standards**, to the waters of the Mad River.

Special Condition 2. Pile-driving (in pertinent part, from pages 8 & 9 of the staff report).

A. Applicability. All project activities involving the installation of temporary or permanent piles **at or between the location of piers 3 and 4** ~~**or sheet-piles**~~ shall be undertaken in accordance with the requirements set forth herein. The restrictions of this Special Condition shall apply to any pile-driving activities that ~~**may**~~ **have the potential to** affect the aquatic environment of the Mad River, including but not limited to pile driving associated with proposed Piers ~~**2 and**~~ 3 **and 4**~~,~~**. In addition,** installation of coffer dams, testing, or other activities that may produce sound, shaking, disturbance of sediments and gravels in the riverbed, or produce other potentially disruptive effects within the aquatic environment, regardless of whether such activities are undertaken outside of the limits of the flowing waters of the river**, shall additionally be subject to the requirements of the special conditions set forth herein**. All ~~**such**~~ project activities shall at all times be undertaken in full accordance with the following requirements.

B. Timing & Limitations

1) Pile-driving shall be limited to daylight hours **(between sunrise and sunset, provided that there is sufficient visibility for the marine mammal monitor and for the fisheries biological monitor, where applicable)** and shall not be extended through the use of artificial lighting within the Mad River corridor.

2) Pile-driving **of temporary or permanent piles at or between the locations of Piers 3 and 4** shall be limited annually to July 1 – September 1, including these dates**, and shall only be undertaken while approved fish exclusion measures are in place. Installation of sheet piles to install coffer dams in preparation for pile-driving at Piers 3 and 4 may be undertaken without this restriction, provided that the installation of sheet piles at the Pier 3 & 4 locations shall be subject to the hydroacoustic monitoring plan required by Special Condition 4, and shall not exceed the dual metric criteria at any location within the Mad River.**

3). **Pile-driving at Pier 2 shall not commence prior to September 1, 2008. Pile-driving at Pier 2 is not limited to the July 1- September 1 window that applies pursuant to Subparagraph 2) above, and is not anticipated to produce effects in the waters of the Mad River that would exceed the Dual Metric Threshold; however, because the acoustical estimates contain a degree of uncertainty, and because the river's seasonal hydrology varies significantly, the hydroacoustic monitoring plan required pursuant to Special Condition 4 shall incorporate provisions to perform hydroacoustic monitoring of pile-driving at the Pier 2 location(s) to the satisfaction of the Executive Director, for the purpose of confirming that the Dual Metric Threshold is not exceeded within the waters of the Mad River during the subject pile-driving.**

~~3~~**4)**. Pile-driving **of steel shell piles** shall be limited to ~~**one**~~ **a maximum of two** pile section**s** per day.

D. Monitoring

Pile-driving activities subject to Special Condition 2 shall only be undertaken if all of the following conditions are continuously met. If any of these conditions are not met at any time after pile-driving commences, the fisheries biological monitor shall direct that the pile-driving activities stop until such compliance is established:

1) at least one authorized fisheries biological monitor is present at the location of the pile-driving. It shall be Caltrans' responsibility to ensure that adequate biological monitoring personnel are available to staff this monitoring obligation and to ensure that other monitoring (for example of the stability of the fish exclusion structures) tasks are also completed.

2) the hydroacoustic monitoring personnel and equipment are in place and ready to commence monitoring.

3) personnel and equipment for any concurrent monitoring/studies (such as caged fish studies) that are being conducted to evaluate the effects of the pile-driving are in place and ready for pile-driving to commence.

4) the approved "fish exclusion zone" and other pertinent fisheries protection measures required by Special Condition 5 are fully in place and the fish exclusion zone has been de-populated of all fish species and of sensitive species of other taxa (e.g., red-legged frogs) to the maximum extent feasible, and the fisheries biological monitor has verified this status (if the netting or other structures defining the exclusion zone fail, then depopulation must be **re-established and** verified **by the fisheries biological monitor** following repair**, before pile-driving resumes**); and

5) neither criteria of the dual metric exposure criteria set forth in Special Condition 4 below is exceeded **pursuant to the methods of monitoring and responsive construction site management set forth in the approved final hydroacoustic monitoring plan prepared pursuant to the requirements of Special Condition 4.**

If any of the above conditions are not met at any time during pile-driving, pile-driving operations shall be stopped until compliance is restored, and pile-driving shall not re-commence until full compliance with all pertinent conditions has been verified by the fisheries biological monitor and entered into the monitoring records. If pile-driving is stopped because hydroacoustic limits are exceeded, additional requirements pursuant to Special Condition 4 and other special conditions set forth herein shall apply.

> ***Staff Note:*** *Caltrans requested that this restriction on continued pile-driving (in the event of non-compliance) be deleted and in place of that, a requirement that meetings with various agencies be held if Caltrans cannot comply with the requirements of the permit associated with hydroacoustic impacts on fish, etc., and further, that …"Attenuation measures and/or compensatory mitigation will be determined by negotiation between Caltrans and the permitting agencies." Caltrans suggested that the language in the above section be deleted and that the following additional language be inserted: …. "At least one representative from each permitting agency will be invited to four meetings (per pile driving season), and during the pile driving phase of the project, with Caltrans to discuss progress and preliminary pile driving monitoring results."*
>
> *The staff report contains various recommendations for special condition requirements that establish limits on hydroacoustic impacts, meaningful action to limit significant adverse impacts on sensitive species – particularly listed salmonids – that may arise if such limits are exceeded – and requirements for assessment of baseline environmental data (such as fish population assessments that have not been performed to date to establish the baseline of the Mad River fisheries that may be affected, for example).*
>
> *Thus, the Caltrans request for these changes amounts to a request to continue an activity (driving heavy piles) that may have significant adverse impacts on sensitive species even if the activity exceeds protective thresholds that have been established and applied in the pertinent special conditions herein, and to deal with*

such exceedance through "negotiations and meetings with agencies" but without any specified provisions for protection of the sensitive resources under such circumstances.

The Caltrans proposal undermines Caltrans' representations that the proposed project can be undertaken without exceeding the established protective thresholds for avoidance of substantial adverse hydroacoustic impacts on sensitive species. Further, suggesting that in the event of non-compliance, mitigation will be accomplished by holding meetings and negotiating further, without resort to further Commission review of a potential amendment to CDP 1-07-013 (provided for in Special Condition 4 (C)(3)(4), commencing on page 13 of the staff report) does not meet the pertinent standards for review of development proposals under the Chapter 3 policies of the Coastal Act, and moreover, would impermissibly defer the evaluation of any limits to the proposed project's potential impacts. Such an approach would remove the limits on the proposed project's potential adverse hydroacoustic impacts on sensitive species established by Special Conditions 2 and 4.

~~F~~**E**. **Future Amendment.** Project activities shall be conducted at all times in accordance with these provisions. Any proposed changes to these pile-driving requirements and limitations shall be reported to the Executive Director. No changes to the requirements of the special condition shall be made without a Coastal Commission approved amendment of CDP 1-07-013 unless the Executive Director determines that no amendment is legally required.

SPECIAL CONDITION 4: Hydroacoustic Monitoring Plan; Dual Metric Exposure Criteria (in pertinent part, commencing on page 11 of the staff report):

Staff note: *Caltrans requested that the preliminary plan required "prior to issuance" of the CDP pursuant to this special condition instead be required later, "prior to in-river pile driving activities." Staff does not recommend making this change because the existing condition calls for a preliminary plan to be submitted prior to issuance of the permit. A final plan is required by January 1, 2009. This provides almost a year to work out the details of the plan, which may contain substantial technical analysis. In the experience of staff, on other Caltrans projects with similar requirements, sufficient review time is needed to provide adequate technical review and resolution of complex biological and technical monitoring concerns*.

A. PRIOR TO ISSUANCE OF CDP 1-07-013, Caltrans shall submit a **Hydroacoustic Monitoring Plan**, containing all supporting information and analysis deemed necessary by the Executive Director for the Executive Director's review and approval. Prior to submitting the plan, to the Executive Director, Caltrans shall also

submit copies of the Plan to the reviewing fisheries biologists of the California Department of Fish & Game and the National Marine Fisheries Service for their review and consideration.

The plan shall be based on the "dual metric exposure criteria" set forth below and shall state that exceedance of either criterion, calculated as required herein, shall be deemed lethal to exposed fish and non-compliant with the Conditions of CDP 1-07-013.

DUAL METRIC EXPOSURE CRITERIA

1) Criteria: SEL-accumulated:

A fish receiving an accumulated Sound Exposure Level (SEL) at or above 187 dB re one micropascal squared-second during the driving of piles shall be deemed to have received a lethal physical injury. To estimate the sound energy to which a fish is exposed during multiple hammer strikes, NMFS uses the simple summation procedure where Total SEL = Single Strike SEL + 10log(number of strikes).

2) Criteria: Peak SPL:

A fish receiving a peak sound pressure level (SPL) at or above 208 dB re one micropascal from a single hammer strike shall be deemed to have received a lethal physical injury.

At a minimum, the Plan shall:

(1) Establish the field locations of hydroacoustic monitoring stations that will be used to document the extent of the hydroacoustic hazard footprint during pile-driving activities **, and provisions to adjust the location of the acoustic monitoring stations based on data acquired during monitoring, to ensure that the sound pressure field is adequately characterized**;

(2) Include provisions for determining whether the fish exclusion zone proposed by Caltrans based on preliminary modeling extends beyond the actual limits of the hydroacoustic hazard footprint associated with the dual metric exposure criteria developed by the National Marine Fisheries Service in 2007;

(3) Describe the method of hydroacoustic monitoring necessary to continuously assess the actual conformance of the proposed pile-driving with the dual metric exposure criteria up- and down-river of the pile-driving locations on a real-time basis, including relevant details such as the number, location, distances, and depths of hydrophones and associated monitoring equipment;

(4) Include provisions to continuously record pile strikes in a manner that enables the time of each strike, the number of strikes, **the peak sound pressure and other**

measures of sound energy per strike, or other information required by the Executive Director in consultation with fisheries biologists of the California Department of Fish & Game and the National Marine Fisheries Service, and the interval between strikes to be determined for all pile-driving activities that may produce measurable acoustic affects in the aquatic environment of the Mad River, **as well as provisions to supply all monitoring data that is recorded, regardless of whether the data is deemed "representative" or "valid" by the monitor (accompanying estimates of data significance, confounding factors, etc. may be supplied by the acoustician where deemed applicable)**;

(5) Include provisions for real-time identification **(including a method to approximate SEL levels for daily field evaluation of continuing project compliance, provided such method is fully described in the plan to the satisfaction of the Executive Director)** and reporting of any exceedance of the dual metric exposure criteria, clear action and notification protocols to stop pile-driving in case of such exceedance, including the authority of the fisheries biological monitor to order pile-driving to stop immediately, and procedures to notify pertinent parties including the Executive Director and other pertinent state and federal agencies immediately after any exceedance of the dual metric exposure criteria. **The plan shall additionally provide a complete explanation and illustration of the method used to analyze the cumulative impact portion (accumulated SEL) of the dual metric exposure criteria threshold, and in addition, shall include a complete explanation and illustration of the method used to translate the projections of such impacts to the spatial location of the fisheries exclusion zones within the Mad River Corridor.**

(6) Include a monitoring and reporting program that will be coordinated with the fisheries biological monitor and will include provisions to provide daily summaries of the hydroacoustic monitoring results to the Executive Director and to other agencies requesting such summaries, as well as more comprehensive summary reports on a monthly basis during the pile-driving season(s).

(7) Include provisions to monitor pile-driving activities associated with Pier 2 to ensure that such activities, which are not restricted to the July 1 – September 1 pile-driving window associated with Piers 3 and 4, do not exceed the dual metric exposure criteria threshold within the waters of the Mad River, as additionally required pursuant to Special Condition 2.

(8) Include provisions to address how the hydroacoustic monitoring data from the first season of pile-driving will be used to guide the pile-driving activities in the second pile-driving year (adaptive management) to avoid all significant impacts to sensitive species to the maximum extent feasible.

B. Final Hydroacoustic Monitoring Plan

No later than January 1, 2009, Caltrans shall submit a Final Hydroacoustic Monitoring Plan for the review and approval of the Executive Director. The Final Plan shall substantially comply with the draft plan except that it shall take into account new information gained since preparation of the draft plan **prepared by Caltrans**.

C. Dual Metric Exposure Criteria: Compliance Threshold

(1) **Consistent with Caltrans' hydroacoustic impact analyses (Exhibits E, F, & G) that show P**~~**p**~~eak sound pressure level within the Mad River aquatic environment will not exceed 205 dB **and the hydroacoustic hazard zone generated by pile-driving a maximum of two 40-foot sections of steel shell piles of 7-foot-diameter per day (See Fish Exclusion Zone E, shown in Addendum Exhibit FF) shall be limited to 150 meters upstream and 150 meters downstream from the pile-driving locations associated with Piers 3 and 4. No other proposed pile-driving activities may generate a hydroacoustic hazard footprint (defined as the exceedance of the dual metric exposure criteria set forth in Special Condition 4(A)(1) and (2)) within the waters of the Mad River.** ~~at 10 – 20 meters distance from pile-driving or at any other location in the river.~~ Fish exclusion measures (Special Condition 5) shall be deployed to exclude **the maximum feasible number of** fish from access to the area of the river **established as the applicable Fish Exclusion Zone pursuant to the Caltrans hydroacoustic impact analyses and as identified as Zone E in the in Addendum Exhibit FF prepared by Caltrans.** ~~affected by accumulated sound effects (SEL accumulated) generated by the proposed pile-driving.~~

(2) **Absent empirical data to the contrary submitted to the satisfaction of the Executive Director, such as evidence from caged fish studies undertaken within the Mad River pursuant to Special Condition 5, all fish subject to exceedance of the dual metric exposure criteria shall be assumed killed.** ~~If either criterion of the dual metric exposure criteria set forth in Subparagraph A of this Special Condition is exceeded, any exposed fish shall be deemed to have suffered a lethal impact, unless the caged fish studies (Special Condition 5) demonstrate that injury to fish at the subject levels was unlikely;~~

(3) In the event of an exceedance of either criterion of the dual metric exposure criteria, pile-driving operations shall be immediately stopped and shall not recommence unless the Executive Director, in consultation with the fisheries biologists of the California Department of Fish & Game and the National Marine Fisheries Service so authorizes, based on the deployment of additional sound attenuation or other measures deemed likely by qualified technical experts to return the pile-driving to conformance with the duel metric exposure criteria;

(4) If the return to pile-driving after the implementation of the additional measures discussed in Subparagraph C(3) above results in an exceedance of either criterion of the dual metric exposure criteria, pile-driving shall be stopped immediately and shall not re-commence until or unless the Commission approves an amendment to CDP 1-07-

013 that proposes substantial changes to the proposed project that are deemed by the Executive Director to offer a high likelihood of success in preventing further exceedance of the dual metric exposure criteria.

D. Project activities shall be conducted at all times in accordance with the provisions of the final approved plan. Any proposed changes to the final approved plan shall be reported to the Executive Director. No changes to the final approved plan shall occur **without** an amendment to CDP 1-07-013 unless the Executive Director determines that no amendment is legally required.

Special Condition 5. Mad River Fish and Other Affected Species Monitoring & Mitigation Plan. (Commencing on page 14 of the staff report):

A. PRIOR TO ISSUANCE OF CDP 1-07-013, Caltrans shall submit a **Preliminary Monitoring & Mitigation Plan for Fish and Other Affected Species** subject to the review and approval of the Executive Director. Such plan shall be submitted by Caltrans after their consultation with biologists of the California Department of Fish & Game, the National Marine Fisheries Service, and other pertinent advisors with expertise regarding the biota of the Mad River or other technical issues associated with the requirements of the Plan. The Plan shall be prepared by qualified biologists with educational background and field experience substantially relevant to the species of concern. The plan shall include at a minimum the following elements:

(1) Preliminary Information. All materials related to the potential impacts of the proposed project that have been provided by Caltrans to the California Department of Fish and Game, National Marine Fisheries Service, Regional Water Quality Control Board, Army Corps of Engineers, Environmental Protection Agency, and State Lands Commission since January 1, 2005 in support of the subject project and copies of all final permits, approvals, leases, or other authorizations of or from these agencies shall be attached to the Preliminary Plan as Exhibits.

(2) Baseline Surveys. Surveys to acquire comprehensive baseline information about the habitats and all species present in areas of the Mad River corridor that may be affected by the proposed project, or by the mitigation measures implemented in accordance with the provisions of CDP 1-07-013 shall include but not be limited to the following elements:

(a) A survey design developed in cooperation with biologists of the California Department of Fish and Game and the National Marine Fisheries Service and approved by the Executive Director.

(b) Provisions for conducting preliminary surveys during 2008 prior to any disturbance of the Mad River corridor (including the associated riparian vegetation) and refining and repeating these surveys prior to commencement of pile-driving activities in the 2009 and 2011 pile-driving years and other pile-driving years that may arise during project construction that may affect the species that inhabit the Mad River.

(c) Provisions and detailed methods for documenting the types and distribution of physical habitats within the reach of the river from at least 500 meters upstream to 500 meters downstream from the proposed pile-driving locations.

(d) Provisions and detailed methods for documenting, to the extent feasible, the presence, distribution, and relative abundance of all aquatic species within the reach of the river from at least 500 meters upstream to 500 meters downstream from the proposed pile-driving locations.

(e) Provisions and detailed methods for estimating within the reach of the river from at least 500 meters upstream to 500 meters downstream from the proposed pile-driving locations the density and size frequency or age-class frequency of fish by species, habitat type, and location, and the total abundance of fish by species; this provision need not include small species that typically inhabit cryptic habitats.

(f) Provisions for adequate replication and an analysis of the precision of the estimates.

(3) Implementation of a Fish Exclusion Zone (FEZ). Provide a complete description and analysis of all components of the Fish Exclusion Project proposed by Caltrans, including but not limited to the following elements:

(a) A description of the methods of establishing**, maintaining, operating, and restoring upon any failure that may occur,** the Fish Exclusion Zone and the proposed linear fish migration corridor within the FEZ limits, and a description of all associated development in the Mad River Channel, including “enhancement structures” outside of the FEZ, “temporary augmentation structures” and all other artificial features conceptually proposed by Caltrans in November – December 2007 for placement within the Mad River but deferred by Caltrans for later provision of a detailed project description after Commission approval of CDP 1-07-013.

(b) Provision**s** and detailed methods for removing fish and other organisms from the FEZ.

(c) Provisions for estimating the number of fish present within the FEZ by species and age- or size—class using the methods developed in section A(2) above. Estimates will be made both before and after the initial fish removal (depopulation) from the FEZ following construction of the fish exclusion barriers and before commencement of pile driving. The number of fish removed will be

counted by species and age- or size—class. This information shall be recorded and retained in the project records and pertinent monitoring reports and plans.

(d) Provisions for counting the number of fish by species and age- or size—class that are removed from the FEZ following repair of the barrier should the barrier fail. The relationships developed in section A(3)(c) above will be used in conjunction with the number of fish removed to estimate the number of fish remaining in the FEZ following the repair of the barrier. This information shall be recorded and retained in the project records and pertinent monitoring reports and plans.

(e) Provisions for adjusting the size and location of the FEZ based on empirical results of the hydroacoustic monitoring and the caged fish study.

(4) **Estimation of Losses Due to Project Implementation and Mitigation Requirements.** Provide a description of the methods that will be used to calculate resource losses and compensatory mitigation requirements, including but not limited to the following elements:

(a) Provisions for numerical estimates of losses of fish and compensatory mitigation requirements in terms of adult equivalent fish that would have migrated to spawning areas of the Mad River or tributaries.

(b) Estimation of the area and periods of loss of habitat that is filled, coffered, or otherwise physically degraded due to project activities.

(c) Estimation of direct and indirect impacts to fish from pile driving, from capture and transplantation, and from exclusion from the Fish Exclusion Zone.

(d) Estimation of impacts to species other than fish from project-related activities.

~~(3)~~(5) Monitoring the Impacts of Pile Driving on Caged Fish During Project Construction

The Preliminary Plan shall include provisions for determining whether pile driving during project construction results in the mortality or physical injury of caged fish held at various distances from the piling driving location. The Preliminary Plan for monitoring the effects of pile driving on caged fish must be designed to refine preliminary impact assessments developed pursuant to (1) and (2) above with empirical data. The Preliminary Plan shall discuss conceptually and the Final Plan shall include in detail the following elements:

(a) An experimental design developed in cooperation with biologists of the California Department of Fish and Game and the National Marine Fisheries Service and pertinent experts in academia, and approved by the Executive Director.

(b) Explicit specification of the statistical design that will be used to analyze the results, a statistical power analysis, and a trial analysis using mock data; the statistical design must be determined in coordination with the development of the physical design that is feasible in the field and will require preliminary, small-scale experiments; replication may be based on individuals, cages, and repeated experiments.

(c) Provisions for developing protocols and conducting preliminary experiments during **the years prior to pile-driving and** the first year of pile driving and conducting the definitive monitoring of impacts on caged fish during the second year of pile driving.

(d) Provisions for peer review of the experimental design prior to development of a final plan.

(e) The use of locally available hatchery fish.

(f) The cooperative involvement of experts from California Department of Fish and Game, National Marine Fisheries Service, ~~and~~ Humboldt State University**, and the University of California,** where such experts are available and interested; appropriately supervised HSU graduate students **or University of California graduate students** should be used for field and laboratory work when feasible and appropriate.

(g) The inclusion of appropriate controls for handling, transport, caging, and holding fish in the river.

(h) Continuous hydroacoustic monitoring of sound levels immediately adjacent to caged fish during each experimental period so that effects of distance from pile driving can be expressed in terms of received sound pressure levels.

(i) Specification of protocols for handling test animals subsequent to experimental exposure to pile driving, preparation of animals for pathological analysis, and actual pathological analysis.

(j) If the principal investigators selected to undertake the caged fish studies demonstrate, based on preliminary field trials/investigations that the study as contemplated is not feasible due to the physical or chemical conditions of the river or constraints arising from the need to handle and transport fish, the Executive Director may authorize termination of further efforts to undertake the caged fish study otherwise required herein.

B. Prior to Commencement of Construction (other than the test pile work proposed for 2008 at Pier 2, on the pasturelands south of the Mad River) Caltrans shall submit a

~~**Revised**~~ Final **Monitoring** Plan **for the review and approval of the Executive Director** that incorporates new ~~**information learned since approval of the preliminary plan**~~ **(1) the results of the baseline surveys, (2) revisions to the Fish Exclusion Zone proposal incorporating the results of the baseline surveys and other pertinent new information, (3) revisions of the estimation of losses of fish from project implementation and mitigation requirements based on the results of the baseline surveys and other pertinent new information, (4) revisions to the caged fish study that incorporate the results of the peer review of the caged fish study required by subsection (5)(d) above, (5) provisions for how caged fish study data will be used for adaptive management purposes,** and ~~**incorporates all changes requested by the Executive Director for the review and approval of the Executive Director**~~ Caltrans shall submit the ~~**Revised**~~ Final **Monitoring** Plan for the Executive Director's review no later than January 1, 2009 and shall not commence any activities that would affect the subject areas of the Mad River and environs until Caltrans receives evidence of the Executive Director's review and approval of the ~~**Revised**~~ Final **Monitoring** Plan.

C. ~~**The portion of the Revised**~~ **No later than October 1 of the year of the first pile-driving season, a** Final **Monitoring** Plan that ~~**deals with**~~ **addresses** ~~**monitoring**~~ the effects of pile driving on caged fish shall be ~~**revised**~~ **shall be submitted for the Executive Director's review and approval, that incorporates the results of the peer review of the first pile-driving season.** ~~**following the preliminary work that will be conducted in 2009 and submitted for peer review.**~~ Caltrans shall submit the ~~**Revised**~~ Final Plan for monitoring the effects of pile driving on caged fish for the Executive Director's final review no later than March 1, 2010 and shall not commence any additional pile-driving activities ~~**that would affect the subject areas of the Mad River and environs**~~ until Caltrans receives evidence of the Executive Director's review and approval of the ~~**Revised**~~ Final **Monitoring** Plan.

~~C.~~D. Final Fisheries and Other Affected Species Compensatory Mitigation Plan:

Not later than October 1 of the year of the second pile-driving season (presently projected as October 1, 2011), Caltrans shall submit a complete analysis of the affects of the subject project on the sensitive species and habitat of the Mad River based on the data collected during project operations in accordance with Conditions 4 and 5, and shall submit a Final (complete) application for an amendment to CDP 1-07-013 for Long term compensatory Mitigation of fisheries impacts associated with all aspects of the subject project, including pile-driving, that have adversely affected the fisheries of the Mad River. The long term compensatory mitigation plan shall mitigate**, to the maximum extent feasible,** ~~**for**~~ all significant direct and indirect impacts to fish from pile driving, capture and transplantation, and from exclusion from the Fish Exclusion Zone, as well as significant impacts to species other than fish from project-related activities.

STAFF NOTE: *The revisions to the condition clarify the language, provide more definite requirements for the contents of the final plan for monitoring, etc., and*

ensure that mitigation provided by the final fisheries mitigation plan will mitigate the impacts to the maximum extent feasible.

SPECIAL CONDITION 6: BIOLOGICAL MONITORING: FISHERIES. (commencing in pertinent part on page 18 of the staff report):

C. Duties: The fisheries biological monitor(s) shall have the lead responsibility for ensuring that all project activities are undertaken in full compliance with the requirements of CDP 1-07-013. The fisheries biological monitors shall also brief on-site personnel on the requirements of such compliance and shall keep records of such briefings and the identities of attending personnel. The biological monitor shall instruct and direct the resident engineer or other site supervisors and construction personnel in all applicable measures necessary to avoid direct or indirect adverse impacts to fish.

… **Until compliance is achieved,** It shall be the responsibility of the designated **Caltrans** site supervisor**, who may be the resident engineer, to stop work , or to direct immediate remedial measures to return the project activities to compliance** at any time the fisheries biological monitor indicates that the pertinent work is not in compliance with the requirements set forth in the applicable permits and approvals, and that such non-compliance jeopardizes the water quality or the health of fish in the Mad River. A **Caltrans** site supervisor shall be designated for such purpose for each day of construction and such information shall be readily available and posted at the site. The posting shall indicate that if the designated site supervisor is not immediately available to stop work upon the request of the fisheries biological monitor, the fisheries biological monitor shall have the authority to stop work immediately without waiting for the arrival of the designated Caltrans supervisor. It shall be the responsibility of all designated Caltrans supervisors to fully affirm this responsibility and authority to all construction personnel on the subject project site.

The fisheries biological monitor shall also verify compliance with water quality requirements of CDP 1-07-013, particularly those pertaining to **water quality standards and site-specific water quality objectives established for the Mad River and defined in the Water Quality Control Plan for the North Coast Region (Basin Plan), including pertinent** pH and turbidity limits, **and with the approved SWPPP,** and **with** requirements prohibiting the discharge of debris, chemicals, and other unauthorized materials to the stream channel, or to locations that drain to the stream corridor.

The fisheries biological monitor's primary duty is to monitor project activities that may affect fisheries or aquatic habitat, and the fisheries biological monitor shall therefore not be required to undertake other duties that are required of the general biological or water quality monitoring staff that may be required by other special conditions of CDP 1-07-013 or by other Caltrans requirement.

The biological monitor shall record and report any significant briefings, instructions, or directions provided to site personnel, and shall record any ~~potential~~ incidents **and/or corrected incidents that had the potential of non-compliance** with permit conditions, whether verified yet or not, in the pertinent daily monitoring log. **The biological monitor shall also timely enter into the subsequent records the manner in which non-compliance was resolved and the pertinent facts, including before- and after-incident photographic records whenever feasible.**

D. Notification and reporting:

(1) **Non-compliant w**~~W~~ork shall be stopped immediately by the designated Caltrans supervisor, or by the biological monitor if **t**he designated site supervisor is not available, if non-compliance with permit conditions is determined by the fisheries biological monitor, and such continued non-compliance could adversely affect fish within the Mad River. Work shall also be stopped immediately if any fish injury or mortality is observed **outside the approved Fish Exclusion Zone** that could reasonably be considered to be related to project activities, whether such activities are compliant with permit conditions or not. The fisheries biological monitor shall additionally provide direct, immediate verbal notification of such observations/actions to the designated fisheries biologists of the California Department of Fish and Game and the National Marine Fisheries Service, and to the Executive Director. The subject activities shall not re-commence thereafter unless the Executive Director, in consultation with the fisheries biologists of CDFG and NMFS determines that such work is compliant with the Special Conditions of CDP 1-07-013 and the adverse affects on fish have been resolved to prevent further injury.

(2) The fisheries biological monitor shall prepare daily monitoring logs that **in addition to regular monitoring reports also** include information requested by the Executive Director and by the fisheries biologists of CDFG and NMFS, and shall submit the logs daily by e-mail or facsimile to the **Caltrans Resident Engineer and Environmental Liaison, and daily to the** Executive Director and to the fisheries biologists of CDFG and NMFS **as frequently as they may request,** and to other state and federal agency staff that may request such reports, during the July 1 – September 1 pile-driving season. Monitoring logs shall be submitted weekly **to the same parties, and in the same manner,** during the remainder of the year. The fisheries biological monitor shall also ensure that the hydroacoustic monitoring daily logs are submitted with the biological monitoring reports **and that the day's hydroacoustic monitoring log is submitted concurrently with the day's biological monitoring log to the pertinent Caltrans staff, the Executive Director, and to other agency staff as the agencies may request**. Should the Executive Director request additional monitoring information based on project circumstances that may arise during the course of the proposed project construction, the additional information shall be collected by the fisheries biological monitor and/or other Caltrans personnel as applicable and included in the pertinent monitoring logs.

SPECIAL CONDITION 7: CONSTRUCTION RESPONSIBILITIES. (commencing in pertinent part on page 20 of the staff report):

4) Vehicles, equipment and materials……Fueling on the dry gravel bars of the channel shall be subject to all BMPs and over-water fueling procedures that set the highest possible standards for fuel containment and spill response readiness, and shall be limited to major tracked vehicles such as cranes **and stationary equipment such as generators and pumps** that cannot feasibly be relocated outside of the corridor for fueling, ….

6) Demolition of the existing bridge or roadbed shall not be undertaken through the use of explosives, and no portion of the existing bridges may be demolished in a manner that allows debris to fall into the waters of the Mad River or onto the native gravel bar. Construction debris shall be picked up from the bridges **or debris-capture structures suspended from the bridges or other supports,** and removed without use of the channel below **as a landing for debris and other construction wastes and the channel may not otherwise be used for demolition** except as authorized to stage the cranes and other equipment in use for demolition activities above the corridor. All construction debris generated by demolition activities shall be captured from the deck of the existing bridges, **or from temporary structures or devices suspended below and/or adjacent to the structures being demolished, to capture the debris,** even if this requires some traffic delays, rather than **resorting to the method of allowing the debris to be** dropped to the river corridor for retrieval there. Visible amounts of concrete dust and small rubble shall not be released into the air or water during construction and dust suppression measures shall be implemented. Dust control via water spray shall be implemented ~~cautiously~~ **in a manner that does not generate excess water runoff into the river** and **shall be** monitored by the fisheries monitoring biologist or the monitor's designated assistant or other biological monitor, so that excessive water contaminated by concrete dust does not drain into the banks, channel, or waters of the river. No portion of the demolition debris shall be allowed to enter ~~**any portion of**~~ the Mad River corridor~~**, whether wet or dry,**~~ at any time.

9) All lead-contaminated soils that will be disturbed in the areas east of the existing bridges shall be excavated and removed prior to any other disturbance of these areas (northeast quadrant of the proposed project site) only to the depth of the lead contamination concentrations that qualify for disposal as hazardous wastes, and shall not be commingled or otherwise diluted by mixing the contaminated soils with other soils or materials. The lead-contaminated soils shall immediately be segregated through placement into appropriate containers for shipping and disposal as hazardous wastes, and shall be removed from the site for disposal at a licensed facility authorized to accept hazardous wastes immediately thereafter. The hazardous waste containers shall be logged and the record of final disposal maintained by the Caltrans supervising engineer and provided to the Executive Director within sixty (60) days of such disposal.

The resident and supervising Caltrans engineers shall report the excavation and disposal to the biological monitor who shall record these reports in the biological monitoring reports required by the Special Conditions of CDP 1-07-013. Caltrans shall prepare an as-built site plan showing the location and extent of the excavation of lead contaminated soils at the same scale as the wetland mitigation plans proposed for Caltrans for installation at the affected locations after associated grading has been completed. The as-built site plan shall be submitted to the Executive Director within sixty (60) days of completion of the **removal of the** lead contaminated soils with an attached copy of the final wetland mitigation plan for the same location, demonstrating that the subject location will be free of **hazardous** lead **contaminated soil**~~contamination~~ **and demonstrating that the subject location will be at or below background concentrations of lead as established by the Kearny Foundation of Soil Science, Division of Agriculture and Natural Resources, University of California published report, "Background Concentrations of Trace and Major Elements in California Soils (also available on the internet at : http://www.envisci.ucr.edu/downloads/chang/kearney/hearneytext.html.** The location and volume of project wastes so disposed shall be documented by the resident engineer and noted in the biological monitoring reports. The disposal records shall be retained by Caltrans as part of the permanent project files and made available on request.

10) Fueling shall take place in a single designated offsite area that is bermed and otherwise set up to fully contain any potential spill without release outside of the designated area, and the designated area shall be continuously equipped with all materials necessary to control and cleanup any spill that may occur. The integrity of the containment berm and the readiness of control and cleanup materials and equipment shall be periodically verified by the Caltrans site supervisor and noted in the permanent project records. The designated fueling/fuel storage area may not be located closer to the Mad River corridor than a minimum of 100 feet landward from the top of bank. Only equipment that cannot be readily relocated to the designated offsite fueling location may be fueled in other areas of the site (cranes, large tracked vehicles **and stationery equipment** only) and these shall be re-fueled only by a California Department of Fish and Game-certified over-water re-fueler, in a manner authorized in accordance with all requirements of the Department of Fish and Game and the Regional Water Quality Control Board, including but not limited to the requirement that such re-fueling be undertaken by a minimum of two crew members certified for such operations, with one on standby to shut off the flow of fuel and the other at the delivery point, in constant communication with each other, with full deployment of absorbent pads with sufficient capacity to absorb the maximum amount of fuel that could escape from the fueling hose before shutoff occurs in the event of equipment failure. No fueling of any kind may take place anywhere on site except during daylight hours and when visibility is sufficient for the re-fueling crew to maintain visual contact.

12) Cement/concrete shall be prepared and poured or placed in a manner that will prevent discharges of wet cement, or waters that have been in contact with

cement/concrete, into coastal waters. Such measures include but are not limited to placement of measures such as catch basins, mats or tarps beneath the construction area to prevent spills or overpours from entering coastal waters, and use of Baker Tanks to collect, ~~treat and~~ test **and** potentially **treat** contaminated de-watering effluent. De-watering of effluent that has been in contact with cement/concrete or other potential contaminants shall not be de-watered into coffer dams or sediment basins within the river channel, **or discharged directly into the Mad River or its tributaries. De-watered effluent that has been in contact with uncured cement or other potential contaminants** ~~**but**~~ shall only be pumped to the de-watering locations authorized for the non-riparian pasturelands upgradient from the river corridor and where such effluent will soak into the subject lands and will not run off into the Mad River **or its tributaries, whether** directly or indirectly.

13) Construction De-watering during the period defined annually as June 16 through October 2 may involve construction of a de-watering basin within the dry native gravel bar. The temporary basin must be located a sufficient distance from the nearest edge of the wetted channel to ensure sufficient filtration of discharged effluent to protect the water quality of the Mad River as advised annually by the Caltrans environmental engineer/water quality manager based on emergent river conditions. The sediment basin must be located within the area of the river that is within the pertinent Fish Exclusion Zone (FEZ) established in active pile-driving seasons, when a FEZ is required pursuant to other special conditions set forth herein. The temporary sediment basin must include a filter fabric lining (or equivalent) to prevent the release of fines to the Mad River. The use of a temporary sediment basin during the pertinent season must include a monitoring program that includes monitoring of the dewatered effluent discharged to the temporary sediment basin, and upstream and downstream monitoring. Upstream and downstream monitoring points must be located no more than a maximum of fifty (50) feet from the temporary sediment basin location. . A complete constituent list, monitoring frequency, and standards for water quality compliance shall be developed in the project SWPPP and reviewed and approved by the Caltrans environmental engineer/water quality manager prior to the SWPPP submittal to the Executive Director for review and approval.

14) Construction De-watering effluent during the October 3 through June 15 period annually (wet weather season for purposes of interpreting this provision), shall not be discharged at any location within bank to bank (within the river corridor) of the Mad River or its tributaries. If adjacent pasture fields are used for construction de-watering, all de-watered effluent shall be fully contained. Construction De-watering shall not result in standing water that persists for more than 72 hours. Areas used for construction de-watering shall be explicitly delineated on map layouts and shall be incorporated into the project SWPPP. The use of a temporary sediment basin pursuant to subparagraph 13) above shall include a monitoring program that includes monitoring of the dewatered effluent discharged. A complete constituent list, monitoring frequency, and standards for

water quality compliance shall be developed in the project SWPPP and reviewed and approved by the Caltrans environmental engineer/water quality manager prior to the SWPPP submittal to the Executive Director for review and approval.

~~13)~~**15)** Rinsate from the cleaning of equipment, including cement mixing equipment, shall be contained and handled only in upland areas where drainage to coastal waters is fully prevented, and otherwise outside of any environmentally sensitive habitat area or wetland or buffers thereto.

~~14)~~**16)** Reporting protocols and contact information for the appropriate public and emergency services/agencies in the event of a spill shall be prominently posted on site at all times.

~~15)~~**17)** All forms that may be utilized for wet concrete/cement pours shall be grout-sealed, or the equivalent to prevent release of concrete/cement, and the grout shall be allowed to cure adequately and be water-tested under the supervision of the fisheries or general biological monitor and the resident engineer to ensure complete seal before any wet concrete/cement or other chemical treatments may be applied to the forms. No placement/pour of concrete/cement within or above the river channel from top of bank to top of bank, including within de-watered coffer dams, shall occur unless the fisheries biological monitor is present.

~~16)~~**18** No vegetation removal, including clearing, grubbing, limbing, trimming, or other disturbance of existing vegetation may occur between March 1 and August 31 of any year unless a qualified biologist provides a survey undertaken to the satisfaction of the Executive Director not less than ten (10) days prior to proposed commencement of such activities, demonstrating conclusively that no birds are nesting in the area that would be affected, and the results of the survey have been provided to the Executive Director's satisfaction not less than five (5) days prior to proposed commencement of such activities, and the vegetation removal has additionally been authorized by a California Department of Fish and Game biologist familiar with the bird species likely to nest in the subject area.

~~17)~~ **19** Exclusionary netting shall not be used. Nesting that would be affected by project activities shall be discouraged by timely removal of attempted nests which must be performed by, or performed under the direct supervision of, a qualified biologist. Such activities shall be logged by the pertinent biological monitor. Nesting shall be allowed on any structure that is not scheduled for demolition during the forthcoming nesting season and the contractor shall be required to schedule demolition outside of the nesting season unless Caltrans demonstrates to the satisfaction of the Executive Director that such delay would imperil the project schedule to the extent that an additional year of site disturbance could result.

18)**20** Placement of temporary Rock Slope Protection and other slope stabilization measures annually, before October 15, may be authorized by the Executive Director if no more effective method of erosion control is available. The preferred method of erosion control shall be the anchored placement of geotextiles and mulch provided these would be stable and would not contribute to discharge into the river waters during the rainy season. If RSP is used, the RSP must be placed, removed, and stored annually in compliance with the other provisions of CDP 1-07-013 and must be finally disposed in accordance with the waste disposal provisions of this Special Condition. No RSP may be placed permanently within the bed and banks, from top-of- bank to top -of - bank of the river channel, except as specifically shown on the proposed project plans for the areas of the new bridge abutments that are located above the 100-year flood plain. No permanent placement of RSP below the limits of the 100-year flood plain is authorized by CDP 1-07-013 **except for the construction of the scour hole that will be constructed after pile-driving has concluded, in accordance with the mitigation required by the National Marine Fisheries Service for loss of the scour hole at the existing bridge pier. RSP and other materials such as woody debris shall be placed in accordance with plans and provisions authorized by the Executive Director in consultation with the fisheries biologists of the NMFS and the California Department of Fish and Game**.

SPECIAL CONDITION 10: Water Quality Protection. (commencing on page 28 of the staff report)

A. Caltrans shall conduct the limited amount of vegetation clearance and site disturbance necessary to undertake the pile load testing southwest of the proposed bridges, in the general area of proposed Pier 2, in full compliance with the limited plan for Best Management Practices submitted by Caltrans. **The vegetation removal and the pile load testing at Pier 2 shall be undertaken after September 1, 2008 and the vegetation removal shall not exceed that shown in the crosshatched area identified in Addendum Exhibit GG.** ~~The subject vegetation may be removed immediately upon issuance of CDP 1-07-013 as requested by Caltrans, prior to March 1 of 2008. No vegetation may be removed or soils disturbed under this provision, however, in any area closer to the river than 100-foot setback from the outermost riparian canopy at the top of the southwest river bank.~~ Minor trimming of vegetation overhanging the existing road, but not vegetation beyond such overhang, may be undertaken along the existing access road immediately west of Wymore Road for the purpose of accessing the construction site. No access to, or modification of the bed and banks of the Mad River is authorized pursuant to Subparagraph A herein.

B. Not later than ~~September~~ **July** 1, 2008, or within such additional time as the Executive Director may grant for cause, **Caltrans shall submit for the review and approval of the Executive Director a Phase I Storm Water Pollution Prevention Plan (SWPPP) that shall be comprehensive in scope but shall apply only to the**

pile-load testing activities Caltrans proposes to undertake after September 1, 2008 at the proposed Pier 2 location shown on Addendum Exhibit GG. If any de-watering is necessary to undertake the subject work addressed by the Phase I SWPPP, then the effluent produced by such de-watering shall be discharged only to pasturelands in the southwestern quadrant of the subject project area. Any excess effluent that cannot be absorbed by the treated pasturelands shall be temporarily contained in storage tanks or other upland containment within the southeastern quadrant pasturelands until sufficient evaporation or percolation has occurred. No discharge to the Mad River for activities subject to the Phase I SWPPP shall occur unless the Executive Director approves an amendment to the Phase I SWPPP upon a showing of evidence to the Executive Director's satisfaction that all water quality standards protective of the waters of the Mad River will be met. The Executive Director shall determine whether the Phase I SWPPP is adequate to control erosion and to prevent contamination of the waters of the Mad River and associated damage to sensitive species during the proposed pile-testing activities undertaken after September 1, 2008. Proposed activities subject to the provisions of the Phase I SWPPP shall not commence until the Executive Director's approval has been granted.

C. Not later than October 1, 2008, or within such additional time as the Executive Director may grant for cause, Caltrans shall submit for the review and approval of the Executive Director a complete Phase II SWPPP for all other project activities not covered by the Phase I SWPPP.~~**but not less than one hundred and twenty (120) days prior to proposed implementation, Caltrans shall submit a copy of the draft Storm Water Pollution Prevention Plan (SWPPP) prepared subsequent to Commission approval of CDP 1-07-013 by the construction contractor selected by Caltrans.**~~ The Executive Director shall determine whether the SWPPP is adequate to control erosion and to prevent contamination of the waters of the Mad River and associated damage to sensitive species during the proposed construction period authorize pursuant to CDP 1-07-013. If the Executive Director determines that the SWPPP is not adequate for this purpose, project activities other than those specifically authorized by Subparagraph A above shall not commence until all changes required by the Executive Director have been made and published in a revised SWPPP to the satisfaction of the Executive Director. Caltrans shall allow a minimum of thirty (30) days for the final review by the Executive Director for the purpose of determining that all **previously** requested changes **to the draft Phase II SWPPP** have been made. It shall be Caltrans' responsibility and the responsibility of the pertinent contractor to ensure that the draft SWPPP is prepared and submitted on a pre-construction timeline that allows for the full sequence of this iterative review, which could require at least 120 days, or longer if substantial changes to the draft SWPPP are necessary.

~~C.~~**D. In addition to other requirements set forth in this or other special condition(s) set forth herein, t**~~T~~he **Phase II** SWPPP shall specifically **develop a construction de-watering plan for both dry weather and wet weather seasons.**

For purposes of interpreting provisions of these special conditions pertaining to construction de-watering requirements, the dry weather construction season shall be defined in accordance with the standards of the North Coast Regional Water Quality Control Board as May 1 to October 1, annually, and the wet weather construction season shall be defined as October 2 to April 30, annually. ~~provide for all project de-watering to be managed only by means of pumping the de-watered effluent to the upland pasturelands at locations not less than 100 feet from the landwardmost extent of the riparian vegetation, or from the top-of-bank, whichever is greater, and the effluent shall be applied to the pasturelands in a manner that prevents return runoff from reaching the bed and banks of the Mad River.~~ **The construction de-watering plan shall discuss methods, a monitoring program, and corrective actions that may be necessary, that is specific for both the dry weather and wet weather seasons. If, during the wet weather season,** the pasturelands become so saturated that the effluent cannot filter adequately, project activities requiring de-watering shall be stopped until adequate infiltration capacity has been restored. Nothing in these provisions shall authorize alternative de-watering through the use of any structures such as coffer dams ~~or sediment basins~~ within the **wetted channel of the** Mad River.~~channel or banks.~~

E. In addition to the other requirements of this or other special condition(s) set forth herein, the Phase II SWPPP shall contain specific Best Management Practices (BMPs) for work undertaken during the May 1 – June 15 time period annually as authorized in Special Condition 1(A) *et. seq*. above. These BMPs shall address the specific activities proposed within the river corridor during this annual window of time and shall provide BMPs adequate to ensure the protection of the water quality of the Mad River if unexpected precipitation occurs while such activities are underway.

F. Drilling muds or spoils associated with foundation installation, coffer dam excavation or other project activities shall be removed immediately from the **river** corridor and de-watered or disposed outside of the area of the corridor defined **for purposes of interpreting the requirements of this special condition** as any location closer to the river than a minimum of 100 feet landward of the top of bank of the river. No effluent from such de-watering shall be allowed to reach the banks or bed of the Mad River at any time, and should such release occur, the project shall be shut down immediately until the discharge has been contained and fully resolved. Should such discharge occur, the discharge shall be immediately reported to the Executive Director and to the fisheries biologists of the California Department of Fish and Game and the National Marine Fisheries Service, and to the appropriate representative of the Regional Water Quality Control Board.

G. De-watered effluent that will be generated by activities associated with maintaining cofferdams, drilling, **sediment de-watering,** or pile-driving and related work, shall not be directed into coffer dams ~~or sediment basins~~ in the river channel**.**, ~~but shall be pumped only to the authorized pastureland de-watering site(s) where the~~

~~effluent shall be applied to the pasturelands in a manner not to exceed the infiltration capacity of such lands, as provided in these special conditions.~~

H. The Phase II SWPPP may additionally include a construction de-watering plan that relies on discharge to a SEDIMENT BASIN constructed within the dry native gravels of the river bar. The plan for use of a sediment basin shall specify that such basin may only be used annually from June 16 – October 14, and may only be used for discharge of de-watering effluent that has not come into contact with uncured concrete or other potential contaminant. The plan shall specify a setback from the outer boundaries of the sediment basin to the nearest edge of the wetted channel that is deemed sufficient by the Caltrans environmental engineering/water quality staff to provide adequate filtration of effluent discharge protective of the waters of the Mad River. The plan shall require that the sediment basin be lined with filter cloth to prevent discharge of sediment contamination to the waters of the river. The plan shall require the removal of all sediments and filter cloth prior to re-grading of the sediment basin at the end of the annual construction season. The plan shall require that the sediment basin be removed and re-graded in accordance with the pertinent annual construction access plan or as the fisheries biologists of the National Marine Fisheries Service and the California Department of Fish & Game may direct. No de-watering within the river corridor shall be allowed unless undertaken in accordance with these requirements.

~~D.~~**I.** Caltrans shall undertake development in accordance with the approved final **Phase I and Phase II SWPPP** plans. Any proposed changes to the approved final SWPPP shall be reported to the Executive Director. No changes to the approved final SWPPP shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

SPECIAL CONDITION 11: BIOLOGICAL MONITORING (NON-FISHERIES) (from page 30 of the staff report).

A. Caltrans shall provide daily monitoring of all project activities for compliance with all conditions of CDP 1-07-013 including those that require separate monitoring by the fisheries biological monitor(s). A biological monitor, a qualified Caltrans construction liaison or environmental planner who is also a biologist, shall monitor and record site conditions and environmental baseline information, removal and packaging of lead-contaminated soils for hazardous waste disposal, potential exposure of cultural remains during excavation (the biological monitor shall seek the assistance of a qualified Caltrans archaeologist for this purpose), SWPPP monitoring report accuracy and completeness, and shall maintain and submit daily logs to the Executive Director, and to state and federal agency staff requesting such submittals. The biological monitor shall also be responsible for timely notifying the pertinent parties (within 24 hours or less **of**

the potential non-compliance) of any instance of non-compliance with permit conditions, or any other occurrence that threatens to materially jeopardize the biological integrity of the Mad River corridor. The biological monitor shall ensure that a daily log and full record of project activities, including **potential** non-compliance **whether verified or not, and the subsequent resolution or remedial action and results**, is maintained, reported, and timely provided to the Executive Director and other state and federal agencies with regulatory authority over the subject project. The biological monitor shall submit the monitoring logs to the Executive Director and to other state and federal agencies requesting the logs on a weekly basis **(fisheries biological monitoring logs have separate submittal requirements)**. The **Caltrans** site supervisor designated pursuant to Special Condition No. 6 shall make the required notification of non-compliance within 24 hours if the biological monitor is not available, but shall not prevent the biological (or fisheries) monitor(s) from making direct reports to the Executive Director and to other state and federal agencies.

B. Nothing in these requirements shall relieve the site supervisor designated pursuant to Special Condition No. 6 or the contractors and other non-Caltrans personnel on site, from additionally monitoring project activities for compliance with (and monitoring for compliance with) the pertinent requirements of all applicable state and federal authorizations or approvals.

SPECIAL CONDITION 12. Site Inspections. (from page 30 of the staff report):

Coastal commission staff, and other agency staff that the Coastal Commission staff may coordinate site visits with, shall be authorized to enter the site at any time to observe project activities without prior notice. Caltrans shall ensure that adequate protective gear **that Caltrans deems necessary** for visitors is maintained at the site **or elsewhere where it could be obtained without significant delay** for such purposes. If activities are underway that could cause a hazard to site visitors, the **Caltrans** site supervisor or designee shall require that these activities be temporarily suspended as soon as practicable, for a reasonable amount of time to allow safe site inspection by Commission and agency staff, and the **Caltrans** site supervisor or designee shall accompany staff during such site visits. Commission staff shall notify the **Caltrans resident engineer or/**site supervisor upon arrival

SPECIAL CONDITION 14. Revised Final Plans and Future Amendments. (from pages 31 & 32 of the staff report, in pertinent part)

A. PRIOR TO ISSUANCE OF CDP 1-07-013, Caltrans shall submit evidence to the satisfaction of the Executive Director that the following changes, clarifications or confirmation of the proposed project have been incorporated into the proposed project:

- 8-foot-high "picket" outer rail originally proposed for outermost side of multi-modal corridor has been **reduced to a height of 54 inches**, **the concrete k-rail barrier proposed to separate the corridor from the traffic shoulder has been** replaced with ST-~~20~~ **10** rail **(33-inch height), the westward outer rail on the southbound bridge that was proposed as ST-20 rail is replaced with ST-10 rail** topped by a bike rail of the lowest height possible consistent with bicyclist safety **(which is presently proposed as 48 inches in height) and that the inside bridge rail of each bridge will be ST-10 without a bike rail (33-inch height).**

- The architectural lighting of the bridge shown on the original plans and designs has been deleted and all lighting and signage on the bridge will be the minimum necessary consistent with safety requirements and will be designed and directed **to limit illumination** ~~so as not to illuminate~~ **of** the habitat of the Mad River corridor below or adjacent to the structures authorized by CDP 1-07-013 **to the maximum extent feasible**.

- No vegetation will be removed from the Mad River corridor and no river crossing will be installed during the summer of 2008. Project activities within the river corridor during 2008 will be limited to performing fisheries and habitat baseline surveys pursuant to plans approved by the Executive Director (Special Condition 5).

- Removal of lead contaminated soils in the northeast quadrant shall be completed, and the material removed and disposed as hazardous wastes as required in these special conditions, prior to any other **soil** disturbance ~~of~~ **within** the **lead-contaminated areas of the** northeastern quadrant, including access improvements, staging, and other preliminary project activities **if these activities would traverse the lead-contaminated site locations**. Lead-contaminated soils **identified as hazardous in Caltrans studies** shall not be mixed or stored with any other materials or mingled with less contaminated or uncontaminated materials ~~**located at lower levels**~~ to achieve dilution of the lead contamination.

- Plans shall be revised to require that pile-driving that may affect the fisheries of the Mad River due to the production of a hydroacoustic impact footprint within the waters of the river shall be limited to the driving of a maximum of ~~**one**~~ **two** pile section**s** per day to minimize the hazard to fish and to minimize the necessary extent of the Fish Exclusion Zone and its impacts on fisheries habitat of the Mad River.

SPECIAL CONDITION 15. **Revised Wetland/Stream Channel Mitigation Plan**. (commencing on page 32 of the staff report):

PRIOR TO ISSUANCE OF CDP 1-07-013, Caltrans shall submit a **revised** plan for **the review and approval of the Executive Director for** wetland mitigation **that also incorporates mitigation , including wetland riparian loss and for** stream channel impacts **from project activities other than pile-driving and the associated fish exclusion activities** and that includes, but is not limited to, the following requirements:

A. On-site mitigation credited in previous mitigation plans submitted by Caltrans for wetland mitigation in areas that will be beneath the proposed new bridges shall be limited (or verified as limited) only to the equivalent wetland area that was delineated beneath the existing bridges slated for demolition. Other revegetation installed beneath the additional area of the proposed new bridges shall not count toward**s** on-site mitigation **and if counted**, **but** must instead be added to the overall area of wetland mitigation that must be undertaken off-site.

B. Off-site riparian wetland mitigation at the proposed Old Samoa **Road** 40-acre parcel acquired by Caltrans in 2007 providing a **minimum maximum** of two (2) acres of compensatory riparian wetland mitigation necessary for the Mad River Bridges project.

C. **The plan shall provide that a**All wetland impacts associated with the proposed project construction, including any impacts to **riparian corridor** wetland soils or vegetation that last longer than twelve months, **shall be mitigated at a minimum total ratio of 4:1, with 1:1 mitigation of riparian wetland impacts on site to the maximum extent feasible where suitable locations on the subject site exist, and the balance of the required mitigation** shall require compensatory off-site mitigation within the watershed of the Mad River. **at a minimum ratio of 4:1** (**4:1 ratio means that** 4 acres of similar wetland mitigation per acre of wetland impact at the project site). **The plan shall further provide for the off-site mitigation of stream channel bottom impacts to channel habitat located in the area between bottom-of-bank to bottom-of-bank,** and **at** a minimum ratio of 1:1 (1 acre of stream channel mitigation per acre of stream channel impact). **The channel impacts shall be calculated annually for the authorized project activities undertaken in this area of the subject site between May 1 and October 14 annually, and added cumulatively for the final total of such area that requires 1:1 mitigation. To the extent feasible, the mitigation provided in the plan and** shall be performed in the location of fisheries mitigation**, such as, but not limited to, the stream channel locations of fish passage improvements that may be proposed pursuant to Special Condition 5, so that the maximum ecological benefits may be obtained where feasible. (Special Condition 5).**

D. Final Plan

Not later than October 1 of the second pile-driving year (presently estimated as October 1, 2011 by Caltrans) Caltrans shall submit a final Wetland and Stream Channel Mitigation Plan for the review and approval of the Executive Director, in consultation with the California Department of Fish & Game and the National Marine Fisheries

Service**,** that incorporates ~~**these**~~ **all of the** requirements **of subsections A, B, and C above** and any additional **mitigation for** impacts to wetlands or stream channel that become necessary as the impacts of actual construction become known during implementation **of the project.**~~**over the course of construction, in a manner that maximizes the ecosystem benefits of the mitigation additionally required by Special Condition 5 herein.**~~

> ***STAFF NOTE:*** *These modifications to the recommended condition language have been made to ensure clarity and clear standards for review of the required plans. The revisions correct a typographical error that placed the word "minimum" instead of the intended word "maximum" in the text, consistent with the findings in the staff report that recommend that the Commission limit the off-site mitigation to be provided at the 40-acre Old Samoa Road parcel to two (2) acres to avoid conversion of existing agricultural lands for wetland mitigation. In addition, the modifications respond to a Caltrans concern that the mitigation not be absolutely restricted to the locations of the fisheries impact mitigation (for the effects of pile-driving, pursuant to Special Condition 5) in the event that such a combination proves infeasible for reasons unknown at this time.*

Changes to Recommended Findings:

(Commencing at page 71 of the staff report, in pertinent part, within Section 4.3.1.2 of the findings discussing conformity of the project with the wetland fill and ESHA policies of the Coastal Act:)

Feasible, Less Environmentally Damaging Alternatives to the Proposed Project

(... commencing on staff report page 73 in pertinent part)

- federal applications for project review, and therefore proposed no mitigation prior to a series of iterative proposals submitted and refined between August 2007 and the present.
- Caltrans ~~**presently proposes**~~ **previously proposed** to reduce the impacts to salmonids **that would otherwise occur if pile driving near Piers 3 and 4 is undertaken without measures to exclude fish from the hydroacoustic impact hazard footprint** by building a "Fish Exclusion Zone" of weirs and nets up and down river as much as 200 linear meters (1,312 linear feet) **upstream and downstream** from the pile-driving source, and to install a 3-foot-wide fish migration passageway down the center of the stream corridor for intermittent fish passage when pile-driving is interrupted. These measures are somewhat experimental (but would be monitored and managed adaptively), and the installation and de-population will result in take of species.

Caltrans presently proposes, in accordance with revisions submitted to the Coastal Commission staff on January 8, 2008, to reduce the impacts to salmonids by constructing a "Fish Exclusion Zone" (FEZ) of only 150 linear meters upstream and downstream from the pile-driving proposed at Piers 3 and 4, and by limiting pile-driving to a maximum of two approximately 40-foot-long, 7-foot-diameter, steel shell piles sections per day.

Based on revised estimates submitted by Caltrans on January 9, 2008 and shown in Addendum Exhibit FF, Caltrans estimates FEZ limits for various pile-driving scenarios and rough estimates of fish within each FEZ (these numbers would be doubled for two years of proposed pile-driving) include:

One-pile-section-per-day: 180 linear meters total FEZ: 429 fish present
Two-pile-sections-per-day: 300 linear meters total FEZ: 598 fish present
Three-pile-sections-per-day: 400 linear meters total FEZ: 1,198 fish present

~~**Depending on the extent of the exclusion area, fish take for the exclusion alone would range from 858 listed salmonids to 4,926 listed salmonids (based on preliminary rough estimates prepared by Caltrans in December of 2007, that do not take future lost reproductive contributions into consideration, but which also rely on preliminary worst-case estimates that could be revised as the result of baseline surveys that will be performed in 2008).**~~

- ~~**Scenario 1: Drive one pile section per day:**~~
  ~~**Exclusion area 90 meters (180 total linear meters) up and down stream from pile-driving (590 linear feet x 200-foot-channel = 118,000 sq. ft. exclusion area)**~~

- ~~**Scenario 2: Drive more than one pile section per day**~~
  ~~**Exclusion area 200 meters (400 total linear meters) up and down stream from pile-driving (1,312 linear feet x 200-foot-channel = 262,400 sq. ft. exclusion area)**~~

…

Evaluation of Potential Alternatives …

The following potential alternatives to the proposed project have been identified, evaluated for potential to avoid or reduce the project's adverse impacts on coastal resources, and tested for feasibility by Caltrans: …

(from staff report page 79, in pertinent part:)

Alternative 8: Build the bridges as presently proposed by Caltrans but restrict pile driving to ~~one~~ a maximum of two 40-foot steel shell pile sections per day during the July 1 – September 1 pile-driving season established annually by the National Marine Fisheries Service, and implement Fish Exclusion Zone ~~Scenario 1~~ E as shown on Addendum Exhibit FF, a distance of approximately 150 meters upstream and downstream from pile-driving locations between proposed Piers 3 and 4. This restriction would reduce fisheries impacts associated with Fish Exclusion Zone D shown on Addendum Exhibit FF, by approximately 1,200 listed salmonids over two pile-driving seasons, according to the fish population estimates set forth in Addendum Exhibit FF. Caltrans has confirmed that this alternative could be feasibly implemented and would not be likely to extend pile-driving into a third season. Thus, this alternative reduces the total fish impacts that would be posed by a three-pile-section per day pile-driving schedule and thus represents a less environmentally damaging feasible alternative to the project as previously proposed by Caltrans. ~~As described in Exhibits H and I, this restriction reduces the area of the total Fish Exclusion Zone (FEZ) to 118,000 sq. ft. compared with an exclusion zone of at least 262,400 sq. ft. if two sections of pile are driven per day, during each pile-driving season. If limited to two pile driving years, this alternative would take an estimated 858 listed salmonids, comparced with an estimated 4,926 listed salmonids for an exclusion zone sized for driving two file sections per day. The restricted pile-driving schedule, particularly in the second pile-driving year, would be tight enough to produce some risk of extending pile-driving to a third year, though Special Condition 2 (C) contains provisions to moderate this risk. In addition, Caltrans District 1 staff and their selected contractor will gain significant installation experience during pile-driving during Year 1, a year with fewer piles to install than pile-driving Year 2. This sequence argues that the experience gained will enhance efficiency the second year, thus adding confidence that an alternative limiting installation to one pile section per day could be feasibly implemented. Moreover, the projections of Caltrans provided on December 7, 2007 indicate that for the second pile-driving year, the days needed for pile-driving only exceed the available window by 3 to 5 days, underscoring the likelihood that the experience gained during pile-driving Year 1 could be applied to the goal of shaving off those extra days from the pile-driving schedule.~~

Alternative 8 offers no differential reductions in impacts to three of the four key coastal resource impacts categories described above (agriculture, stream channel, riparian/wetlands), as compared with the proposed project. However, Alternative 8 would reduce fish exclusion impacts by reducing the accumulated hydroacoustic impacts that drive the spatial extent of the competing fish exclusion scenarios. **Alternative 8 would not reduce the impacts of establishing the FEZ at the 90-meter footprint (180 linear meters, total) that would be required for driving only one pile section per day. However, Caltrans has presented evidence that such a limit would substantially increase the risk that construction delays would require pile-driving into a third season, and possibly even a fourth season due to**

sequential construction requirements. If even one additional FEZ season was required for the one-section-per-day scenario, Caltrans estimates that a total of 1,287 listed salmonids would be adversely affected. This compares to only 1,196 listed salmonids that Caltrans indicates would be affected by two seasons of the 150-meter footprint (300 linear meters, total) associated with the two-pile-section-per-day FEZ. Thus, Alternative 8 would substantially reduce the ~~**area of Mad River habitat**~~ **number of affected salmonids** that would be affected by the hydroacoustic hazard footprint associated with **limiting** pile-driving **to one 40-foot section per day of** the proposed 7-foot-diameter steel shell piles, and would also substantially reduce the number of listed salmonids that would be taken to establish the larger FEZ needed for the multiple **(three)**-pile-section-per-day pile driving scenario that Caltrans ~~**presently**~~ **previously** propose~~**d**~~.

~~**FEZ Scenario 1 (discussed above), under Alternative 8, affects only about 17% of the listed salmonids that would otherwise be taken by implementation of FEZ Scenario 2 pursuant to Caltrans' presently proposed project.**~~

Caltrans has stated that the agency prefers to leave decisions such as the number of pile sections that can be driven in a day to the choice of the eventually-selected contractor. Caltrans has stated that this is because the contractor may come up with a cost-savings idea when given maximum flexibility and allowed to implement a variety potential options. Alternative 8 represents a significant reduction in the number of listed salmonids that would be harmed to establish the larger fish exclusion zone that would otherwise be required, however, and in addition, the smaller FEZ would be easier to manage, less of a challenge to clear of fish, and would avoid **most of the** particularly fish-rich habitat that lays just outside of the smaller FEZ but would be cleared to establish the larger FEZ. Thus, implementation of Alternative 8 would increase the chances for success of the FEZ method of protecting fish within the river, **as compared with the FEZ necessary for a three-pile-sections-per-day pile-driving scenario,** would reduce direct and indirect adverse effects on fish and other species, and would thus reduce the adverse effects on coastal resources as compared with the impacts that would result from the project as presently proposed by Caltrans (with larger FEZ). **As described above, the two-section-per-day FEZ would also reduce the affects on listed salmonids that would be produced by the one-pile-section-per-day FEZ because the risk of a third, or fourth, year of pile-driving would be mostly eliminated by this scenario according to Caltrans staff.**

The Commission finds, therefore, that it would be a feasible, environmentally preferable alternative to require that pile-driving be limited where it could affect the river habitat, to a maximum of ~~**one**~~ **two forty-foot steel shell pile** section**s** per day as required by Special Conditions 2 (Pile Driving) and 14 (Revised Plans). The Commission further finds that it is reasonable for Caltrans to require its eventually selected contractor to abide by this restriction, and that Caltrans would have sufficient notice of this limitation to include it in the appropriate bidding documents and eventual contract as required by Special Condition 7 (Construction Responsibilities). In this way, the bidders would be

fully appraised of this limitation, and any loss of potential financial windfall the state and the contractor might secure from retaining unfettered flexibility to select other options would be offset by the protective effects of selecting Alternative 8 discussed above.

In addition, the Commission finds that Caltrans' desire to provide cost-saving incentives in construction projects does not override the applicability of the Chapter 3 policies of the Coastal Act in reviewing potential development within the coastal zone. That is, as previously stated, Coastal Act Section 30233 requires a searching analysis for feasible, least environmentally damaging alternatives. As discussed herein, Alternative 8 would feasibly reduce impacts on listed salmonids and environmentally sensitive habitat. In addition, and as is also discussed above, Special Condition 2 contains a limited exception provision for the Executive Director to grant relief from absolute pile-driving restrictions upon request and in light of an adequate showing of an environmentally-protective basis for the request. This provision reduces the risk that Alternative 8 could render the project infeasible or force a third year of pile-driving. Therefore, for all of these reasons, the Commission finds that Alternative 8 would reduce the adverse impacts on coastal resources posed by the proposed project, and that the revision of the proposed project to limit the project to the construction of ~~**one**~~ **two** pile section**s** per day~~**/ Scenario 1**~~ **as shown by Zone E of Addendum Exhibit FF** is feasible and **represents a less environmentally damaging feasible alternative** when compared to the ~~**presently**~~ **previously** proposed project **that included provisions to install up to three pile sections per day in the pertinent locations**.

Conclusion: second test (alternatives)

Therefore, as discussed extensively above, the Commission has considered eight alternatives, including the no-project alternative and the proposed project. The Commission finds for the reasons set forth above that the no--project alternative is not a feasible, less environmentally damaging alternative to the proposed amendment. The Commission also finds, however, that there is one alternative, identified as Alternative 8 above, that would meet the purpose and need of the proposed project, and would also reduce the project's hydroacoustic impact-related footprint on the listed salmonids and other species that inhabit the waters of the Mad River. Alternative 8 is virtually identical to the proposed project except for one feature: pile-driving would be limited to ~~**one**~~ **two forty-foot-long** section**s** of **the proposed** 7-foot-diameter pile**s** ~~**(which may be 40 to 60 feet in length)**~~ per day instead of the multiple**(three)**-pile-section-per-day option that Caltrans ~~**presently**~~ **originally** propose**d**~~**s**~~. Therefore, Alternative 8 is feasible, and demonstrates that **a** less damaging feasible alternative to the proposed project exists. Special Condition 2 requires that Caltrans limit installation of pile sections to ~~**one**~~ **two** pile section**s** per day for pile-driving of piers that may produce hydroacoustic impacts of biological concern. Special Condition 2 also provides the means of securing a limited exception to this restriction, for cause, if a third year of pile-driving would thereby be avoided. ~~**In addition, Special Condition 3 requires that Caltrans revise the proposed project to incorporate Alternative 8 (that is, undertake pile driving**~~

~~**pursuant to Fish Exclusion Scenario 1).**~~ **Thus, the Commission has identified a feasible, less environmentally damaging alternative to the proposed project.**

(from "Feasible Mitigation Measures" section of the staff report, commencing in pertinent part on page 83 of the staff report:)

… to require through a special condition for revised plans that the least visually-intrusive design of bridge elements, including bike rails and lighting, be chosen, require proper disposal of lead-contaminated soils; ensure that adverse affects on fisheries and aquatic habitat/species that may arise from the hydroacoustic impacts of pile driving are limited to the maximum extent possible by limiting the installation of pile sections to ~~**one**~~ **two** per day (Special Condition 14: Revised Plans); to provide for a revised wetland plan that would not impermissibly convert excessive amounts of non-prime agricultural lands to non-agricultural uses and ensure that an alternative location for approximately 3 acres of compensatory riparian mitigation is undertaken at an ecologically appropriate location within the Mad River watershed and at a ratio of at least 4:1 **and mitigation of stream channel impacts at a ratio of 1:1** (Special Condition 15: Revised Wetland/Stream Channel Mitigation Plan;

~~**… to provide for implementation of revised bridge foundation plans should this become a concern on a short timeline, consistent with affirmative environmental review (Special Condition 20: Future Revised Plans to Reduce the Impacts of the Proposed Bridge Foundation);**~~ and to provide for the protection of marine mammals that may otherwise be affected by the hydroacoustic impacts of pile-driving (Special Condition 2**01**~~**1**~~: Marine Mammal Monitoring Program)

OTHER CORRECTIONS:

(page 42 of the staff report in pertinent part, bottom of the page:)

… This information will be provided through compliance with the pertinent Special Conditions set forth herein (See Special Conditions 2, 3, 4, 5, 15, and 2**01**~~**1**~~ in particular).

All references to ST-20 rail in the staff report, including on pages 31, 42, 46, & 100 should be changed to **ST-10** rail.

COLLEGE
OF THE
REDWOODS

ADDENDUM EXH. NO. 6
APPLICATION NO.
1-07-013 – CALTRANS
MAD RIVER BRIDGES
HIGHWAY 101
CORRESPONDENCE (1 of 8)

January 8, 2008

RECEIVED
JAN 09 2008
CALIFORNIA
COASTAL COMMISSION
NORTH COAST AREA

Peter Douglas, Executive Director
California Coastal Commission
710 E Street, Suite 200
Eureka, CA 95501

Dear Peter:

First, on behalf of the faculty and students at College of the Redwoods, I would like to thank you, your staff at the Coastal Commission, and our CalTrans colleagues for the opportunity to be part of the partnership project we have been working on for the past few months. I am convinced that the resources that could be made available to the college through this partnership would make an enormous difference to our agriculture program and specifically to our ability to make continuing productive use of our college farm in Shively.

As I know you have discussed with Vice President Bobbitt, the college took possession of the Shively farm at a time when our student enrollment was just beginning to experience what has become a very significant decline. That decline has caused a similar decline in our apportionment funding from the state. Ninety-five percent of the college's base funding is dependent on student enrollment.

Since acquiring the farm, the college has been working to integrate this new laboratory resource into its agriculture program, which has been an important area of instruction at the college for many years. This work has been focused in two primary areas – improvement of the physical infrastructure at the farm site and achieving a level of financial sustainability for the program over time.

The bequest of the farm to the college included approximately $200,000 in cash, which the college spent in the first few years to begin to make much needed infrastructure improvements at the Shively site. These funds have now been exhausted and additional infrastructure improvements remain to be completed.

As the college has begun to operate the farm as an instructional site for the agriculture program, it has also become necessary to supplement the annual operating budget of farm from general fund apportionment revenue. In the current year, this annual subsidy has grown to nearly $100,000.

Office of the President

7351 Tompkins Hill Rd.
Eureka, CA 95501-9300
707.476.4170

FAX: 707.476.4402

The currently proposed partnership between the Coastal Commission, CalTrans, and the college is exciting and attractive to us because it is designed to address both of these continuing needs of our agriculture program. The immediate support being proposed will enable us to complete our current infrastructure improvements, and more importantly, the ongoing support being proposed will ensure the ultimate viability and sustainability of the farm as an important resource to our local agriculture community. In this respect, it is important to understand that it has been made clear to the college that, should we be unable to sustain the Shively farm as a viable instructional facility at any point in future, the property would pass out of college ownership; it would be converted to a redwood park and its use as agricultural land would be lost forever.

For all of the reasons stated here, the college is extremely grateful to be considered as a potential partner in this project with the Coastal Commission and CalTrans. It has been a pleasure for us to work with everyone from both partner agencies to help bring the project to this point in its development. If there is anything any of us at the college can do to further assist with this effort, please let us know.

Sincerely,

Tom Harris

Tom Harris
Interim President/Superintendent

TH:sa
cc: Dr. Bobbitt

University of California Cooperative Extension

Agriculture and Natural Resources
Humboldt County
Agriculture Center
5630 South Broadway, Eureka, CA 95503-6998
(707) 445-7351 Fax (707) 444-9334 TDD 1-800-6[illegible]

California Coastal Commission
North Coast Division Office
P.O. Box 4908
Eureka, CA 95502

1/7/08

Dear Commissioners,

We would like to express our full support to the staff recommendation to mitigate loss of agricultural lands in Humboldt County with a 2 million dollar fund established at College of the Redwoods for the agriculture teaching position and support of the Shively Education Center.

As UC Cooperative Extension farm advisors, we work with farmers to solve local problems through research projects. We hold workshops to bring up to date information to our local agriculturists and would work closely with the new agricultural faculty person to coordinate these efforts. The Shively Education Center is a useful site to have experimental plots, demonstration plantings and workshops. We have in the past had some trials there, but without a faculty position at the community college it is difficult to coordinate new projects. We would gladly serve on an advisory committee or task force to oversee the agriculture program at CR, as we have in the past. Many of our projects are grant funded and we would be excited to include CR faculty as collaborators and partners in our projects. We want you to know that there is a large group of committed educators, farmers and ranchers who will work together to facilitate and ensure success of this project.

The future of farming in our region and nationwide is reliant on educating young people to see agriculture and all it's related areas as potential career choices, from actual farming/ranching to research and extension, regulatory and environmental sciences. Our community college students can transfer into the UC and CSU system where there are excellent agriculture programs. Hands-on learning is the most successful tool; as our 4-H, FFA and college farm programs across the nation has proven. One example of a successful long term college farm project is the Cal Poly enterprise projects. We have studied their model and adopted it for College of the Redwoods already; for five years students have been growing produce and running a farmers market on campus. If the Coastal Commission and Cal Trans can make these funds available it would be an investment in the future, while mitigating loss of productive lands.

Thank you for your time and attention.

Deborah Giraud

Deborah Giraud, Farm and Community Development Advisor

Alan Bower

Alan Bower, Natural Resource and Livestock Advisor

3 of 8

Humboldt County Farm Bureau

5601 So. Broadway, Eureka, CA 95503
Serving Agriculture Since 1913

January 3, 2008

California Coastal Commission
710 E Street Suite 200
Eureka, CA 95501

Re: Permit No. 1-07-014

Dear Commissioners:

The Humboldt County Farm Bureau would like to provide the following comments on the partial mitigation of the permanent conversion of prime agricultural lands associated with CalTrans projects on the north coast.

We have reviewed your Staff Report dated December 21, 2007, regarding the proposed endowment of a $2 million fund for the agricultural education program of the College of the Redwoods, and the program's sustainable agricultural teaching farm. This proposal is by far the most positive contribution anyone could make towards the future of agricultural in our community.

The full time agriculture instructor is one of the most important factors in educating local and state agriculturalists for future generations. In addition, the school farm has been struggling with lack of funding to actually be a productive addition to the college's agricultural program. We would like to congratulate CalTrans for developing such an outstanding program for mitigation of the permanent conversion of Ag lands and we strongly support this proposal.

With regards to the purchase of the Demello site to mitigate for the loss of wet lands at the Mad River area, we do not support this proposal. The conversion wet lands at one site then mitigating that loss with Ag land to be partially used as wet lands results in an overall larger loss of productive Ag lands.

Again, we wish to show our strong support for the mitigation of Ag Lands with the endowment to the College of the Redwoods Agricultural program. This proposal will enhance agriculture for future generations.

Sincerely,

Jim Regli
President

Phone (707) 443-4844 • Fax (707) 443-0926 ▪ email humboldtfb@sbcglobal.net

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NCGA
Farmers' Market
PO Box 4232
Arcata, CA 95518
441-9999 (Voice Mail)
(707) 825-7503 (Fax)
www.humfarm.org

California Coastal Commission
North Coast Division Office
P.O. Box 4908
Eureka, CA 95502

Dear Commissioners, 1/8/08

The North Coast Growers Association is the group of farmers who run five farmers markets a week in Humboldt County. Many of us attended College of the Redwoods for agriculture classes and business classes. The Shively Education Center is a wonderful farm site that gives students real life experience to complement their classroom studies. Various farmers hire CR students and those who have had some experience are better workers and committed to learning.

We fully support the Cal Trans and Coastal Commission plan to have a fund set up at the CR Foundation to endow a faculty position and support the farm, and transportation. We will help advise and connect the new faculty to local farmers to make the Shively Education Center a community asset for all. This mitigation idea will benefit new beginning farmers, and the whole community of farmers here on the North Coast for many, many years.

Thank you for your time and attention.

Denise Payne
Executive Director

Midge Catching Vice President
Dave Feral, Board Member
North Coast Growers Association

5-48

Amity Heritage Roses

Mr. and Mrs. Tracy and Janet Sclar
PO Box 357. Hydesville, CA 95547
voicemail/fax: 707-768-2040
TandJ@AmityHeritageRoses.com
http://www.AmityHeritageRoses.com

8 January 2008

California Coastal Commission
North Coast Division Office
P.O. Box 4908
Eureka, CA 95502
Fax: 707-445-7877

Dear Commissioners,

We have been excited to read of the staff recommendation to mitigate loss of agricultural lands in Humboldt County with a two million dollar fund established at College of the Redwoods for the agriculture teaching position and support of the Shively Education Center.

As nearby neighbors to the highway 36 overpass project, and professionals in the agriculture community, we find this recommendation highly favorable for all parties concerned. The farm is a treasure for CR and the county and we recommend all measures possible to supply and sustain the Agriculture Department at CR, and to promote locally grown produce in an era where farmlands are increasingly disappearing.

If the Coastal Commission and Cal Trans can make these funds available it would be a huge investment in our future, our area, and our students, while at the same time mitigating loss of currently productive lands.

Respectfully,

Tracy and Janet Sclar
Owners
Amity Heritage Roses

Janet Sclar
Board Member
Humboldt County Farm Bureau

Cc: Katherine Ziemer
Executive Director
Humboldt County Farm Bureau

6-98

1-7-08

FAVOR, with conditions.
Item No. F8a
Permit 1-07-013

California Coastal Commission
710 E Street Suite 200
Eureka, CA 95501

Permit 1-07-013
Applicant California Dept of Transportation
Hearing 1-11-08

I support the construction of the Highway 101 bridge over the Mad River provided it still includes a pedestrian walkway. The pedestrian walkway must not be designated a bikeway because pedestrians would not have a legal right of way over the bicyclists. State law allows bicyclists to use a pedestrian walkway, but pedestrians would have the right of way. Bicyclists already have the two 10-foot wide shoulders on the freeway bridge which were ensured by the previous Caltrans District 1 Director, a bicyclist.

The communities in Humboldt and Del Norte Counties are like a string of pearls connected by the State highways. There is no other legal or physical right of way for pedestrians between communities. California Streets and Highways Section 157, FHTA funding policy, and Caltrans Sacramento headquarters policy require that alternate pedestrian routes be provided. Historically, pedestrians used the Mad River Bridge without restrictions until the 1960's, when the southbound Mad River freeway bridge was built. The northbound Mad River freeway bridge had been built in 1928 and had always been used as the pedestrian route, even though it was getting dangerous. Caltrans District 1 adopted a de-facto policy of prohibiting pedestrians from walking between communities by posting "Pedestrian's Prohibited" signs on the on-ramps, off-ramps, and bridges on the only pedestrian routes. The Hammond Railroad Bridge became government property 18 years after the southbound Highway 101 freeway bridge was built, so it was not ever considered as being an alternate route, but the Hammond Railroad Bridge was never a viable alternate pedestrian route anyway because it is four miles out of the way, and pedestrians don't have that kind of mileage in their shoes.

Recently Caltrans spent $3,000,000 to widen shoulders (but no additional traffic lanes) on the Highway 101 bridge over the Little River north of McKinleyville and did not provide any alternate pedestrian route. Bicyclists were treated with a widened shoulder, but Caltrans kept their "Pedestrians Prohibited" signs. **Your Coastal Commission did not object to physically and legally blocking pedestrian access between McKinleyville and Trinidad.** It took me ten years to get all the signs removed. The vehicle traffic is very light and few pedestrians other than me use this route, so using the freeway is not a significant pedestrian hazard. But **the Coastal Commission should not create legal and physical pedestrian ghettoes!**

The Commission staff recommendation that $2 million of taxpayer's money be given to the College of the Redwoods Foundation earmarked for the Shively Farm is outrageous and should be ridiculed and **deleted**. This is the kind of recommendation that properly earns your Commission it's **more appropriate name, the California Coastal Extortion Commission**. Thirty five years ago it was likewise irrational and extravagant when I designed one of the first coastal bikeways in Los Angeles City. The cost for about a mile of critical bikeway was only $42,000, but as a condition of approval your Commission demanded that the City guarantee construction of $1,500,000 worth of Los Angeles County's bikeways and that low cost housing be built on 30 City-owned lots nearby. Fortunately, the stupidity of the Commission approval

conditions was recognized, and the conditions were deleted. Within a month after construction of the bikeway it was used by about 1,000 bicyclists a day, and now there are many thousand more per day. If the Commission had won it's initial stupid way, the people would have lost a lot.

The local newspaper stated that Caltrans could not participate in the McKinleyville Community Services District storm drain marsh project about a half mile from the bridge site as mitigation because it was **partially** outside the Coastal Zone. Staff is now proposing mitigation at a location that is **over 60 miles from the bridge and from McKinleyville and also that is entirely outside the Coastal Zone**. The mitigation site should be close to McKinleyville and somehow relevant to it, because McKinleyville is the area that is being impacted. Apparently being within the Coastal Zone was just an excuse.

Charles Wilson
1810 Cottonwood Ave.
McKinleyville, CA 95519

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STATE OF CALIFORNIA—THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *GOVERNOR*

CALIFORNIA COASTAL COMMISSION

45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200
FAX (415) 904-5400

MEMORANDUM

FROM: John Dixon, Ph.D.
Ecologist

TO: Melanie Faust

SUBJECT: Caged Fish Study at Mad River

DATE: January 9, 2008

ADDENDUM EXH. NO. 7

APPLICATION NO.

1-07-013 – CALTRANS MAD RIVER BRIDGES HIGHWAY 101

MEMORANDUM OF COMMISSION STAFF ECOLOGIST, WITH ATTACHMENT (1 of 6)

I have recommended that the Coastal Development Permit for the replacement of the bridges on Highway 101 at the Mad River be conditioned to require a study to empirically determine whether underwater sound generated by driving support piles results in the injury or death of caged fish placed at various distances from the pile-driving activity. This requirement has been incorporated in the staff report as part of Special Condition 5.

Although reasonably based on existing literature and expert opinion, there is very little empirical basis for the sound thresholds that have been established to avoid injury to fish from pile-driving activities. Although the experts who recommended these thresholds believe that the thresholds are conservative (i.e., injury would require higher sound intensities), there is considerable uncertainty in their recommendation. Because of the complex physical environment and shallow water in streams, there is even greater uncertainty in the estimates of the sound intensity that will occur at various distances from the pile-driving activity. For this reason, continuous hydroacoustic monitoring while piles are being driven is necessary both to implement measures to avoid injury and to estimate, after-the-fact, the area within which injuries probably occurred. By placing caged fish adjacent to the hydrophones used for acoustic monitoring, it will also be possible to empirically determine whether the received sound levels at various distances from the source actually cause injury.

The caged fish study is required to be conducted in four parts: (1) Much of the logistics and handling protocols will be will be worked out prior to piling driving (estimated to begin in summer 2009); (2) preliminary experimental observations will be made during the first year of pile driving; (3) the final experimental design will be determined following analysis of the first year's data and peer review; and, (4) final experimental observations will be conducted during the second year of pile driving (probably 2011). The results of these observations can be used to implement appropriate protective measures in the second year of pile driving at Mad River and at other locations where bridges will be constructed in the future. In addition, the results will aid in calculating the actual impacts to fish from pile driving in the Mad River and elsewhere. In meetings with Caltrans, biologists from NOAA Fisheries (Dan Free) and CDFG (Scott Bauer)

were very supportive of conducting these studies in the Mad River. It is quite unlikely that such studies would be logistically feasible in any other significant salmon stream in central or northern California where a bridge is likely to be built. The Mad River is close to Humboldt State University and to the CDFG Fish Hatchery. As a result, experimental fish are readily available, experts and holding facilities for fish are close at hand, handling and travel time for fish is minimized, and field work is efficient and close to home for the biologists involved. On the other hand, if the scientific team chosen to conduct this work advises that it is not feasible because of the physical or chemical conditions of the river, technological limitations, or biological constraints, the Executive Director, by specific provisions contained within Special Condition 5, is empowered to cancel the study.

A Caltrans consultant (Hadden 2007) has criticized the proposal for a caged-fish study based on a number of false assumptions. For example, she asserts that the distances at which cages are placed cannot be determined until after the first year of hydroacoustic monitoring. This is probably based on the idea that the cage distance must correspond to some particular received sound level. This is not true; all that is required is that the cage locations span a large enough distance to result in a significant range of received sound levels. Regardless, this estimate could be made after the first episode of pile driving rather than after the first full year. Other false assumptions include the notions that details of pile driving (e.g., number of strikes) must be controlled, and that neither effective replication nor effective randomization can be achieved. On the other hand, the assertion that this is an observational study (as opposed to a manipulative study where the treatment level (e.g., received sound pressure level) is determined *a priori* and other variables kept constant) is accurate. However, the premise that observational studies do not allow one to reasonably assign causation is false. Were it true, there could be no useful assessments of environmental impacts and no useful epidemiological studies. There are, of course, both. Although the determination of treatment levels that can occur in a laboratory setting is not possible, an experimental design that includes appropriate controls and the random assignment of fish to treatment will produce interpretable results. For example, if fish are not injured at any location when there is no pile driving, whereas they are injured during pile driving where sound levels are high, but not where sound levels are low or at control locations with ambient sound, it is reasonable to conclude that the sound caused the injury. If there is a significant range in the intensity of sound exposures during the course of the experimental observations, it will also be possible to estimate the sound level at which injury becomes likely.

Attachment:

Hadden, S. (Jones & Stokes). December 29, 2007. Discussion of caged fish studies associated with pile-driving activities during the Mad River bridges replacement project in response to California Coastal Commission staff report Condition 4.

Date: December 29, 2007

Prepared by: Samantha Hadden, Aquatic Scientist, Jones & Stokes

Subject: Discussion of Caged Fish Studies Associated with Pile-Driving Activities during the Mad River Bridges Replacement Project in Response to California Coastal Commission Staff Report Condition 4

Caged fish studies are being required prior to issuance of CDP 1-07-013 (Condition 4, Section A, page 11) in the form of a *Hydroacoustic Monitoring Plan.*

Caged fish studies have been drafted as part of *Special Condition 5 of the California Coastal Commission Staff Report dated December 21, 2007. Section C, item 2, page 13* implies that the purpose of these caged fish studies would be to "demonstrate that injury to fish at the subjected levels [sound] was unlikely" in the event that either criterion of the "duel metric exposure criteria" were exceeded.

The possibility of caged fish studies being successfully implemented during the first year of pile-driving is limited by several factors that cannot be controlled for in a natural field setting:

1. The distances at which the various cages (experimental units) are placed cannot be precisely known until after the first year of hydroacoustic monitoring.

Caged fish studies *would not* improve the assessment of fish 'take' during pile driving over the methods already proposed (i.e., snorkel surveys) based on the following:

1. There is no need to distinguish between lethal and sub-lethal harm.
2. All fish exposed to 187 dB $SEL_{accumulated}$ are considered to experience harm. Comprehensive surveys and estimates of the number of listed salmonids will be performed, and a mitigation strategy is being currently being prepared to reconcile in adult equivalents the number of fish potentially harmed.

Caged fish studies could affect pile-driving activities:

1. The ability of fisheries biologists to remove and fish and replace them with new specimens before the next pile strike would require that pile-driving cease. These delays would seriously compromise time windows already established during the permitting process.

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2. The contractor could not ensure the safety of persons conducting the experiments

Things to consider if caged fish studies were implemented during pile-driving activities:

1. When considering an experimental design it is important to:

    a. Randomize because it averages out the effects of all variables that cannot be controlled for. This would be difficult because we do know the dynamics of the sound pressure waves that will be produced and then subsequently experienced by each experimental unit (i.e., caged fish). An experiment of this type would require a complex sampling design with control over parameters such as the number of strikes, time of day, as well as time between strikes in order to effectively randomize experimental units.

    b. Replicate; this is necessary to ensure that the experiment is powerful enough to detect the effect. The nature of the sound pressure waves produced and there locations would make replication (i.e., multiple experimental units experiencing the same sound pressure waves) nearly impossible in a field setting.

    c. Stratify experimental units to remove the effects of a known confounding variable. We would not know how to stratify the experimental units until after the first year of pile driving. Even with a known hydroacoustic footprint, the differences in the location and depth of each pile being driven would complicate the stratification of experimental units.

2. The essential difference between an experiment and an observational study for comparing the effects of treatments:

    a. In an experiment, the experimenter determines which experimental units receive which treatments. This would be nearly impossible given the nature of a construction project (e.g., number of strikes, depth of pile, and time of strike).

    b. In an observational study, we simply compare units that happen to have received each of the treatments. We could potentially accomplish this after hydroacoustic monitoring during the first year of pile-driving.

c. Caged fish studies implemented in a construction environment would be limited to an observational study. This could be is useful in identifying *possible* causes and effects, but it *cannot reliably establish causation*. Only a properly designed and executed experiment can reliably demonstrate causation (i.e., no causation without manipulation). These studies would not allow for the level of control necessary to undertake a true *experiment*.

3. Limitations on the design of caged fish studies implemented during a pile-driving

   a. In order to determine causation an experiment must be randomized. It would be necessary for a caged fish study to randomize experimental units because this would average out the effects of all variables that cannot be controlled for such as the response of individual fish to a given pressure wave. This would be difficult because we do know the dynamics of the sound pressure waves that will be produced during any given strike. These constraints would make it nearly impossible to randomize our experimental units because the distribution of the wave patterns produced by a single pile-driving event will occur along some unknown physical gradient. We would need to model this in some way or block for its effects. But, if cannot randomize, you cannot block for unknown variables.

   b. Since we cannot accurately randomize the experimental units we would be limiting ourselves to an observational study which would not yield a direct cause and effect relationship between a given sound level and the response of a fish.

   c. The precise hydroacoustic footprint would need to be known to control for confounding variables among the experimental units (e.g., body orientation in space and time, body size).

   d. In an ideal experimental setting we would know exactly what sound level we were exposing an individual cage (i.e., experimental unit) to as well as its position in the water column during exposure. This would allow for randomization and controls.

Hydroacoustic impacts from sound pressure waves are currently being conducted by the Fisheries Hydroacoustic Workgroup (FHWG). This is an interagency group composed of representatives from NOAA Fisheries (Southwest), NOAA Fisheries (Northwest), U.S. Fish and Wildlife Service, California Department of Fish and Game, and the U.S. Army

Corps of Engineers. The FHWG is supported by a panel of hydroacoustic and fisheries experts who have been recommended by the FHWG members. A Steering Committee oversees the FHWG and is composed of managers with decision-making authority from each of the members' organizations. Caged fish studies potentially implemented during pile-driving should be done so in consultation with the FHWG. This would ensure that this *research* could be used to produce guidelines for fisheries managers (i.e., 187 dB $SEL_{accumulated}$ threshold) to assess and evaluate potential impacts, not to establish direct take numbers associated with a given project for the purposes of mitigation.

CDP Application No. 1-07-013 (Caltrans)
Mad River Bridges Replacement
U.S. Highway 101, Humboldt County

Addendum Exhibit FF

Fish Exclusion Zones, including proposed Zone E (Hydroacoustic Impact Hazard Footprint)

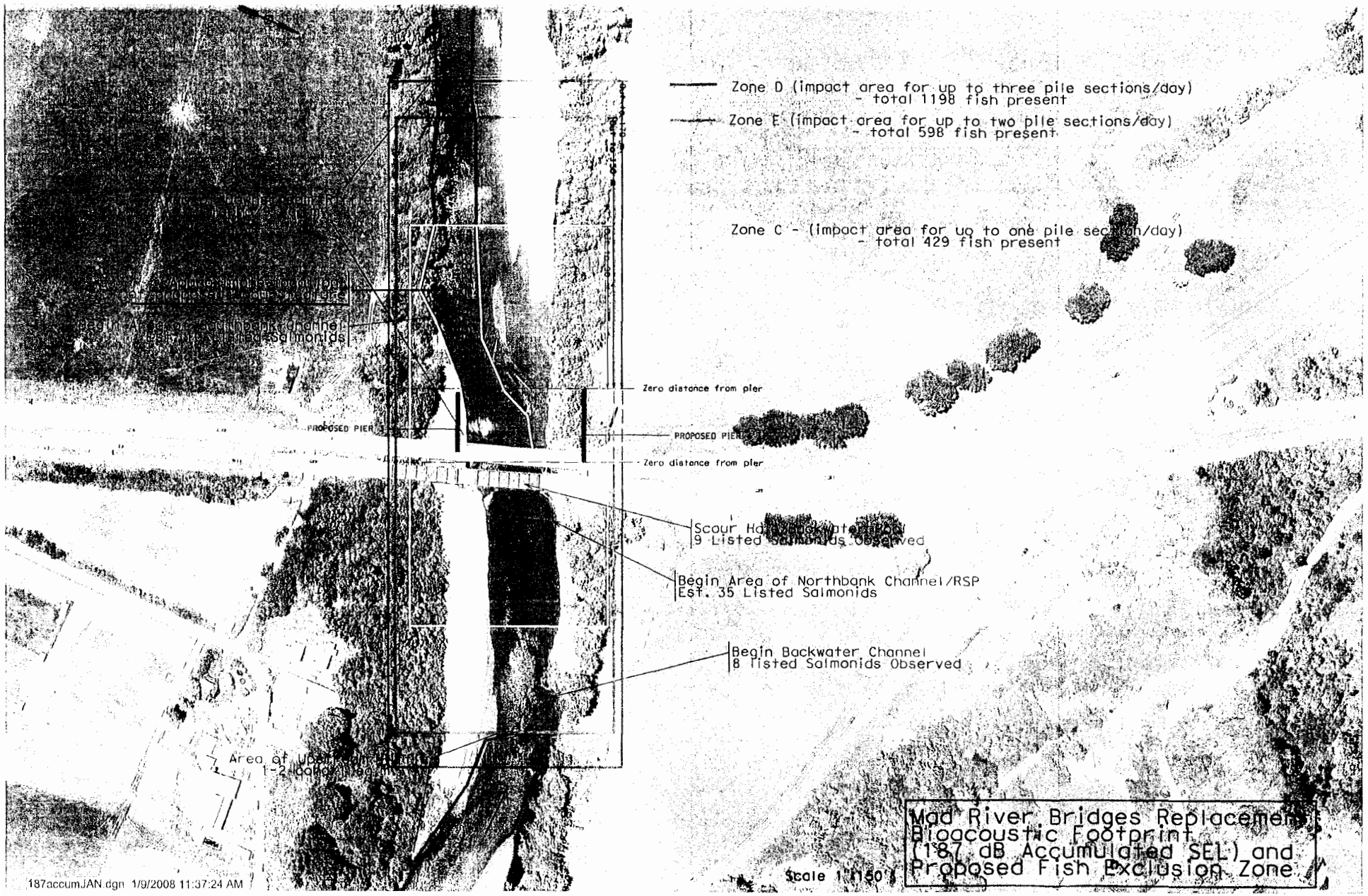
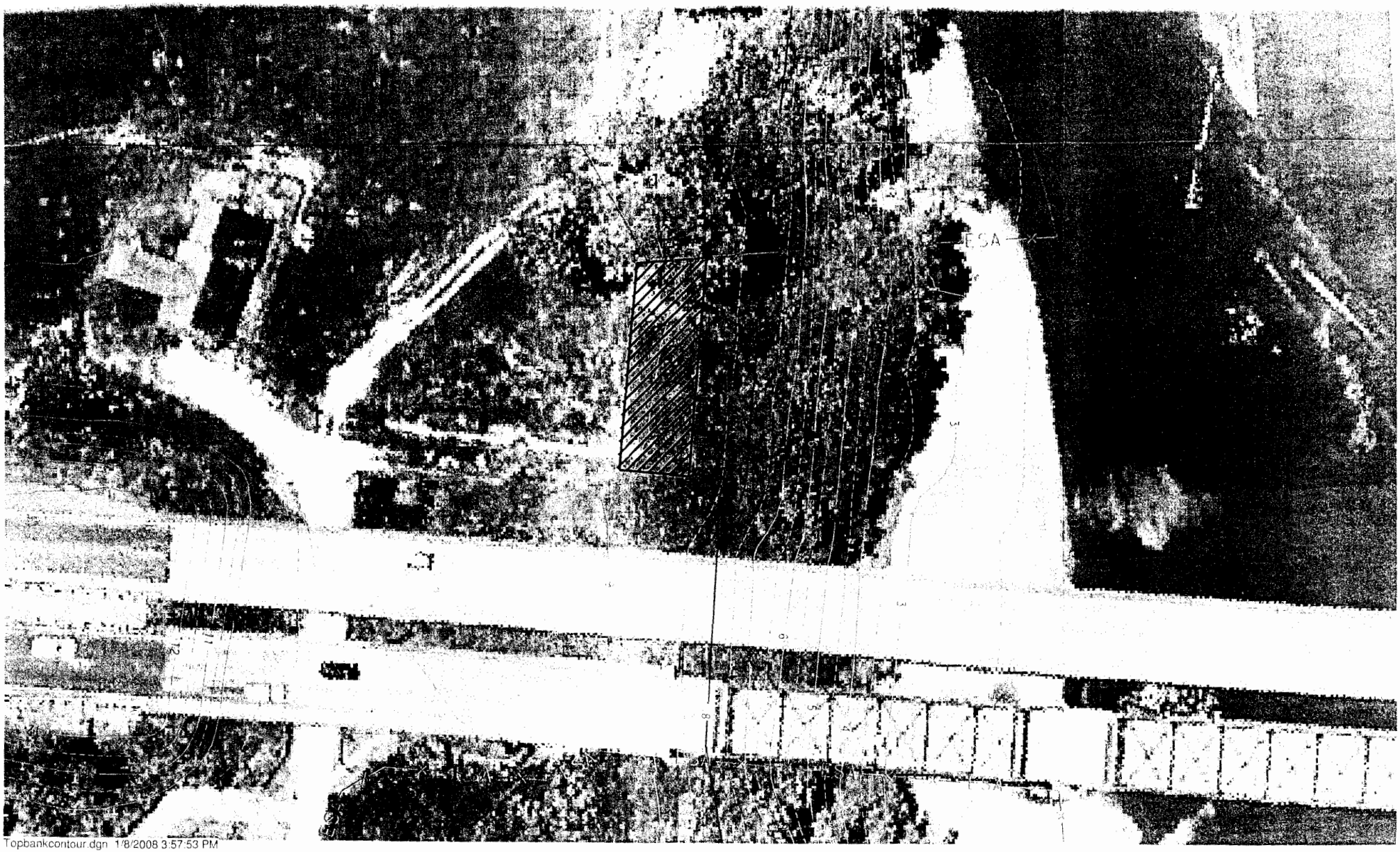

Zone D (impact area for up to three pile sections/day)
- total 1198 fish present
Zone E (impact area for up to two pile sections/day)
- total 598 fish present
Zone C - (impact area for up to one pile section/day)
- total 429 fish present
Zero distance from pier
PROPOSED PIER
PROPOSED PIER
Zero distance from pier
Begin Area of Northbank Channel/RSP
Est. 35 Listed Salmonids
Begin Backwater Channel
8 listed Salmonids Observed
Mad River Bridges Replacement
Bioacoustic Footprint
(187 dB Accumulated SEL) and
Proposed Fish Exclusion Zone
Scale 1"=150'
187accumJAN.dgn 1/9/2008 11:37:24 AM

EXHIBIT FF

CDP Application No. 1-07-013 (Caltrans)
Mad River Bridges Replacement
U.S. Highway 101, Humboldt County

Addendum Exhibit GG

Cross-hatched area indicates vegetation removal area necessary for Pier 2 Test-Pile Driving; Red "x" indicates location of corner piles (center "x" indicates the location of the 7-foot-diameter test pile for Pier 2)



Topbankcontour.dgn 1/8/2008 3:57:53 PM

Exhibit GG