CALIFORNIA COASTAL COMMISSION
NORTH COAST DISTRICT OFFICE
710 E STREET • SUITE 200
EUREKA, CA 95501
VOICE (707) 445-7833
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F13a

ADDENDUM

DATE: August 9, 2012

TO: Commissioners and Interested Parties

Click here to go to the original staff report.

FROM: Charles Lester, Executive Director
Alison Dettmer, Deputy Director
Robert S. Merrill, North Coast District Manager
Jim Baskin, Coastal Planner

SUBJECT: **Addendum to Item F13a, California Department of Transportation Coastal Development Permit Amendment No. 1-07-013-A2** for Public Hearing and Action at the August 11, 2014 Meeting in Santa Cruz

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1. CHANGES TO STAFF REPORT

The staff recommendation dated July 27, 2012 had recommended that the Commission approve portions of the applicant's proposed amendment and deny other parts. As presented in Attachment No. 1, the applicant has withdrawn the portion of the permit amendment application that staff had recommended be denied. The amendment application no longer seeks approval of a stream channel mitigation proposal as partial satisfaction of two special conditions of the original permit requiring the submittal of final comprehensive fisheries and wetlands mitigation plans to mitigate the adverse impacts of the bridge replacement project. The applicant will instead resubmit the mitigation proposal as part of the comprehensive fisheries and wetlands mitigation plans once other components of the plans have been further developed. As the portion of the amended project which staff believes to be inconsistent with the Coastal Act is no longer before the Commission, staff is changing the staff recommendation to a recommendation for conditional approval of the revised amended project. Specific changes to the July 27, 2012 staff report are as follows:

a. On page 2, revise the "Description of Requested Amendment" to delete sub-part (1) describing the stream channel mitigation proposal.

b. On pages 2 and 3, delete the portions of the Summary of Staff Recommendation addressing the stream channel mitigation plan component of the original permit amendment request.

c. On page 5, revise the Table of Contents to delete the entry for Section VI, "Findings and Declarations for Partial Denial."

d. On pages 6 and 7, replace Section I, "Motion, Resolution, and Recommendation" with the following:

I. MOTION, RESOLUTION, & RECOMMENDATION

Motion:

I move that the Commission approve the proposed amendment to Coastal Development Permit 1-07-013 pursuant to the staff recommendation.

Staff recommends a **YES** vote. Passage of this motion will result in approval of the amendment as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Resolution:

The Commission hereby approves the coastal development permit amendment on the ground that the development as amended and subject to conditions, will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit amendment complies with the California Environmental Quality Act because feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the amended development on the environment.

e. On page 23 within the Amendment Description finding, revise the first paragraph on the page as follows:

Caltrans now proposes a further amendment the original permit. The requested amendment ***~~would specifically identify a mitigation project for partial compensation of impacts to stream channel resources associated with construction of the replacement bridges to partially satisfy two special conditions requiring submittal of final fisheries and wetlands mitigation plans. In addition, the amendment~~*** seeks authorization for the agency to retain portions of the three sets of piers of the former bridges that were previously proposed and required to be fully demolished. In place of razing Piers 6 and 9 down to their wooden piling underpinnings, extrication would be discontinued at one meter below the ordinary ground surface. This modification would reduce the degree of ground disruption that would have effects on riverine water quality, while removing the aerial portions of the pier to a depth where the remnants would not pose similar

potential adverse impacts to site stability from scour-related erosion at some future time. Similarly, the aerial portions of Pier 8 would be removed only down to the Ordinary Low Water elevation of the river, and large woody debris fish habitat materials installed onto the pier remnants to sustain and enhance the existing scour pool aquatic habitat in existence in the river around the pier base. This latter work to sustain and enhance the existing pool habitat would be performed in place of constructing a new scour hole down river of the new bridges, as was proposed and approved in the original permit, intended to mitigate for the loss of habitat that would have resulted from full demolition of Pier 8. These ~~***three***~~ ***two*** project modifications are described in further detail below.

f. On pages 23 through 25, within Finding II.B, "Amendment Description," strike the section titled "Proposed Final Wetland and Stream Channel Mitigation Plan."

g. On page 25, within Finding II.B, "Amendment Description," strike: (1) the word "also" from the first sentence of the section titled "Proposed Partial Retention of Piers 6 and 9;" and (2) the parenthetical statement at the end of section.

h. On page 27, strike: (1) the parenthetical statement at the end of section titled "Proposed Partial Retention and Habitat Enhancement of Pier 8;" and (2) the word "Partial" from the title of Section V; (2).

i. On pages 38 through 43, strike Section 6, titled "Findings and Declarations for Partial Denial" in its entirety.

III. ATTACHMENTS

1. Letter from Dana York, Branch Chief, North Region Environmental Management Branch E2, California Department of Transportation – District 1, dated July 31, 2012, received August 2, 2012.

DEPARTMENT OF TRANSPORTATION
DISTRICT 1, P. O. BOX 3700
EUREKA, CA 95502-3700
PHONE (707) 445-6416
FAX (707) 441-5775
TTY 711

Flex your power!
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July 31, 2012

California Coastal Commission
North Coast District Office
710 E Street, Suite 200
Eureka, CA 95501
Attn: Jim Baskin

Dear Mr. Baskin:

Please withdraw our request listed as item "1" in our July 13, 2012, letter for an amended description to CDP 1-07-013. In discussions with the Commission it has become evident that we need more time to work through the details of the Blue Lake weir removal proposal. We plan to look at how it will fit into the final mitigation plan, to be submitted at a future date after project construction is completed.

If you have any questions about this matter, please contact Susan Leroy at (707)-445-6048.

Sincerely,

DANA YORK
Branch Chief, North Region Environmental Management Branch E2

Attachment:
July 13, 2012, Letter to Amend Description of CDP 1-07-013

cc: Susan Leroy

ATTACHMENT 1

DEPARTMENT OF TRANSPORTATION
District 1
P.O. Box 3700
Eureka, CA 95502
PHONE (707) 445-6600

Flex your power!
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CDP 1-07-013 (Amendment)
US Route 101, Mad River Bridges
District 1 (Eureka)

July 13, 2012

California Coastal Commission
North Coast District Office
710 E Street, Suite 200
Eureka, CA 95501
Attn: Jim Baskin

SUBJECT: Amendment to description for CDP 1-07-013

Dear Mr. Baskin:
Enclosed is an amendment to the description for CDP 1-07-013 for the replacement of the Mad River Bridges for Coastal Commission review and acceptance. The enclosed description and attachments supersede those submitted on March 13, 2012; all other information in the application is accurate.

The amendment includes the following items:

1. Per Condition 15, a plan for stream channel impact mitigation (Attachment A). A project description for removing a weir on the Mad River as mitigation for stream channel impacts is attached (B). Attachment C consists of a draft Cooperative Agreement with the Humboldt Resource Conservation District, who will implement the project on Caltrans' behalf, and a Statement of Work. Removal of the weir at Blue Lake also fulfills a portion of the mitigation for fish impacts, and is included in the plan for long term compensatory mitigation of fisheries impacts due to the project (Attachment D), as required by Condition 5 D of the original permit. In the interests of expediting concurrence for the weir removal, which has time constraints, we are deferring consideration of the remaining fish mitigation projects to a subsequent amendment, unless Commission staff directs otherwise.

2. Change to Project Description, Findings, p. 63
Proposal to allow the footings of the old bridge that are above the top of the bank (piers 6 and 9, shown in Attachments E1 and E2) to be removed only to 1 meter below ordinary ground;

3. Change to Project Description, Findings, p.64
Proposal to retain Pier 8 to maintain fish habitat it creates, and attach woody debris to minimize the aesthetic impact, rather than removing it completely and establishing a

replacement scour structure in another part of the channel (Attachment F).

Future Wetland Amendment Submission

Item 3 of the March 13, 2012 amendment has been withdrawn; however, we want to let you know our thoughts regarding this permit condition. In 2007 the CDP permit application stated that 1.72 acres of permanent and temporal impacts to coastal wetlands would occur during Project Years 1-3 (Mad River Bridges Replacement On-site Wetland and Riparian Mitigation and Monitoring Plan [MMP], November 2007, Table 1, page 7, submitted with the CDP application). However, on May 30, 2012 during a joint field review of the project site with Coastal Commission staff, we observed that no temporal impacts within the project's N/E quadrant (projected at 0.21 acre) actually occurred (polygons 35, 16, 17, 18 and 19; see MMP Exhibit 5, Impact Mapping). Therefore we will be seeking to amend the CDP to state that 1.51 acres *(vs. 1.72 acres)* of permanent and temporal impact to wetland and riparian habitats occurred during Project Years 1-3.

Further, as mitigation for project impacts, Caltrans may propose to utilize existing bank credits at the Elk River Wildlife Area Mitigation Bank. In this case Caltrans will be seeking to amend the mitigation ratio to a ratio of 3.4:1 (versus 4:1). The Elk River bank was constructed over 20 years ago and wetlands are fully functional; while out-of-kind (tidal), there will be no temporal loss, therefore a ratio of less than 4:1 is justified.

The proposed mitigation ratio would be satisfied as follows:

On-site, in-kind - 1.04:1

Upon project completion it is estimated that 1.57 acres of revegetation can be accomplished on-site (as proposed in the 2007 MMP, minus acreage proposed to be planted under the new bridge deck [as disallowed by the project's CDP]). These areas will be planted following the completion of project construction, as proposed in the project's revegetation plan.

Off-site, in-kind - 1.3:1

The project's CDP allowed for two (2) acres of off-site riparian habitat restoration at the Samoa parcel for mitigation credit; this restoration has occurred.

Off-site (established), out-of-kind - 1.01:1

The Caltrans Elk River Mitigation Bank has a balance of 1.53 acres of available credit. Because this bank was constructed over 20 years ago, wetlands are fully functional.

If you have any questions or require additional information, please contact Valerie Gizinski, project coordinator, at (707) 445-5320, or by e-mail at valerie_gizinski@dot.ca.gov .

Sincerely,

Dana York
Senior Environmental Planner - Branch E-2

Attachments:
A – Stream Channel Impact Mitigation Plan
B – Project Description for Blue Lake Hatchery Weir Removal
C – Draft Cooperative Agreement for Blue Lake Weir Removal and Statement of Work
D – Long Term Compensatory Fisheries Mitigation Plan
E1 & E 2 – Maps of the footings of Piers 6 and 9 in relation to the Mad River
F – Fish Habitat Structure Proposal for Pier 8

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NORTH COAST DISTRICT OFFICE
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F13a

Filed:	7/13/12
180th Day:	1/9/13
Staff:	J. Baskin-E
Staff Report:	7/27/12
Hearing Date:	8/10/12

STAFF REPORT: MATERIAL AMENDMENT

Amendment Application No.: **1-07-013-A2**

Applicant: **California Department of Transportation**

Project Location: U.S. Route 101, Mad River Bridges, between Arcata and McKinleyville, unincorporated area of Humboldt County.

Description of Original Coastal Development Permit: Construct two new cast-in-place (CIP) concrete box girder bridges, reconfigure new on and off ramps and Central/Route 200 intersection, and demolish the existing bridges. The new bridges would be about 750 feet long, and each bridge would have two 12-foot-wide traffic lanes, a 5-foot-wide inner shoulder and a 10-foot-wide outside shoulder. The new northbound structure would also include an additional 8-foot-wide "multi-modal" (bicycle/pedestrian) corridor on the eastward side and landings at each end of the bridge. Demolish existing residence & outbuildings, relocate utilities, upgrade/install up to10 culverts. Total grading of approximately 110,000 cubic yards (yd^3) (19,638 yd^3 cut, 89,995 yd^3 fill, 14,786 yd^3 export – including demolition debris). Excavate lead contaminated soils east of existing bridges & dispose as hazardous wastes. Construct a new scour pool approximately 100 feet down river of the new bridges to mitigate for stream channel impacts associated with loss of scour pool habitat at a former bridge in-water pier.

Description of Requested Amendment: (1) Approval of Final Stream Channel Mitigation Plan, in partial satisfaction of Special Condition No. 15.C and partial satisfaction of Special Condition No. 5.D of the original permit, entailing removal of an in-water weir structure at the Mad River Fish Hatchery (***staff recommends DENIAL***).

(2) Retention, rather than demolition of, the portions of Piers 6 and 9 from their pier bases to a height corresponding to the elevation of one meter below ordinary ground level (***staff recommends APPROVAL WITH SPECIAL CONDITIONS***).

(3) Retention, rather than demolition of, the portions of Pier 8 from the pier base to a height corresponding to the elevation of Ordinary Low Water (OLW), and the installation of large woody debris enhancements onto the retained pier remnants for sustaining the existing scour pool habitat around the base of the pier (***staff recommends APPROVAL WITH SPECIAL CONDITIONS***).

Staff Recommendation: Denial in part; Approval in part, with Special Conditions.

SUMMARY OF STAFF RECOMMENDATION

Staff recommends that the Commission take one vote adopting a two-part resolution, which would approve portions of the applicant's proposed amendment and deny other portions of the proposed amendment. The California Department of Transportation (Caltrans) proposes an amendment to the original permit granted for the replacement of the U.S. 101 crossing of the Mad River in unincorporated Humboldt County. The amendment seeks approval of the proposed removal of an upriver in-water weir structure at the Mad River Fish Hatchery to partially satisfy the requirements of special conditions of the original permit requiring the submittal for the review and approval by the Executive Director and the Commission of a final long term compensatory fisheries impact mitigation plan and a long term compensatory stream channel impacts mitigation plan. Additionally, the requested amendment would allow for retention of portions of three sets of old bridge piers (Piers 6, 8, and 9) previously proposed and required under the original permit to be demolished as part of the Mad River Bridges Replacement Project. Retention of remnants of old Pier 8 is also proposed to conserve and enhance a scour pool in the river bottom that provides significant fish habitat. The conservation and enhancement of the scour pool would substitute for the originally authorized creation of an entirely new scour pool approximately 100 feet downstream that has not yet been constructed.

The primary coastal resource issues raised by this amendment include: (1) ensuring the overall adequacy of mitigation for the project's adverse effects to fisheries and stream channel resources in the absence of comprehensive mitigation plans; and (2) potential adverse impacts to water quality and site stability associated with retention and/or enhancement of the former bridge piers.

Special Conditions 5 and 15 of the original permit require the submittal of final comprehensive fisheries and wetland mitigation plans to mitigate the adverse impacts of the bridge project. Caltrans proposes to partially mitigate for the impacts of the bridges replacement project through restoration of river bottom substrate by removing an in-water weir structure at the upriver Mad River Fish Hatchery. This 5.9-acre weir structure, though originally intended to function as part of the hatchery's fish ladder diversion facility, has caused intended impacts to aquatic resources by forming an obstruction to fish passage, trapping sediment, and poses a safety threat to boaters due to its dilapidated state. As the weir represents a significant barrier to anadromous fish migration and contributes to water quality degradation, removal of the weir is a priority for the various federal, state, and local resource agencies. As proposed, the work would be conducted by the Humboldt County Resource Conservation District (HCRCD) pursuant to a two-party cooperative agreement between Caltrans and the HCRCD.

Special Condition Nos. 5 and 15 of the original permit require the submittal of a comprehensive set of mitigation measures for all categories of fisheries and riverine impacts, and make no provisions for the incremental submittal of mitigation plans for discrete sets of impacts. Commission staff believes that the granting of any such partial credit for the stream channel mitigation separate and apart from consideration of the whole of the comprehensive mitigation proposals would be inadequate and problematic as a substantive determination of the degree of incremental compliance with the requirements Special Condition Nos. 5 and 15 that the stream channel mitigation plan would arguably provide, cannot be factually made. In addition, the proposed weir removal project itself lacks sufficient detail and metrics for determining its value for mitigation and conformance with the special conditions, as many details of the proposed mitigation measure remain unclear. For example, although a narrative description of the proposal has been submitted, no detailed plans for the weir removal have been developed or submitted. In addition, no detailed monitoring proposal has been submitted for accessing success of the restoration and whether the project has resulted in unintended adverse effects such as channel bank and bottom erosion and related riparian habitat loss. Furthermore, no proposal for remediation is presented in the event that the weir removal work is not successful. Moreover many questions exist as to how implementation of the measure would be guaranteed. The actual weir removal work would be performed by a third party, the Humboldt County Resource Conservation District, with partial funding provided by the applicant. The District is not a co-applicant for the permit amendment. The applicant does not explain how the mitigation measure would be successfully completed in the event the District experiences problems in performing or completing the work.

Staff believes comprehensive final fisheries and wetland mitigation plans should be presented for review in the context of condition compliance once the plans have been completed in conformance with the requirements of Special Conditions 5 and 15.

Therefore, for all of the above reasons, **Commission staff is recommends denial of the stream channel mitigation component of the proposed Coastal Development Permit Amendment No. 1-07-013-A2.** Although details of the mitigation proposal presented are unclear, staff believes the proposal may have merit and may be appropriate for the Commission and the Executive Director to consider as part of the final mitigation plans.

Commission staff recommends conditional approval of the partial retention of Piers 6 and 9, and partial retention and enhancement of Pier 8 of proposed Coastal Development Permit Amendment No. 1-07-013-A2. With respect to the retention and enhancement of the former Mad River Bridges' Pier 8, and the conservation and enhancement of the fish scour pool, Staff believes the wetland fill associated with the proposal constitutes fill for restoration purposes, an allowable purpose for wetland fill under Section 30233(a) of the Coastal Act. To ensure that the restoration proposal is successfully implemented, staff recommends **Special Condition No. 21** which requires the submittal for the review of the Executive Director of a monitoring and remediation program prior to issuance of the permit amendment. In addition, Commission staff recommends the attachment of new **Special Condition Nos. 22 and 23**, setting forth specific design limitations on the proposed Pier 8 large woody debris enhancement structure for insuring that impacts to site stability and visual resources are minimized, consistent with Coastal Act policies.

The partial removal of all three of the old bridge piers down to river level could result in the significant adverse impacts to riverine habitat and water quality if not properly undertaken with appropriate erosion and sediment control measures. Staff recommends that the Commission revise certain portions of the existing special conditions and further impose one new special condition to address the water quality impacts resulting from the changes to the old bridge pier removal work. Staff is recommending **modifications to Special Condition Nos. 7, 10, and 17**, regarding construction responsibilities, erosion control best management practices, and water quality protections.

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APPENDICES

Appendix A: Substantive File Documents

EXHIBITS

Exhibit 1: Regional Location Map
Exhibit 2: Vicinity Map
Exhibit 3: Amendment Project Features Locations
Exhibit 4: Amended Project Description Overview Narrative
Exhibit 5: Proposed Stream Channel Impacts Mitigation Plan
Exhibit 6: Draft Proposed Long Term Compensatory Fish Impacts Mitigation Plan
Exhibit 7: Proposed Mad River Fish Hatchery Weir Removal Mitigation Plan
Exhibit 8: Draft Cooperative Interagency Agreement
Exhibit 9: Piers 6 and 9 Location Maps
Exhibit 10: Pier 8 Fish Habitat Mitigation and Enhancement Plan
Exhibit 11: Excerpt, Adopted Findings for Coastal Development Permit No. 1-07-014

I. MOTION, RESOLUTION, & RECOMMENDATION

Motion:

I move that the Commission adopt the staff recommendation to approve in part and deny in part the amendments to Coastal Development Permit 1-07-013 requested by the permittee, with approval subject to the conditions recommended by staff, by adopting the two-part resolution set forth in the staff report.

Staff recommends a **YES** vote. Passage of this motion will result in approval of a portion of the amendment as conditioned and denial of all other portions of the amended development, and adoption of the following two-part resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Part 1 – Approval with Conditions of a Portion of the Amended Development:

The Commission hereby GRANTS, as conditioned, an amended coastal development permit for the portions of the project consisting of:

(1) retention, rather than demolition of, the portions of Piers 6 and 9 from their pier bases to a height corresponding to the elevation of one meter below ordinary ground level; and

(2) retention, rather than demolition of, the portions of Pier 8 from the pier base to a height corresponding to the elevation of Ordinary Low Water (OLW), and the installation of large woody debris enhancements onto the retained pier remnants for sustaining the existing scour pool habitat around the base of the pier, as a substitution for construction of the originally approved new scour pool 100 feet down river,

and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not have any significant adverse effects on the environment within the meaning of the California Environmental Quality Act.

Part 2 – Denial of the Remainder of the Amended Development

The Commission hereby DENIES a coastal development permit for the portion of the proposed development consisting of:

(1) approval of a Final Stream Channel Mitigation Plan, in partial satisfaction of Special Condition No. 15.C and partial satisfaction of Special Condition No. 5.D of the original permit, entailing removal of an in-water weir structure at the Mad River Fish Hatchery,

and adopts the findings set forth below, on the grounds that the development will not be in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976 and would

result in significant adverse effects on the environment within the meaning of the California Environmental Quality Act.

II. STANDARD CONDITIONS

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

III. SPECIAL CONDITIONS

Note: The original permit (CDP No. 1-07-013) contains twenty special conditions, seventeen of which are reimposed as conditions of CDP Amendment No. 1-07-013-A2 without any changes and remain in full force and effect. Special Condition Nos. 7, 10, and 17 are modified and reimposed as conditions of CDP Amendment No. 1-07-013-A2. Special Condition Nos. 21 through 23 are additional new special conditions attached to CDP Amendment No. 1-07-013-A2. The modified and new conditions are listed below. For comparison, the text of the original permit conditions is included in Exhibit No. 11.

Changes to the special conditions appear in highlighted text format. Deleted language is shown in **~~bold double-strikethrough~~** type; new text appears in **bold double-underlined** font.

For purposes of implementing the activities authorized by Coastal Development Permit 1-07-013-A2, the following definitions shall apply:

7. Construction Responsibilities. A. This permit authorization requires, and by accepting the benefits of CDP 1-07-013 **and CDPA 1-07-013-A2**, Caltrans agrees that:

(1) No construction materials, debris, graded soils, waste, chemicals, fuels, or non-compliant dewatering effluent (effluent with turbidity, pH, or other water quality measure that does not comply with the requirements of the Regional Water Quality Control Board or other state or federal agencies), shall be stored, placed , or discharged within the Mad River corridor including streambed or banks, or adjacent riparian areas, or other areas where it may enter the Mad River or other coastal waters, whether directly or indirectly, unless specifically and affirmatively authorized by these special conditions; and

(2) No machinery shall be allowed at any time within the wetted channel of the Mad River corridor except during the construction windows specifically authorized by Special Condition 1.

(3) The Executive Director may, through these provisions, authorize the limited use of equipment within the wetted channel during the season June 16 through October 14 annually, for the purpose of: a) constructing the temporary river crossing in years where such crossing is necessary, b) diverting the river channel as necessary provided the flowing channel is never reduced to less than fifty feet in continuous flowing channel width, and c) constructing the mitigation scour pool in Construction Year 3 or 4. Such authorization shall be provided through the Executive Director's approval of an annual river access plan that shall be submitted by Caltrans for the review and approval of the Executive Director not later than February 1, annually, for the following May 1 – October 14 season, or by May 1 annually if the river access plan will only address the June 15-October 16 access provisions, to allow sufficient time for iterative executive review and revision of the subject plan. The Executive Director shall review the subject plan in consultation with the fisheries biologists of the California Department of Fish and Game and the National Marine Fisheries Service. The Executive Director may authorize minor changes to the approved annual river access plan that Caltrans requests based on the fluctuating seasonal conditions of the river channel that become more pronounced as the rainy season ends, provided that no significant additional impacts to sensitive species or habitat would result from the proposed changes. The annual river access plan shall address all areas of project activities authorized by CDP 1-07-013 and shall provide a refined plan based on the emerging river conditions and construction needs of the subject year for which the plan is proposed. The annual river access plan shall be prepared by the supervising and resident Caltrans engineers assigned to the subject project, together with the fisheries monitoring biologist and a Caltrans environmental planning staff biologist. The annual river access plan shall not be implemented without the final review and approval of the revised plan incorporating all changes required by the Executive Director.

(4) Vehicles, equipment and materials allowed on the gravel bars in the river channel shall be limited to the minimum necessary to perform project activities. If the Caltrans site supervisor determines that this requirement is not met, the supervisor

shall direct that the excess be immediately re-located outside of the river channel. No vehicles, equipment or materials, except as specifically authorized in the annual river access plan, shall be allowed within the ambulatory wetted channel of the river. 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 stationery equipment such as generators and pumps that cannot feasibly be relocated outside of the corridor for fueling, with full containment of any potential fuel spill in place prior to commencement of any re-fueling operation, and verified by the fisheries biological monitor. All hydraulic fuels used within the river corridor shall be vegetable-based unless determined infeasible by the Caltrans site supervisor, who shall note such determination in the project records. Generators and other potential sources of fuel or oil spills shall be fully contained to prevent spills or leakage onto the gravel bar and shall be inspected at least twice per day for evidence of leaks or spills. No fuels shall be stored closer to the channel than the area defined as a minimum of one hundred (100) feet landward of the top-of-bank of the Mad River, and all fuels, oils or other potential contaminants shall be stored within areas protected by berms sufficient to contain the maximum spill that could occur within the bermed area and authorized for such placement, and in a manner that prevents spills or leaks from reaching the river corridor. Any leaks or spills anywhere on the subject site shall be cleaned up immediately and noted in the SWPPP reports and pertinent biological monitoring reports.

(5) Staging and storage of construction machinery, materials, equipment, fuel, or any other material, or storage of debris or graded material, shall not take place within sensitive habitat areas or within the river channel except as specifically provided in these special conditions, and the perimeters of sensitive habitat areas shall be identified and marked in the field by a qualified biologist prior to commencement of construction and re-identified as often as needed thereafter to continuously maintain the identification and protection of sensitive habitat areas.

(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 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 the Mad River corridor at any time.

(7) All debris, materials, equipment, vehicles, staging and storage features, concrete washout areas, de-watering facilities, the bermed fueling/fuel storage location, and any other material or temporary feature associated with project construction shall be removed immediately after project completion and the affected area returned to pre-construction conditions and restored in accordance with other special conditions set forth herein.

(8) All waste material or excess graded material generated by demolition or construction shall be removed from the construction site and disposed of at a facility that is:

(a) located outside of the Coastal Zone, with necessary permits and approvals to accept the material for disposal or recycling; or

(b) inside the Coastal Zone at a facility demonstrated by Caltrans to the satisfaction of the Executive Director to have all necessary permits and approvals, including a coastal development permit where applicable, for such use. The location and volume of project wastes so disposed shall be documented by the resident engineer and noted in the biological monitoring reports submitted to the Executive Director. The disposal records shall be retained by Caltrans as part of the permanent project files and made available on request.

(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 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.

(11) Sufficient oil absorbent booms and/or pads shall be on site at all times during project construction to ensure an immediate, effective response to any spill that may reach the Mad River. Site personnel shall be verified as fully trained to deploy such equipment, and the presence of the booms/pads/equipment and the adequacy of personnel training shall be periodically verified by the Caltrans site

supervisor and noted in the permanent project records. All equipment used during construction shall be free of oil and fuel leaks at all times, and where parked or operated within or over the river channel from top of bank to top of bank, oil pans or other containment materials or devices shall be continuously placed beneath such equipment to ensure that leaks that do arise will not enter the river environment. Vehicles or machinery cleared to enter the wetted channel, such as for construction of temporary crossings, shall be fully steam-cleaned, including the undercarriage, and inspected and verified to be free of leaks by the Caltrans site supervisor or designated representative before the subject vehicles or machinery are allowed to enter the wetted channel. No vehicles or machinery shall enter the wetted channel at any time unless under the constant supervision of the monitoring fisheries biologist and the Caltrans site supervisor.

(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, 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 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 produced 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 these map layouts 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.

(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.

(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.

(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.

(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.

(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.

(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.

(21) Upon the completion of the Pier 6 and 9 demolition to one meter (1 m.) below ordinary ground level, the excavation shall be back-filled with clean material matching the composition and compaction of surrounding soil and earthen materials, to an elevation and slope matching that of the surrounding terrain.

(22) The Pier 8 demolition work shall be limited to: (a) wire saw cutting of the aerial portion of the pier to as close to the Ordinary Low Water (OLW) summer flow water surface elevation as possible; and (b) additional demolition by pneumatic jack hammers of the remaining portion of the concrete column necessary to stabilize the logs used in the large wood debris habitat enhancement feature. Prior to removal of the pier column, an

impermeable membrane material (such as a rubber pond liner) shall be secured and sealed around the column just below the OLW saw cut elevation. The membrane shall be formed into a basin around the perimeter of the column. Water and cutting slurry generated from the concrete cutting operation shall be collected in the basin and pumped into a portable water tank for disposal at an offsite location, consistent with Special Condition No. 10.F.

(23) Construction of the Pier 8 scour hole fish habitat enhancement structure authorized by CDP Amendment No. 1-07-013-A2 shall employ water quality Best Management Practices (BMPs), such as catch tarps, and vacuum cleaning, during the drilling of holes into both the wooden debris members and the pier concrete to prevent boring wastes from entering coastal waters.

B. All project activities shall be undertaken at all times in full compliance with these requirements. Any project changes to these requirements shall be reported to the Executive Director. No changes to these requirements may be approved without ~~an~~ **a further** amendment to CDP 1-07-013, unless the Executive Director determines that no amendment is legally required.

10. Water Quality Protection. 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. 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 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. 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.

D. In addition to other requirements set forth in this or other special condition(s) set forth herein, the 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. 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, 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 within the wetted channel of the Mad River.

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. **Water and cutting slurry generated from concrete cutting operations associated with demolition of Pier 8 and the installation of the scour pool large woody debris enhancement structure shall be collected in an impermeable membrane material (such as a rubber pond liner) secured and sealed around the column just below the Ordinary Low Water (OLW) saw cut elevation. The membrane shall be formed into a basin around the perimeter of the column. Water and slurry collected in the basin and pumped shall into a portable water tank for disposal at an offsite location approved by the Executive Director. Construction of the Pier 8 scour hole habitat enhancement structure shall employ water quality source control Best Management Practices (BMPs), such as catch tarps, and vacuum cleaning, during the drilling of holes into both the wooden debris members and the pier concrete to prevent boring wastes from entering coastal waters.** 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 coffer dams, drilling, sediment de-watering, or pile-driving and related work, shall not be directed into coffer dams in the river channel.

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.

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.

17. **Assumption of Risk.** By acceptance of Commission approval of CDP 1-07-013 **and CDP Amendment No. 1-07-013-A2**, Caltrans acknowledges and agrees: (i) that the site of the proposed Mad River Bridge project including relocated elements of Route 101 to the point of conformity with the existing highway, and the proposed new pedestrian landings on the north and south ends of the pedestrian corridor on the eastward side of the northbound bridge, may be subject to hazards from seismic events, tsunamis, liquefaction, storms, floods and erosion; (ii) to assume the risks to employees and assigns of Caltrans, including contractors and subcontractors and their officers, agents, and employees, and to the public utilizing the proposed project during and after construction, and to the property that is the subject of this permit of injury and/or damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense against such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.

21. Pier 8 Scour Hole Habitat Large Woody Debris Enhancement. Construction of the Pier 8 scour hole habitat enhancement structure shall be subject to the following design and operational limitations:

(A) An array of no more than nine (9) trunk logs with attached root ball or log stems and separate root wad assemblages, oriented longitudinally with the long axes of the pier footings, as generally described and depicted in "Fish Habitat Retention Proposal," dated July 13, 2012, attached to this staff

report as Exhibit No. 10, shall be installed onto the Pier 8 eastern and western footing remnants.

(B) The large woody material shall be secured by mechanical anchors including bolts, cables, and/or steel dowels attaching the enhancement structure directly to the Pier 8 footings. No revetment rock, guy lines, "deadman" anchors, or other materials shall be placed within the live waters of the river to secure the woody materials. All mechanical anchors shall be positioned so as to be hidden from view to the maximum extent feasible.

22. Pier 8 Scour Hole Enhancement Monitoring Program. A. PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT AMENDMENT NO. 1-07-013-A2, the applicant shall submit for review and approval of the Executive Director, a restoration monitoring program. The restoration monitoring program shall include provisions for monitoring the Pier 8 scour hole habitat enhancement structure that is the subject of CDP Amendment No. 1-07-013-A2 and shall at a minimum include the following:

(1) Provisions for submittal within 30 days of completion of the initial restoration work of "as built" plans demonstrating that the initial restoration work has been completed in accordance with the approved restoration program.

(2) Provisions to ensure structural components of the habitat feature (i.e., logs and root wads) shall be periodically inspected to ensure the structure's stability and integrity to withstand seasonal high river flows. Permittee shall notify the Executive Director of any remedial actions needed to be undertaken to replace lost materials, or to remove problematic accumulated debris if monitoring indicates such action is required to ensure proper functioning as a fish habitat enhancement structure or to avoid impacts to coastal resources.

(3) Provisions to ensure the scour feature shall be monitored on an annual basis for five (5) years after construction. Measurements of the width and depth of the scour feature will be recorded to ensure that it is self-sustaining fish habitat feature. Photo documentation of the stability of the structure shall be taken from GPS coordinate-tied locations upstream, downstream and laterally from the south bank opposite of Pier 8.

(4) Provisions to ensure annual monitoring reports shall be submitted to the Executive Director by February 1 of each year for five (5) years following completion of construction of the enhancement structure. The monitoring reports shall document any changes that have occurred in the enhancement structure and the scour pool dynamics and bathymetry in the vicinity of Pier 8, and identify any maintenance responses or adaptive management actions needed to be undertaken, for sustaining the structure's fish and wildlife habitat functions, and/or avoiding or compensating for impacts to coastal

resources, including but not limited to bank stability. Water quality, public access safety, or visual resources.

(5) Provisions for submission of a final monitoring report to the Executive Director at the end of the five-year reporting period. The final report must be prepared in conjunction with a qualified biologist. The report must evaluate whether the restoration site conforms with the goals, objectives, and performance standards set forth in the approved final restoration program. The report must address all of the monitoring data collected over the five-year period.

(6) Provisions to ensure that the restoration site will be remediated within one year of a determination by the permittee or the Executive Director that monitoring results indicate that the scour feature does not meet the objective that the scour feature is sustaining the scour pool's fish and wildlife habitat functions or is creating impacts to coastal resources, including but not limited to bank stability. water quality, public access safety, or visual resources.

B. If the final report indicates that the scour feature does not meet the objective of sustaining the scour pool's fish and wildlife habitat functions or is creating impacts to coastal resources, the applicant shall submit a revised or supplemental restoration program to compensate for those portions of the original program which did not meet the objective and/or are creating impacts to coastal resources. The revised restoration program shall be processed as an amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

C. The permittee shall monitor and remediate the restoration site in accordance with the approved monitoring program. Any proposed changes from the approved monitoring program shall be reported to the Executive Director. No changes to the approved monitoring program shall occur without a further Commission amendment to this coastal development permit unless the Executive Director determines no further amendment is legally required.

23. Final Revegetation and Erosion Control Plan Associated with Demolition and Removal of Old Bridge Piers 6, 8, and 9. PRIOR TO ISSUANCE OF CDPA 1-07-013-A2, Caltrans shall submit for the review and approval of the Executive Director, a Final Revegetation and Erosion Control Plan and a Revised Final Revegetation and Erosion Control Plan, respectively, for all areas disturbed by construction associated with the demolition and removal of old bridge Piers 6, 8, and 9.

A. Plan Contents. (1) The plan shall be prepared by a qualified botanist with knowledge of the flora of the Mad River and environs. The plan shall provide for both temporary and permanent erosion control and revegetation

utilizing only regionally appropriate or locally grown or collected native plant seeds or materials. The plan shall set forth revegetation performance standards and milestones to ensure the ecological and erosion control success of the plantings subject to the review and approval of the Executive Director.

(2) **All proposed plantings other than for the areas being returned to agricultural use shall be obtained from local genetic stocks within Humboldt County. The Executive Director may authorize limited, minor exceptions to this standard upon a showing of evidence to the Executive Director's satisfaction that locally obtained materials are not available. In no case shall plant species listed as problematic and/or invasive by the California Native Plant Society, the California Invasive Plant Council, or by the State of California be planted or allowed to naturalize or persist on the parcel. No plant species listed as a 'noxious weed' by the State of California or the U.S. Federal Government shall be utilized within the property.**

(3) **All disturbed soils shall be secured by erosion control measures before and during the rainy season, and permanent plantings shall be protected with slope stabilization measures until sufficient cover and root mass ensures that erosion is fully controlled.**

(4) **Weed control measures shall be implemented throughout the disturbed areas associated with the demolition of Piers 6, 8, and 9 subject to revegetation, for a minimum of five (5) years following the end of construction, and annual removal of Himalayan blackberries in these areas shall be included in the weed control efforts.**

(5) **All revegetation activities, including monitoring, adaptive management, and reporting, shall be undertaken or supervised by a qualified botanist.**

(6) **All plantings shall be maintained in good condition for the life of the development approved by CDPA 1-07-013-A2, and shall be watered, weeded, replaced, and otherwise maintained by Caltrans as necessary to achieve and maintain this standard. It shall be the responsibility of Caltrans to repair and remediate any erosion that occurs in any area disturbed during the construction or operation of the development approved by CDPA 1-07-013-A2 for the life of the approved project.**

B. **Amendment. Caltrans shall undertake development in accordance with the approved final plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.**

IV. GENERAL FINDINGS AND DECLARATIONS

A. PROCEDURAL ISSUES

Jurisdiction and Standard of Review

The project site is located in the Commission's retained permit jurisdiction. The County of Humboldt has a certified Local Coastal Program (LCP), but the site is within an area shown on State Lands Commission maps over which the State retains a public trust interest. Therefore, the standard of review that the Commission must apply to the project is the Chapter 3 policies of the Coastal Act.

Scope

This staff report addresses only the coastal resource issues affected by the proposed permit amendment, provides recommended special conditions to reduce and mitigate significant impacts to coastal resources caused by the development as amended in order to achieve consistency with the Coastal Act, and provides findings for partial conditional approval and partial denial of the amended development. All other analyses, findings, and conditions related to the originally permitted development, except as specifically affected by the current permit amendment request and addressed herein, remain as stated within the original permit approval adopted by the Commission on January 11, 2009 attached as Exhibit No. 11.

B. AMENDMENT DESCRIPTION

Project Background and Amendment Overview

On January 8, 2008, the Commission approved with conditions Coastal Development Permit (CDP) Application No. 1-07-013 for the Mad River Bridges Replacement Project as proposed by the California Department of Transportation (Caltrans), entailing the construction of two concrete span bridges to replace the aging, structurally- and seismically-deficient bridges of U.S. 101's crossing of the Mad River , approximately one mile north of the City of Arcata in unincorporated Humboldt County (see **Exhibit Nos. 1-2 and 11**). As proposed and authorized under the original CDP, construction of the replacement bridges was anticipated to be completed over a four year period, with the in-water construction activities limited to specific seasonal periods to minimize impacts to aquatic fish and wildlife, including federal- and state-listed endangered and threatened resident and migratory anadromous fish species such as the California Coastal Chinook salmon (*Oncorhynchus tshawytscha*), Central California Coast coho salmon (*Oncorhynchus kisutch*), Central California Coast steelhead (*Oncorhynchus mykiss*), and Coastal cutthroat trout (*Oncorhynchus clarki clarki*), a California Species of Special Concern.

On August 8, 2008, the Commission granted Coastal Development Permit Immaterial Amendment No. 1-07-013-A1, authorizing the relocation of an existing buried eight-inch-diameter natural gas pipeline on the northern and southern ends of the Mad River Bridge to accommodate reconstruction of the bridge. Construction on the replacement bridges commenced in earnest in the spring of 2009 and will continue until anticipated project completion in fall/winter 2012.

Caltrans now proposes a further amendment the original permit. The requested amendment would specifically identify a mitigation project for partial compensation of impacts to stream channel resources associated with construction of the replacement bridges to partially satisfy two special conditions requiring submittal of final fisheries and wetlands mitigation plans. In addition, the amendment seeks authorization for the agency to retain portions of the three sets of piers of the former bridges that were previously proposed and required to be fully demolished. In place of razing Piers 6 and 9 down to their wooden piling underpinnings, extrication would be discontinued at one meter below the ordinary ground surface. This modification would reduce the degree of ground disruption that would have effects on riverine water quality, while removing the aerial portions of the pier to a depth where the remnants would not pose similar potential adverse impacts to site stability from scour-related erosion at some future time. Similarly, the aerial portions of Pier 8 would be removed only down to the Ordinary Low Water elevation of the river, and large woody debris fish habitat materials installed onto the pier remnants to sustain and enhance the existing scour pool aquatic habitat in existence in the river around the pier base. This latter work to sustain and enhance the existing pool habitat would be performed in place of constructing a new scour hole down river of the new bridges, as was proposed and approved in the original permit, intended to mitigate for the loss of habitat that would have resulted from full demolition of Pier 8. These three project modifications are described in further detail below.

Proposed Final Wetland and Stream Channel Mitigation Plan

Among the conditions attached to the original permit were Special Condition Nos. 5 and 15. Special Condition No. 5 addresses monitoring & mitigation impacts to fish and other affected species resulting from pile-driving and other aspects of the project (see **Exhibit No. 11, pages 14-19**). Sub-part D of Special Condition No. 5 requires that not later than October 1 of the year of the second pile-driving season(October 1, 2010), the applicant 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, and submit a final (complete) permit amendment application for long term compensatory mitigation of fisheries impacts associated with all aspects of the subject project that have adversely affected the fisheries of the Mad River. The intent of this comprehensive final long term compensatory mitigation plan would be to mitigate for, to the maximum extent feasible, 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.

Special Condition No. 15 addresses mitigation for impacts to wetlands, including wetland riparian loss and stream channel impacts from project activities other than pile-driving and the associated fish exclusion activities addressed by Special Condition No. 5. Sub-part D of Special Condition No. 15similarly requires that, by the same specified October 1, 2010 deadline, the applicant submit a final Wetland and Stream Channel Mitigation Plan, developed in consultation with the California Department of Fish & Game and the National Marine Fisheries Service for the review and approval of the Executive Director (see **Exhibit No. 11, pages 37-38**). The plan is to incorporate specified mitigation and monitoring criteria identified in the special condition, including stated compensatory areal replacement ratios, and provide for additional mitigation for impacts, if any, to wetlands or stream channel that become necessary as the impacts of actual construction become known during implementation of the project. A portion of Sub-part C of

Special Condition No. 15 specifically requires that the final mitigation plan provide for the off-site mitigation of stream-channel bottom impacts for authorized project activities undertaken at the project site annually and added cumulatively over the construction period. The condition encourages the mitigation to be provided in the location of fisheries mitigation proposed pursuant to Special Condition No. 5 to maximize ecological benefits. The mitigation plan is to contain both a summary of the area impacted by the project and identify specific mitigation measures based upon compensatory on-site (1:1) and off-site (4:1) areal ratios. As detailed in the proposed mitigation plan, a total of 1.03 acres of stream channel were disturbed during construction activities during the 2009 through 2012 construction seasons (see **Exhibit No. 5**).

Caltrans staff has explained the delay in completing compliance with Special Condition Nos. 5 and 15 in light of ongoing efforts of the agency to acquire a suitable property on which to undertake the required wetlands and biological resources mitigation. Since the Commission's January 2008 approval of the original permit, Caltrans biologists assigned to Caltrans' advance mitigation planning unit have continued to develop a conceptual plan for a potential wetland mitigation bank that would be constructed west of Arcata on a large parcel Caltrans has acquired for this purpose.

As partial compliance with the requirements of Special Condition 5.D and Special Condition No. 15.C, the applicant is proposing to mitigate for fisheries and channel bottom impacts by removal of a 195-foot-long reinforced concrete weir structure located at River Mile 12.13, approximately ten river miles upstream from the U.S. 101 project site. The weir is situated laterally across the river from the California Department of Fish and Game's (CDFG) Mad River Fish Hatchery, near Blue Lake, California (see **Exhibit No. 3**). The site is outside the Coastal Zone.

Constructed in 1989, the purpose of the weir was to divert Chinook salmon and steelhead into a fish ladder associated with the hatchery. The weir's concrete sill started to fail after the first high winter flows. Within a few years, CDFG determined that the weir was not achieving its purpose. The weir was not needed to divert Steelhead into the fish ladder and the weir was not effective at diverting Chinook into the ladder. In 2002 there was an unsuccessful attempt to demolish the weir. The partial de-construction and subsequent water damage have exposed more of the internal rebar, posing a trapping hazard for fish and unsafe conditions for the public in this section of the Mad River. Removing the weir from the river will eliminate a man-made barrier to fish passage that also poses a hazard to the recreating public. In addition, the weir sill artificial channel feature that locally affects sediment transport and forms a low-flow barrier to all environmentally sensitive salmonids and other fish species within this reach of the river.

A total of 5.9 acres of stream channel would be restored with removal of the weir, representing a compensatory mitigation ration of 5.73:1. In addition to serving as compensatory mitigation for the spatial impacts to the stream channel at the Mad River Bridges project site, the project would remove a man-made barrier to improve fish passage and sediment transport and decrease hazardous conditions posed to recreational users of the Mad River. As proposed, the project would be completed in the summer of 2012, with the actual weir demolition being performed by a third party, the Humboldt County Resource Conservation District, under an interagency cooperative agreement (see **Exhibit Nos. 7 and 8**). **(Staff recommends DENIAL of this**

portion of the requested permit amendment. Refer to Section VI of this staff report for specific findings for denial.)

Proposed Partial Retention of Piers 6 and 9

Caltrans also proposes that portions of the former bridges' Piers 6 and 9 be retained. These structures are situated outside of the live waters of the Mad River, but within its 100-year floodplain (see **Exhibit No. 9**). This project modification represents a refinement of the original Mar River Bridges Replacement Project in which full demolition and extrication of the pier footings down to their wooden pile underpinnings had been proposed by the applicant and authorized by the original permit. Subsequent to the permit approval, Caltrans reassessed the need for full subsurface removal of the piers. Insofar as the footings of Piers 6 and 9 are 52 feet and 48 feet landward of the top of their respective north and south river banks, neither footing would be subject to scour by the Mad River where their future potential exposure would indicate a need for more extensive removal at depth. Consequently, in the interest of further reducing the impacts to the riverine and riparian corridor resources associated with such significant ground disturbing excavation, the applicant is now proposing to limit demolition of the piers to removal down to one meter below the ordinary ground surface, as specified in Caltrans' Construction Standard Specifications. **(Staff recommends APPROVAL WITH CONDITIONS of the portion of the requested permit amendment and discussed further below in the findings and declarations of Section V of this staff report.)**

Proposed Partial Retention and Habitat Enhancement of Pier 8

Finally, the applicant is proposing a similar change to the formerly proposed full demolition of Pier 8, situated within the live waters of the Mad River along its northern bank. Similar to Piers 6 and 9, the bridges replacement project as originally approved provided that the structure would be fully demolished down to its base, approximately 40 feet below the bottom of the river, entailing the extrication of approximately 100 tons of steel-reinforced concrete. In the course of performing such demolition, the scour pool that had formed at the base of the pier footings would have been coffer-dammed off of the watercourse, excavated, and back filled to an elevation matching the surrounding river bottom contours, effectively obliterating the fish habitat the pool afforded. Such pools provide deep water areas where resident and anadromous fish species may hold and feed. To mitigate for the loss of fish habitat, the original approved project included the creation of a new scour pool approximately 100 feet downriver of the replacement bridges on the river's south bank (see **Exhibit No. 3**).

Caltrans has reevaluated the formerly envisioned full subsurface removal of Pier 8 and offsite mitigation of the associated loss of scour pool habitat, and now proposes to retain and enhance habitat at Pier 8 for two reasons: First, the downriver replacement scour hole would likely not be self-sustaining due to its location in an area of the channel where sediments are deposited rather than being transported further down stream. Secondly, complete removal of the footing of Pier 8 would result in greater impacts to river resources, particularly water quality. The applicant cites past experiences with removal of pier footings on the Ten Mile Bridge Replacement Project where it was virtually impossible to completely remove the water at the bottom of the coffer dam around the piers. This situation is further exacerbated by the existing shoreline revetment in proximity of the pier which would likely cause deformation of the sheet piling used to dam the pier off from the river waters, with the resulting seepage of entrained sediment, demolition

debris, and other contaminants into coastal waters. In addition, subaerial demolition of the pier would involve construction equipment that would generate significant levels of audible noise vibrations that could have significant hydroacoustic impacts to fish and other aquatic organisms.

Accordingly, Caltrans now proposes to avoid loss of the habitat afforded by the existing scour pool and minimize demolition impacts by scaling the removal of the pier to the portions above the Ordinary Low Water elevation of the river. In addition, the structure would be enhanced through the attachment of an array of large wood debris to the top of the pier footing remnants to retain the scouring effects of the vertically shortened pier stanchion by providing an appropriately sized and positioned in-water obstruction that would continue to deflect the flow of river waters in a manner as to sustain the existing scour pool at the base of Pier 8. The large wood debris enhancement structure would also provide substrate for arthropods on which the fish would feed, and afford shade and cover to the underlying scour hole.

As now proposed, the Pier 8 column would be cut with a wire saw as close to the summer flow water surface elevation as possible. Additional demolition of the concrete column to stabilize the logs used in the large woody debris fish habitat enhancement habitat feature would involve the use of pneumatic jack hammers. Although there would be no in-water demolition work, above-water removal of concrete would necessitate containment of the resulting demolition debris. An impermeable membrane material (such as a rubber pond liner) is proposed to be secured and sealed around the column just below the saw cut elevation. The membrane would be formed into a basin around the perimeter of the pier. The resulting water and cutting slurry generated from the concrete cutting operation would be collected in the basin and pumped into a portable water tank for disposal at an off site location.

Construction of the fish habitat enhancement structure would involve placing and securing large woody material on the Pier 8 footing. As detailed in the submitted preliminary plans, an array of approximately nine Douglas-fir and redwood logs with attached root balls or log stems and separate root wads would be mounted onto the eastern and western bridge footings that comprise Pier 8. Once in place the enhancement structure would occupy an approximately 85-foot-long by 15-foot-wide, 1,300 square-foot area around the pier remnants, positioned up off of the channel bottom, atop and laterally along the pier remnants at the annual low-flow water surface elevation. (see **Exhibit No. 10**). The logs and their attending rootballs/wads would be oriented in an up stream orientation to provide a surface on which additional debris might accumulate. Mechanical anchors including bolts, cables, and steel dowels would be used where needed to attach the woody debris to the footings. The mechanical anchors would be located so to be as hidden from view as possible so that the structure has a natural appearance. This attachment work would involve drilling holes into both the wood and the concrete of the pier remnant. Best Management Practices (BMPs) such as catch tarps, and vacuuming, would be used to minimize discharges of dust and cuttings to incidental levels.

The applicant also proposes to the monitor the effectiveness of the enhancement program. Baseline information regarding the width and average and maximum depths of the existing scour hole would be documented prior to the start of construction of the pier enhancements. The scour feature would also be monitored on an annual basis for five years after construction. The width and depth of the scour feature would be measured to ensure that the pool is self-sustaining. The

structural integrity of the habitat enhancement feature (i.e., logs, root balls/wads, and attachments) would also be inspected to ensure that the structure is withstanding the fluvial forces of seasonal high flows. Photo-documentation from fixed locations upstream, downstream and from the south bank of the river would be performed to assess the stability of the structure. Remedial action would be taken if monitoring indicates it is needed. Annual monitoring reports would be submitted to requesting agencies by February 1 of each year for five years following completion. **(Staff recommends APPROVAL WITH CONDITIONS of the portion of the requested permit amendment and discussed further below in the findings and declarations of Section V of this staff report.)**

V. FINDINGS AND DECLARATIONS FOR PARTIAL APPROVAL

The findings in this section apply only to that portion of the proposed project that is described in Part 1 of the Commission's resolution on this permit application, which portion is therefore being conditionally approved.

A. COMPONENTS OF AMENDMENT REQUEST CONDITIONALLY APPROVED

The two components of the permittee's amendment request that are being conditionally approved are as follows:

1. retention, rather than demolition of, the portions of Piers 6 and 9 from their pier bases to a height corresponding to the elevation of one meter below ordinary ground level; and

2. retention, rather than demolition of, the portions of Pier 8 from the pier base to a height corresponding to the elevation of Ordinary Low Water (OLW), and the installation of large woody debris enhancements onto the retained pier remnants for sustaining the existing scour pool habitat around the base of the pier.

B. AVOIDANCE AND MINIMIZATION OF HAZARDS

Section 30253 of the Coastal Act states, in applicable part:

> *New development shall do all of the following:*
>
> *(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
>
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs…*

The project as proposed to be amended would entail the retention of portions of an existing bridge pier obstruction within the perennial low-flow channel of the Mad River (Pier 8) and

further adornment of that structure with an assemblage of large woody debris for the specific intension of sustaining the scour dynamics around the base of the pier to conserve the deep water habitat the scour hole affords to migratory and resident fish species.

Stream restoration projects, although intended to re-establish or improve habitat conditions for fish or aquatic species, have on occasion led to disastrous results due to poor planning or execution. Like gravel mining and other in-water development, restoration activities involving pit-mining or trenching within active river channels may result in incision upstream of the mine (by nick-point migration) and downstream (by sediment starvation). Incision may cause undermining of structures, lowering of alluvial water tables, channel destabilization and widening, and scouring on adjoining riverbanks, ironically leading to a loss of aquatic and riparian habitat if not properly undertaken.

Numerous examples on North Coast rivers and streams, especially on the Russian River in Mendocino County, Dry Creek in Sonoma County, and Redwood Creek and the lower Eel / Van Duzen River system in Humboldt County can be cited where channel modifications such as trenching in particular has led to lateral avulsion, channel capture, head-cutting, incision, nick-point migration, increases in the rate of meander straightening, decreases in channel sinuosity, lateral erosion of adjacent river banks and point bars, and other profound stream morphologic changes either upstream, downstream or within the excavated reach.[1] These changes can dramatically impact key salmonid habitat attributes by creating discontinuous areas within the floodplain where migrating fish would become stranded during low-flows, cause increases in water temperature due to loss of riparian vegetation, cause elevated sediment levels within the water column, form blockages at tributary confluences, simplify aquatic bed habitat through the removal of large woody vegetation, and other impacts to holding, rearing, and spawning habitat for migratory fish.[2]

Although such impacts can occur form channel modifications, the existing conditions at Pier 8 which formed a deep-water pool that has sustained itself for decades have created an apparent stasis between the scouring erosive forces caused by the presence of the pier obstruction and the stability of the surrounding river bathymetry and stream banks. With the exception of ongoing past maintenance by Caltrans to periodically remove problematic debris whose hydraulic resistance was causing lateral loading onto the former bridge footings and exacerbating localized scour around Pier 8 itself, no significant aggrading, degrading, or avulsive changes in the cross-section profile of this reach of the river have occurred over the last several decades that could be directly attributed to scour around the base of the structure. Moreover, given the relatively small scale of the proposed enhancement structure improvement, comprising an approximately 15-foot-wide by 85-foot-long, 1,300 square-foot area, and the proposed linear orientation of the proposed large woody debris enhancements, the Commission's staff geologist, Mark Johnsson PhD, has indicated that the project would not likely result in an increase in levels of vortex scour to a degree that would result in adverse impacts on the stability of nearby river cliff faces or channel morphology.

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1 *Impact Assessment of Instream Management Practices on Channel Morphology*, Aquafor Beech, Limited. & Step by Step, September, 1999

2 *Management of Course Sediment on Regulated Rivers,* Report No. 80, California Water Resources Center, University of California, Davis, October 1993

Therefore, the Commission finds the project as proposed to be amended to partially retain and enhance Pier 8 for fish habitat has been designed to minimize risks to life and property in areas of high geologic and flood hazard, would assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs consistent with Coastal Act Section 30253.

C. PERMISSIBLE DEVELOPMENT IN WETLANDS

Section 30233 of the Coastal Act states, in applicable part:

> *(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
>
> *(l) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*
>
> *(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*
>
> *(3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.*
>
> *(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.*
>
> *(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.*
>
> *(6) Restoration purposes.*
>
> *(7) Nature study, aquaculture, or similar resource dependent activities…*
>
> *(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary…*

The proposed installation of large woody debris fish habitat structure constitutes the placement of fill in open coastal waters. Coastal Act Section 30233(a) restricts the Coastal Commission from authorizing a project that includes fill of open coastal waters unless it meets three tests. The first test requires that the proposed activity must fit into one of seven categories of uses

enumerated in Coastal Act Section 30233(a). The second test requires that there be no feasible less environmentally damaging alternative. The third test mandates that feasible mitigation measures be provided to minimize the project's adverse environmental effects. The fourth and last test requires that the functional capacity of the wetland or estuary are maintained or enhanced.

Allowable Use Test

The applicants have indicated that pier retention and habitat enhancement project portion of the requested amendment is primarily proposed to protect and enhance fish habitat by protecting existing cold deep-water pool habitat within the aggraded segments of the lower Mad River. As discussed in detail above, the proposed project involves the installation of large woody debris atop and onto the lower portions of the former bridge's footings in such a manner as to sustain the scouring of a deep-water pool formed by the obstruction of the Pier 8 structure in the river's perennial low-flow channel. The project is further intended to enhance the complexity of fish habitat within the Pier 8 reach of the lower Mad River. Of the seven allowable uses of fill under 30233(a) that one which most closely matches the intended function for installation of the large woody debris fish habitat enhancement structure is "restoration purposes." To qualify for this permissible use, the fill of coastal waters being undertaken must demonstrate that "restoration" of some feature would result.

In past permit actions, the Commission has found wetland enhancement projects where the *sole purpose* of the project is to improve wetland habitat values to constitute "restoration purposes" pursuant to Section 30233(a)(6). For example, the Commission concurred with a consistency determination for a wetland enhancement project proposed by the U.S. Fish and Wildlife Service at the Humboldt Bay National Wildlife Refuge (CD-33-92). This project involved dredging, diking, and filling of wetlands to create and enlarge shallow ponds and sloughs and replace water control structures and was approved as a "restoration purpose" under Section 30233(a)(7). Similarly in 2000 and 2001, the Commission approved permits for the California Department of Fish and Game authorizing the excavation of shallow ponds within the Department's Mad River Slough (1-99-063) and Fay Slough (CDP No. 1-00-025) Wildlife Areas for the exclusive purpose of restoration. The Commission approved a permit amendment (CDP No. 1-00-025-A1) in March 2004 for additional restoration work at the Fay Slough Wildlife Area.

Neither the Coastal Act nor the Commission's administrative regulations contain a precise definition of "restoration." The dictionary defines "restoration" in terms of actions that result in returning an article "back to a former position or condition," especially to "an unimpaired or improved condition."[3] The particular restorative methods and outcomes varying depending upon the subject being restored. For example, the Society for Ecological Restoration defines "ecological restoration" as "the process of intentionally altering a site to establish a defined indigenous, historical eco-system. The goal of the process is to emulate the structure function, diversity, and dynamics of the specified ecosystem."[4] However, within the field of "wetland restoration," the term also applies to actions taken "in a converted or degraded natural wetland

[3] Merriam-Webster's Collegiate Dictionary, Tenth Edition

[4] "Definitions," *Society of Ecological Restoration News,* Society for Ecological Restoration; Fall, 1994

that result in the reestablishment of ecological processes, functions, and biotic/abiotic linkages and lead to a *persistent, resilient* system integrated within its landscape,"[5] that may not necessary result in a return to historic locations or conditions within the subject wetland area. Similarly, "stream restoration" has been defined to be "re-creating spawning and rearing habitats; removing barriers to migration, and restoring shelter, favorable temperatures, and water quality for the species that evolved in those conditions and therefore will survive in them on their own."[6] "River restoration," by contrast, typically include "the re-creation of meander bends on straightened channels, modification of channel geometry to create habitat for fish, planting banks with riparian vegetation, stabilizing eroding embankments, and creating open channels from streams formerly encased in underground culverts."[7]

Implicit in all of these varying definitions and distinctions is the understanding that the restoration entails returning something to a prior state. Rivers are dynamic systems in which specific attributes, such as the point bars, pools, and riffles are continually created, altered, and destroyed. Consequently "restoration," as contrasted with "rehabilitation," encompasses not only reestablishing certain prior conditions but also *reestablishing the processes that create those conditions*. In addition, most of the varying definitions of restoration imply that the reestablished conditions will persist to some degree, reflecting the homeostatic natural forces that formed and sustained the original conditions before being artificially altered or degraded, and not promptly return to the pre-restored state.

Moreover, any finding that proposed filling constitutes "restoration purposes" must be based, in part, on the assumption that the proposed project will be successful in improving habitat values. Should the project be unsuccessful at increasing and/or enhancing habitat values, or worse, if the proposed diking, filling, and dredging impacts of the project actually result in long term degradation of the habitat, the proposed diking, filling, and dredging would not actually be for "restoration purposes." These two characteristics are particularly noteworthy to restoration grant program administrators in reviewing funding requests to ensure that the return on the funding investment is maximized and liabilities associated with unwanted side-effects of the project are minimized.

Thus, to ensure that the project achieves its stated habitat enhancement objectives, and therefore be recognized as being for "restoration purposes," the project must demonstrate that: (1) it entails a return to or re-establishment of former habitat conditions for salmonids, the presence of landscape-integrated ecological processes, and/or abiotic/biotic linkages associated with these fish species; (2) there is a reasonable likelihood that the identified improvements in habitat value and diversity will result; and (3) once re-established, it has been designed to provide the desired habitat characteristics in a self-sustaining, persistent fashion independent of the need for repeated maintenance or manipulation to uphold the habitat function.

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5 *Position Paper on the Definition of Wetland Restoration*, Society of Wetland Scientists, August 6, 2000

6 *Restoring Steams in Cities – A Guide for Planners, Policymakers, and Citizens*, Ann L. Riley, Island Press, 1998.

7 *Geomorphology in River Restoration*, Environmental Management, 19:1-15, Matt Kondolf, PhD, 1995

For the reasons discussed below, the Commission finds that the proposed filling and dredging activities does qualify under Section 30233(a)(6) as an allowable use for filling and dredging of coastal waters and wetlands.

The applicants state that the application currently before the Commission to sustain and enhance scour pool habitat alongside Pier 8 was developed in response to suggestions from NOAA Fisheries and CDFG staff as an example of how the U.S. 101 bridges replacement project could be undertaken on the lower Mad River and not further degrade the habitat and channel dynamics in this portion of the watercourse, frustrate the recovery efforts for the various state and federal-listed threatened and endangered salmonids that inhabit the Mad River, and avoid the creation of a wholly new scour hole at a downriver site, as formerly proposed and required under the original permit, whose successful establishment and continuity as long term fish habitat would be in doubt.

As described in the applicant's application materials, the purported benefits to fish habitat the proposed project would provide entail:

- Conserving the scour dynamics at an existing in-water obstruction through the placement of wooden debris structures intended for diverting the river's laminar flow downward to sustain the relatively deep-water area that has formed around the former bridge footings which currently provides significant cold- and still-water refuge for migrating salmonid and other resident fish species.

- Enhancing the cover and shade around and above the scour hole to maintain its thermal integrity, camouflage the habitat from raptors and other predators, and discourage poaching.

With respect to whether there is a reasonable likelihood that the identified restoration of habitat value and diversity will result, the Commission notes that the Pier 8 scour pool currently experiences significant habitat utilization by anadromous fish species during migratory river runs.[8] Given this existing condition, and the close involvement of fishery resource habitat specialists in the design of the enhancement structure, the likelihood of continued and sustained use of the pool is seen as a highly probable outcome of the project.

To ensure that the scour pool habitat restoration project is developed as proposed, the Commission attaches **Special Condition No. 21**. This special condition requires that the woody debris be installed on and anchored to the remnant Pier 8 footing in the amount, kind, and orientation proposed by the applicant.

Finally, with regard to whether, once re-established, the enhancement structure has been designed to provide the desired habitat characteristics in a self-sustaining, persistent fashion independent of the need for repeated maintenance or manipulation to uphold the habitat function, the applicant has included provisions for the ongoing monitoring of the structure such that a prompt response to an observed need to repair and maintenance to the structure is undertaken in the interest of ensure the structures ongoing habitat improvement function. To ensure that the

[8] D. Free, NOAA Fisheries, pers. comm.

proposed monitoring and ongoing repair and maintenance of the enhancement structure is undertaken, the Commission includes new **Special Condition No. 22** requiring monitoring of the subject enhancement structure's ability to functionally sustain the scour hole and assessing its structural integrity, with provisions identified for adaptive management and maintenance as determined to be necessary.

Thus, as conditioned, the project is designed to enhance habitat values for water associated fish and wildlife. Preserving the scour pool dynamics around the base of Pier 8 would maintain a deep-water area where up-river migrating adult fish and sea-bound juveniles could continue to safely hold and rest beyond the reach of avian and mammalian predators between sprints to the spawning areas further upstream or to the ocean, respectively. As proposed, the project includes development that is intended to bring about a return to re-establishment of, former habitat conditions for salmonids, the presence of landscape-integrated ecological processes, and/or abiotic/biotic linkages associated with these fish species. Therefore, the Commission finds that the alleged benefits that would be derived from the proposed pool restoration work have been adequately established; thus, the applicants have demonstrated that the purpose of the proposed pier structure retention and installation of woody debris qualifies as restoration purposes under Section 30233(a)(6).

Alternatives

The Commission must further find that there is no feasible less environmentally damaging alternative to the proposed placement of fill in open coastal waters. The only alternatives identified that would meet the objective of the proposed amended project – to avoid the impacts to fish habitat associated with the demolition of Pier 8 –is the "no project" alternative. The no project alternative would involve full demolition / extrication of Pier 8, as originally authorized, and creation of a new scour pool 100 feet downriver as authorized under the original permit.

Other than for the purposes of removing the effectively inert remnants of the former bridge pier's concrete superstructure from the subsurface environment of the river, little perceivable benefit would be derived from full extrication of the structure as was previously authorized under the original permit. To the contrary, full pier removal would necessitate the destruction of the existing scour pool which provides significant fish habitat as discussed above. To compensate for the loss of the pool habitat as envisioned under the original permitted project, a new scour pool would be created on the river's south bank approximately 100 feet down stream of the replacement bridges.

However, given the complexities of fluvial processes, the certainty of successful establishment of a new scour pool cannot be concluded. The intended location for the compensatory scour pool is in an area of the river which, over the last couple of decades, has started to exhibit characteristics of aggradation that could frustrate maintaining a deep water environment.[9] Accordingly, multiple efforts may be necessary to develop and sustain deep water habitat at the locale. In addition, initial and repeated entry through the adjoining riparian corridors and into the live waters of the river by heavy mechanized equipment needed to excavate and construct scour hard-

[9] See Lehre, A., Klein, R., Jager, D., *County of Humboldt Extraction Review Team (CHERT) Historic Analyses of the Mad River: 2004-2007 Update,* February 18, 2009

point elements, such as deflection logs and boulders, and wing dams, would result in additional impacts to wetlands and water quality.

In comparison, the existing Pier 8 footings have an established history of having formed and sustained scour pool habitat in their immediate vicinity with documented utilization by resident and migratory salmonid species for holding and feeding. While it is anticipated that the foreshortening of the pier by removal of its aerial portions would reduce the amount of fluvial resistance that contributes to the presence of the scour hole at the base of Pier 8, the project includes enhancements to be attached to the pier footing remnants to compensate for such reduced vortex scour.

Thus, taking into consideration the economic, environmental, and technical factors, the no project option is not a feasible less environmentally damaging alternative. Therefore, based on the alternatives analysis above, the Commission concludes that the proposed project is the least environmentally damaging feasible alternative.

Mitigation

The Commission must also ascertain whether feasible mitigation measures have been provided to minimize any adverse environmental effects associated with the filling of coastal waters. In other sections of this report, the Commission has identified feasible mitigation measures that will minimize the adverse environmental effects of the fill associated with the proposed pier retention and scour pool enhancement project. These mitigations measures entail: (a) revisions to Special Condition Nos. 7 and 10 requiring the use of specified source control debris barriers and cleanup Best Management Practices in the demolition of Pier 8 and the construction of the large woody debris fish habitat enhancement structure; and (b) modifications to Special Condition No. 8, requiring the submittal of a final erosion control and revegetation plan for the remediation of all areas disturbed in the course of the pier retention and enhancement work. These Special Conditions will minimize adverse impacts to water quality from the entrainment of demolition and construction debris and sediment from ground disturbed areas that could result from the amended project. Therefore, as conditioned, the Commission finds that feasible mitigation will be provided to minimize all significant adverse impacts associated with the proposed filling of coastal waters.

Functional Capacity

The fourth general limitation set by Section 30233 is that any proposed filling in existing wetlands or estuaries must maintain or enhance the functional capacity of the habitat.

As discussed above, the conditions of the permit will ensure that the project will not have significant adverse impacts on the riverine or marine resources of the Mad River. The mitigation measures incorporated into the amended project and required by the Special Conditions discussed above will ensure that the enhancements to the scour pool would not adversely affect the functional capacity of the river waters resources. Furthermore, by placing the large woody debris within the river, the aquatic habitat for anadromous fish species such as Chinook and coho salmon and steelhead will be enhanced. This habitat restoration would also provide cover and substrate for other aquatic organisms such as macro-invertebrates and algae on which these fish species feed. Therefore, the Commission finds that the project, as conditioned, will maintain and

enhance the biological productivity and functional capacity of the habitat consistent with the requirements of Section 30233 of the Coastal Act.

D. COASTAL WATER QUALITY

Coastal Act Section 30231 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

The proposed amendments to the project to retain and/or enhance portions of Piers 6, 8, and 9 have the potential to impact the aquatic biological resources and the quality of coastal waters in ways not previously reviewed and considered in the review and conditional approval of the original project permit. With respect to the proposed termination of demolition of the Pier 6 and 9 footings at one meter below ordinary ground level, no specifications for such partial retention was included in the criteria for construction performance standards, revegetation and erosion and control, and water quality pollution protection plans as imposed by Special Condition Nos. 7, 8, or 10 in the original permit

Notwithstanding the significantly reduced scale of the originally envisioned full removal of the piers, if not properly graded and revegetated, avoidable impacts to coastal resources could result. In addition, the proposed partial demolition of the aerial portions of Pier 8 and the construction of the deep water fish habitat enhancement structure could similarly impact aquatic resources from the uncontrolled release of construction debris, including concrete-water slurry, and scrap metal and wood associated with the large woody debris attachment hardware.

Thus, to ensure ongoing compliance with Coastal Act Section 30231, the Commission modifies the construction responsibilities provisions of Special Condition Nos. 7 and 10, and adds new Special Condition No. 23 to require that: (1) upon the completion of the Pier 6 and 9 demolition to one meter (1 m.) below ordinary ground level, the excavation be back-filled with clean material matching the composition and compaction of surrounding soil and earthen materials, to an elevation and slope matching that of the surrounding terrain; (2) the Pier 8 demolition work be limited to: (a) wire saw cutting of the aerial portion of the pier to as close to the Ordinary Low Water (OLW) summer flow water surface elevation as possible; and (b) additional demolition by pneumatic jack hammers of the remaining portion of the concrete column necessary to stabilize the logs used in the large wood debris habitat enhancement feature; (3) prior to removal of the pier column, an impermeable membrane material (such as a rubber pond liner) shall be secured and sealed around the column just below the OLW saw cut elevation; (4) the membrane shall be formed into a basin around the perimeter of the column to allow water and cutting slurry generated from the concrete cutting operation to be collected in the basin and pumped into a

portable water tank for disposal at an offsite location, consistent with the approved water quality protection plan; (5) construction of the Pier 8 scour hole fish habitat enhancement structure shall employ water quality Best Management Practices (BMPs), such as catch tarps, and vacuum cleaning, during the drilling of holes into both the wooden debris members and the pier concrete to prevent boring wastes from entering coastal waters; and (6) a revised final revegetation and erosion control plan for the amended project by submittal for the review and approval of the Executive Director.

With the specified revisions to the special conditions imposed to the original permit approval, the biological productivity and the quality of the river appropriate to maintain optimum populations of marine organisms and for the protection of human health will be maintained and restored. Therefore, the Commission finds that the amended project as modified by the revisions to Special Condition Nos. 7 and 10, and new Special Condition No. 23, is consistent with Section 30231 of the Coastal Act.

E. PUBLIC ACCESS

Coastal Act Sections 30210, 30211, and 30212 require the provision of maximum public access opportunities, with limited exceptions.

Coastal Act Section 30210 requires in applicable part that maximum public access and recreational opportunities be provided when consistent with public safety, private property rights, and natural resource protection. Section 30211 requires in applicable part that development not interfere with the public's right of access to the sea where acquired through use (i.e., potential prescriptive rights or rights of implied dedication). Section 30212 requires in applicable part that public access from the nearest public roadway to the shoreline and along the coast is provided in new development projects, except in certain instances, such as when adequate access exists nearby or when the provision of public access would be inconsistent with public safety.

In applying Sections 30211 and 30212, the Commission is limited by the need to show that any denial of a permit application based on these sections, or any decision to grant a permit subject to special conditions requiring public access, is necessary to avoid or offset a project's adverse impact on existing or potential public access.

The project as designed will not result in any significant interference with public access. With the exception of the immediate construction site around the existing bridge pier being closed off for the staging and routing of construction equipment, the construction work would not significantly obstruct shoreline or in-water access in the vicinity of the Mad River Bridges. Although there may be limited and temporary restrictions on boating activity during installation of the new enhancement structure, these impacts are only of a temporary duration that will have no long-term impact on access. The project work would span an approximate four-week timeframe and be undertaken between mid-August and October 1, a relatively low-use time of year for anglers prior to the start of the fall runs of Chinook salmon. Therefore, the Commission finds that the proposed project as conditioned, which does not include substantial new public access, is consistent with the public access policies of the Coastal Act.

F. VISUAL RESOURCES

Section 30251 of the Coastal Act states:

> *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

The banks of the Mad River on both sides of the proposed Pier 8 scour pool enhancement project contain mature willows, alder, cottonwoods and water birch. Many of these trees are of specimen size and have fully developed understory vegetation. These trees form an overhanging canopy for the riparian corridor that provides shade and important fish habitat along the river. The intent of the scour pool enhancement project is to further improve these conditions in the immediate vicinity of Pier 8 by the installation of an array of logs and root wads on the upper portion of the pier's footings. Mechanical anchors including bolts, cables, and steel dowels may also be used where needed to attach the woody debris to the footings. These fasteners are proposed to be installed to be hidden from view as much as possible. Once installed, the enhancement structure would approximate the appearance of a naturally occurring lodged raft of wooden debris, similar to that found at other nearby locations along the river shoreline. Notwithstanding the natural materials appearance of the large woody debris improvements, temporary visual resource impacts would occur during construction of the Pier 8 scour pool fish habitat enhancement structure due to demolition of the piers aerial portions, removal of vegetation and other debris around the pier, and the presence of equipment in the construction and staging areas. To ensure that these impacts are short-term and that long term restoration will occur, the Commission includes new Special Condition 23 to require that, prior to issuance of the permit amendment, a revised final revegetation and erosion control plan be submitted for the review and approval of Executive Director, specifying re-planting of the affected surrounding construction and staging areas with locally obtained, native plant materials.

The Commission finds that as the proposed scour pool fish enhancement project, as conditioned, is consistent with Coastal Act Section 30251 concerning the protection of visual resources.

G. CALIFORNIA ENVIRONMENTAL QUALITY ACT

On June 17, 2005, Caltrans as lead agency, certified Mitigated Negative Declaration (SCH 2003122015) for the subject Mad River Bridges Replacement Project," which incorporated the published responses of Caltrans to public comments.

Section 13906 of the Commission's administrative regulation requires Coastal Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified by any conditions of approval, is consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are any feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect the proposed development may have on the environment.

The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. As discussed above, the project as proposed to be amended has been conditioned to be consistent with the policies of the Coastal Act. No public comments regarding potential significant adverse environmental effects of the project were received prior to preparation of the staff report. As specifically discussed in these above findings, which are hereby incorporated by reference, mitigation measures that will minimize or avoid all significant adverse environmental impacts have been required. As conditioned, there are no other feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impacts which the activity may have on the environment. Therefore, the Commission finds that the proposed amended project, as conditioned to mitigate the identified impacts, can be found consistent with the requirements of the Coastal Act to conform to CEQA.

VI. FINDINGS AND DECLARATIONS FOR PARTIAL DENIAL

The findings in this section apply only to that portion of the proposed development that is described in Part 2 of the Commission's resolution on this permit amendment application, which portion is hereby being denied.

A. COMPONENTS OF AMENDMENT REQUEST DENIED

The component of the permittee's amendment request that is being denied is as follows:

1. Approval of Final Stream Channel Mitigation Plan, in satisfaction of Special Condition No. 15.D and partial satisfaction of Special Condition No. 5.D of the original permit, entailing removal of an in-water weir structure at the Mad River Fish Hatchery.

B. ADEQUACY OF IMPLEMENTING MITIGATION REQUIRED BY CDP 1-07-014

As documented in the findings for the original permit authorization, the Commission conditionally approved the filling, dredging, and diking for the Mad River Bridges Replacement Project finding that the development: (1) comprised a permissible use as "incidental public service purposes" for wetland filling and dredging; (2) represented the "least environmentally damaging feasible alternative;" (3) provided feasible mitigation measures minimize adverse environmental effects; and (4) maintained and enhanced the function capacity of the wetland or estuary, consistent with Section 30233 of the Coastal Act (see **Exhibit No. 11, pages 72 – 89**). The proposed removal of the Mad River Fish Hatchery Weir is intended to serve as offsite

mitigation for the stream channel and biological impacts relating to the filling, dredging, and diking associated with the Mad River Bridges Replacement Project construction.

Special Condition No. 5 addresses monitoring & mitigation impacts to fish and other affected species resulting from pile-driving and other aspects of the project (see **Exhibit No. 11, pages 14-19**). Sub-part D of Special Condition No. 5 requires that not later than October 1 of the year of the second pile-driving season(October 1, 2010), the applicant 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, and submit a final (complete) permit amendment application for long term compensatory mitigation of fisheries impacts associated with all aspects of the subject project that have adversely affected the fisheries of the Mad River. The intent of this comprehensive final long term compensatory mitigation plan would be to mitigate for, to the maximum extent feasible, 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.

Special Condition No. 15 addresses mitigation for impacts to wetlands, including wetland riparian loss and stream channel impacts from project activities other than pile-driving and the associated fish exclusion activities addressed by Special Condition No. 5. Sub-part D of Special Condition No. 15 similarly requires that, by the same specified October 1, 2010 deadline, the applicant submit a final Wetland and Stream Channel Mitigation Plan, developed in consultation with the California Department of Fish & Game and the National Marine Fisheries Service for the review and approval of the Executive Director (see **Exhibit No. 11, pages 37-38**). The plan is to incorporate specified mitigation and monitoring criteria identified in the special condition, including stated compensatory areal replacement ratios, and provide for additional mitigation for impacts, if any, to wetlands or stream channel that become necessary as the impacts of actual construction become known during implementation of the project. A portion of Sub-part C of Special Condition No. 15 specifically requires that the final mitigation plan provide for the off-site mitigation of stream-channel bottom impacts for authorized project activities undertaken at the project site annually and added cumulatively over the construction period. The condition encourages the mitigation to be provided in the location of fisheries mitigation proposed pursuant to Special Condition No. 5 to maximize ecological benefits. The mitigation plan is to contain both a summary of the area impacted by the project and identify specific mitigation measures based upon compensatory on-site (1:1) and off-site (4:1) areal ratios. As detailed in the proposed mitigation plan, a total of 1.03 acres of stream channel were disturbed during construction activities during the 2009 through 2012 construction seasons (see **Exhibit No. 5**).

As discussed in the permit amendment description findings above and in **Exhibit No. 4, page 1**, the proposed removal of the Mad River Fish Hatchery weir is intended as offsite mitigation for the placement of fill in open coastal waters and wetlands in two contexts. First, restoration of the 5.9-acre area of stream channel covered by the weir structure is intended by the applicant to satisfy the requirements of the portion of Sub-part C of Special Condition No. 15 requiring that the final mitigation plan provide for the off-site mitigation of stream-channel bottom impacts for authorized project activities undertaken at the project site annually and added cumulatively over the construction period. The weir removal project is intended to mitigate for the physical intrusion of the replacement bridge elements and fish exclusion zone structures into the 1.03

acres of perennial and floodplain areas of the river at an approximately compensatory mitigation ration of 5.73:1. Second, the removal of the weir is intended by the applicant to satisfy the requirements of Special Condition No. 5 of the original permit for submittal and approval of a permit amendment for a Final Long Term Fish and Other Affected Species Mitigation Plan, insofar as improvements to fish passage and sediment transport that would result from removal of this stream channel obstruction.

The permit amendment description also preliminarily identifies other mitigation proposals in the process of being developed which will likely be included in the final fisheries mitigation plan. These contemplated mitigation proposals include: (1) additional wetlands, fish, and other affected species mitigation within the Mill, Hall, and Lindsey Creeks tributaries of the Mad River (see **Exhibit No. 6, pages 2, 8-9**); and (2) seeking the application of credits for wetlands established at the agency's Elk River Mitigation Bank (see **Exhibit No. 4, page 2**). As these mitigation proposals are still being developed, the mitigation proposals are not before the Commission as portions of the mitigation plans the applicant is asking the Commission to now approve.

The Commission's staff ecologist has reviewed the proposed weir removal mitigation measure. Dr. Dixon indicates that from a conceptual standpoint, removal of the weir would appear to restore an amount of channel bottom habitat that matches the amount of channel bottom habitat mitigation required by Special Condition No. 15(C) and may have value for fisheries restoration. However, many details of the proposed mitigation measure remain unclear. For example, although a narrative description of the proposal has been submitted, no detailed plans for the weir removal have been developed or submitted. In addition, no detailed monitoring proposal has been developed or submitted. It is not clear the extent to which the success of the mitigation measure in restoring channel bottom and fish habitat would be measured upon completion of the weir removal work and whether monitoring would be conducted of unintended adverse effects of the removal work such as channel bank and bottom erosion and related riparian habitat loss. Furthermore, no proposal for remediation is presented in the event that either (a) the weir removal work is not successful in achieving the channel bottom or fisheries habitat improvement objectives of the mitigation measure, or (b) unintended adverse effects on coastal resources result. Moreover many questions exist as to how implementation of the measure would be guaranteed. The actual weir removal work would be performed by a third party, the Humboldt County Resource Conservation District, with partial funding provided by the applicant. The District is not a co-applicant for the permit amendment. The applicant does not explain how the mitigation measure would be successfully completed in the event the District experiences problems in performing or completing the work.

In addition to the above questions related to the specific mitigation measure proposed, it is unclear how all the various abiotic and biotic improvements at the multiple sites that may ultimately be included in a final fisheries mitigation plan and final wetlands mitigation plan would interrelate once the whole of the various mitigation activities are finalized. As noted above, specific details relating to the Hall, Mill, and Lindsey Creek and other mitigation sites that may be included have yet to be disclosed. Special Condition No. 5 at sub-part D specifies:

> *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, 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.*** [Emphases added.]

Thus, as structured, Special Condition No. 5 requires that a comprehensive final mitigation plan addressing ***all*** impacts to fish and other affected species be the subject of the requisite permit amendment application, and makes no provisions for serial submittals of mitigation for select sets of impacts, or partial recognition of mitigation credits towards overall compliance with the special condition.

Similarly, Special Condition No. 15 of original Coastal Development Permit No. 1-07-013 requires that a final comprehensive mitigation plan addressing ***all*** impacts to riparian and channel bottom wetlands be submitted for the review and approval of the Executive Director. Special Condition No. 15 reads as follows:

> *Revised Wetland/Stream Channel Mitigation Plan. 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 including wetland riparian loss and 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 on-site mitigation, 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 maximum of two (2) acres of compensatory riparian wetland mitigation necessary for the Mad River Bridges project.*

C. ***The plan shall provide that 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. (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 location 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 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.*

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 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.* [***Emphases*** added.]

Therefore, the portion of the requested permit amendment regarding the proposed removal of the Mad River Fish Hatchery Weir as full wetlands and stream channel mitigation required by Special Condition Nos. 5 and 15 and in partial satisfaction is procedurally in variance to the requirements of the original permit for requisite comprehensive mitigation plans for all of the fisheries and wetland impacts associated with the replacement bridge project. Accordingly, the granting of partial credit for the weir removal mitigating biological impacts to fish and other affected species as partial satisfaction of Special Condition Nos. 5 and 15 of the original permit would be premature at this time, as a substantive determination of the degree of incremental compliance with the requirements Special Condition Nos. 5 and 15 that the stream channel mitigation plan would arguably provide, cannot be factually made.

The partial mitigation plan that has been submitted does not change the scope of the authorized project or change the mitigations required by the special conditions of the permit, and thus is

dissimilar to most coastal development permit amendments that the Commission reviews. The partial mitigation plan has essentially been submitted for condition compliance review for the Commission to determine whether the partial plan satisfies at least parts of the requirements of Special Conditions 5 and 15 for comprehensive fisheries and wetland mitigation plans. As such, comprehensive final fisheries and wetland mitigation plans should be presented for review in the context of condition compliance once the plans have been completed in conformance with the requirements of Special Conditions 5 and 15.

Therefore, for all of the reasons set forth above, the Commission finds that the components of the applicant's amendment proposal relating to the proposed demolition of the Mad River Fish Hatchery Weir to be deficient with respect to fulfilling the mitigation required under Special Condition Nos. 5 and 15 of the original permit authorization insofar as the adequacy of the intended mitigation to fully and/or partially offset impacts to wetlands, stream channel, fish, and other affected species has not be procedurally and substantively demonstrated. Therefore, this component of the permit amendment is inconsistent with the requirements of Section 30233 of the Coastal Act that feasible mitigation measures have been provided to minimize the adverse environmental effects of the development and the Commission therefore denies this component of the applicant's amendment request.

C. CALIFORNIA ENVIRONMENTAL QUALITY ACT

Section 13906 of the California Code of Regulation requires Coastal Commission approval of a coastal development permit application to be supported by findings showing that the application, as modified by any conditions of approval, is consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Public Resources Code Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available, which would significantly lessen any significant effect that the activity may have on the environment.

The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. These findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report.

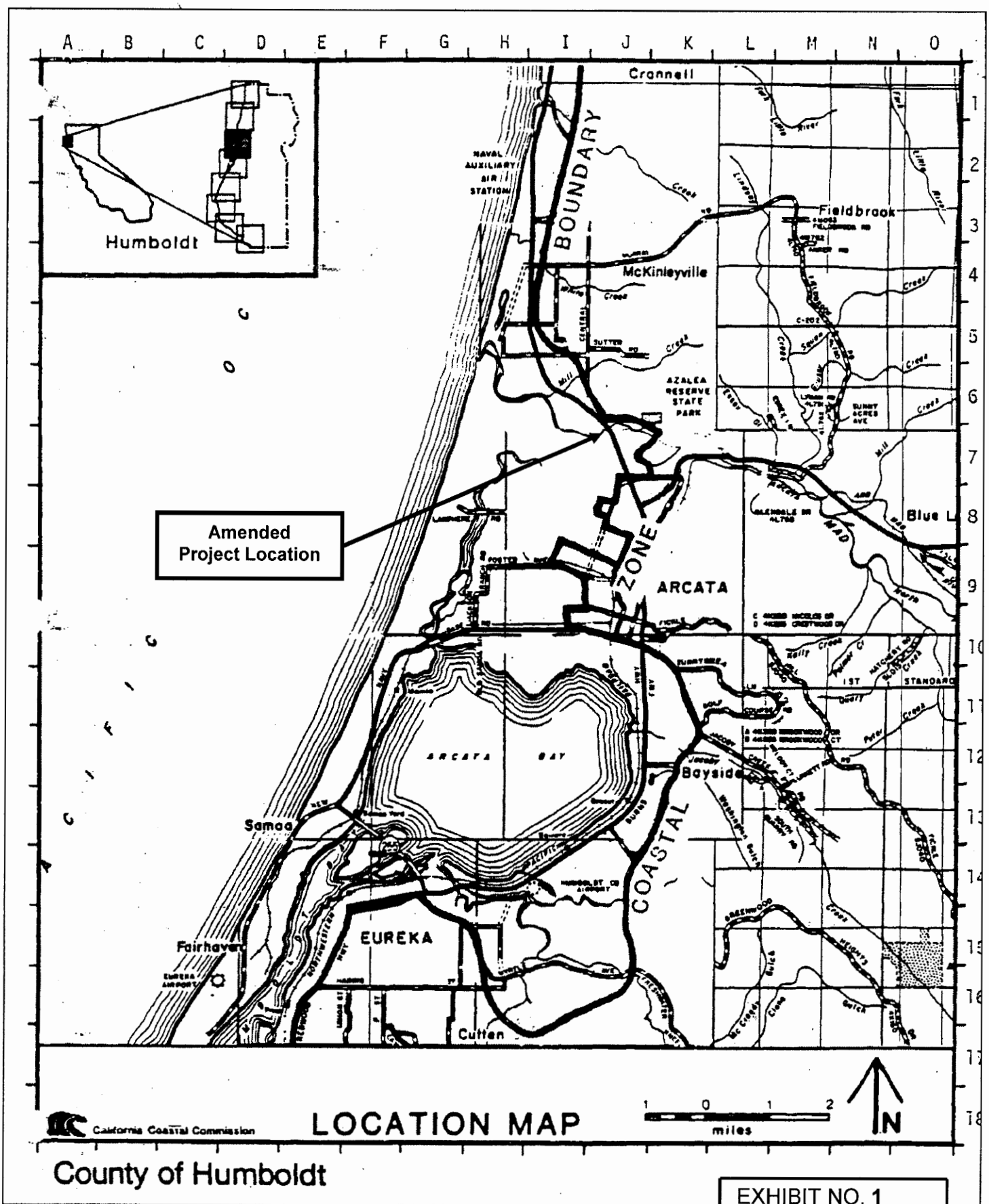
As discussed herein, in the findings addressing the consistency of the above-referenced portions of the proposed amendment with the Chapter 3 policies of the Coastal Act, the proposed amendment is not consistent with the policies of the Coastal Act that restrict the dredging and filling of coastal waters and wetlands.

As also discussed above in the findings addressing project alternatives, there are feasible alternatives available which would substantially lessen any significant adverse impact that the activity may have on the environment. Therefore, the Commission finds that the above-referenced portions of the proposed amendment cannot be found consistent with the requirements of the Coastal Act to conform to CEQA.

APPENDIX A:

SUBSTANTIVE FILE DOCUMENTS

1. Coastal Development Permit No. 1-07-014 (Caltrans)



County of Humboldt

EXHIBIT NO. 1

APPLICATION NO.

1-07-013-A2

CALTRANS

REGIONAL LOCATION MAP

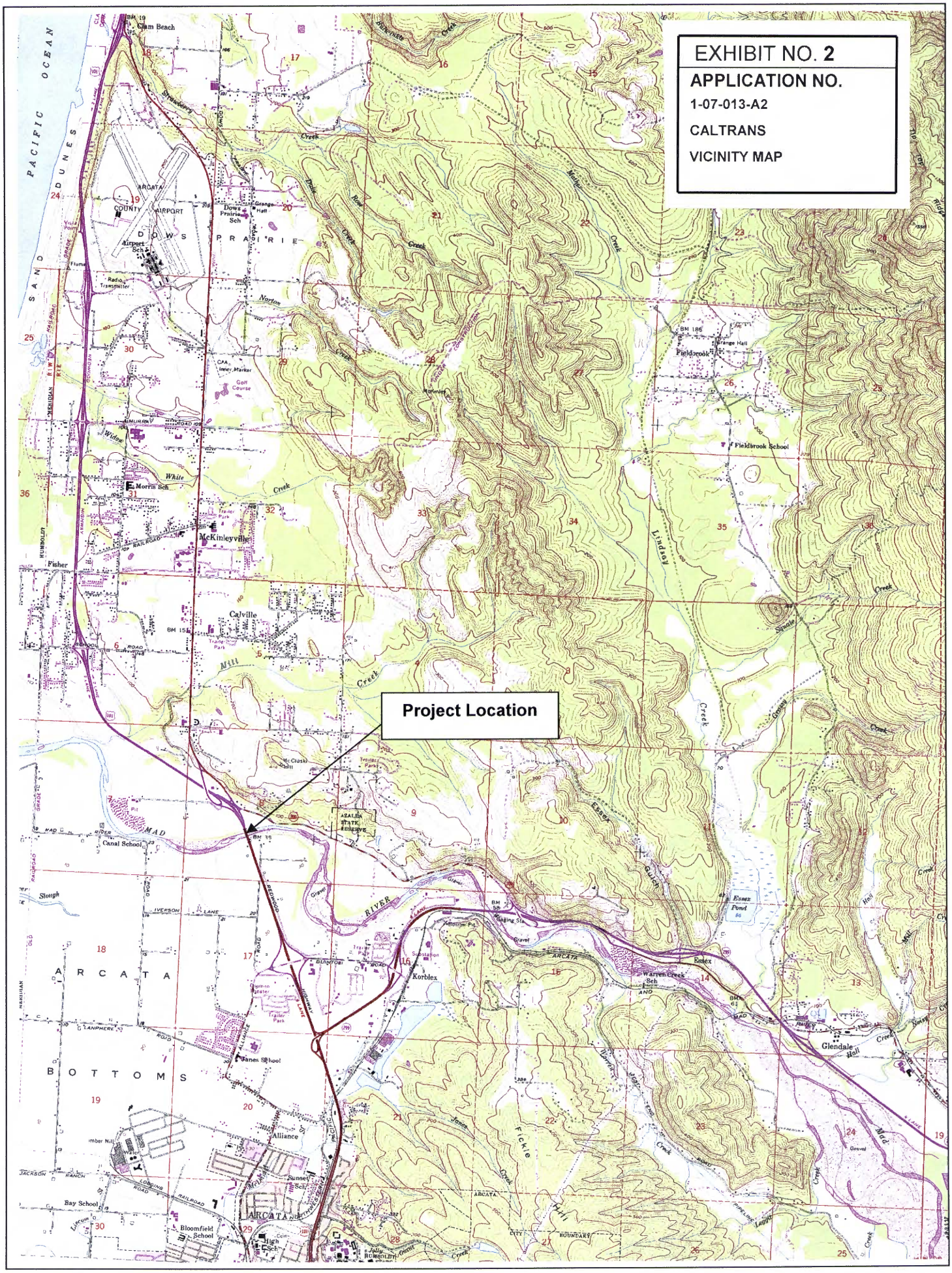


EXHIBIT NO. 2
APPLICATION NO.
1-07-013-A2
CALTRANS
VICINITY MAP
Project Location
PACIFIC OCEAN
SAND DUNES
DOWS PRAIRIE
ARCATA BOTTOMS
Clam Beach
ARCATA COUNTY AIRPORT
Airport Sch
Dows Prairie Sch
Grange Hall
Fieldbrook
Fieldbrook School
McKinleyville
Morris Sch
Fisher
Calville
Canal School
Korblex
Warren Creek Sch
Essex
Glendale
Janes School
Alliance
Sunset Sch
Bay School
Bloomfield School
High Sch
Mad River
Mill Creek
Norton Creek
Lindsay Creek
Fickle Hill
Azalea State Reserve
Redwood Highway
Arcata
Eureka

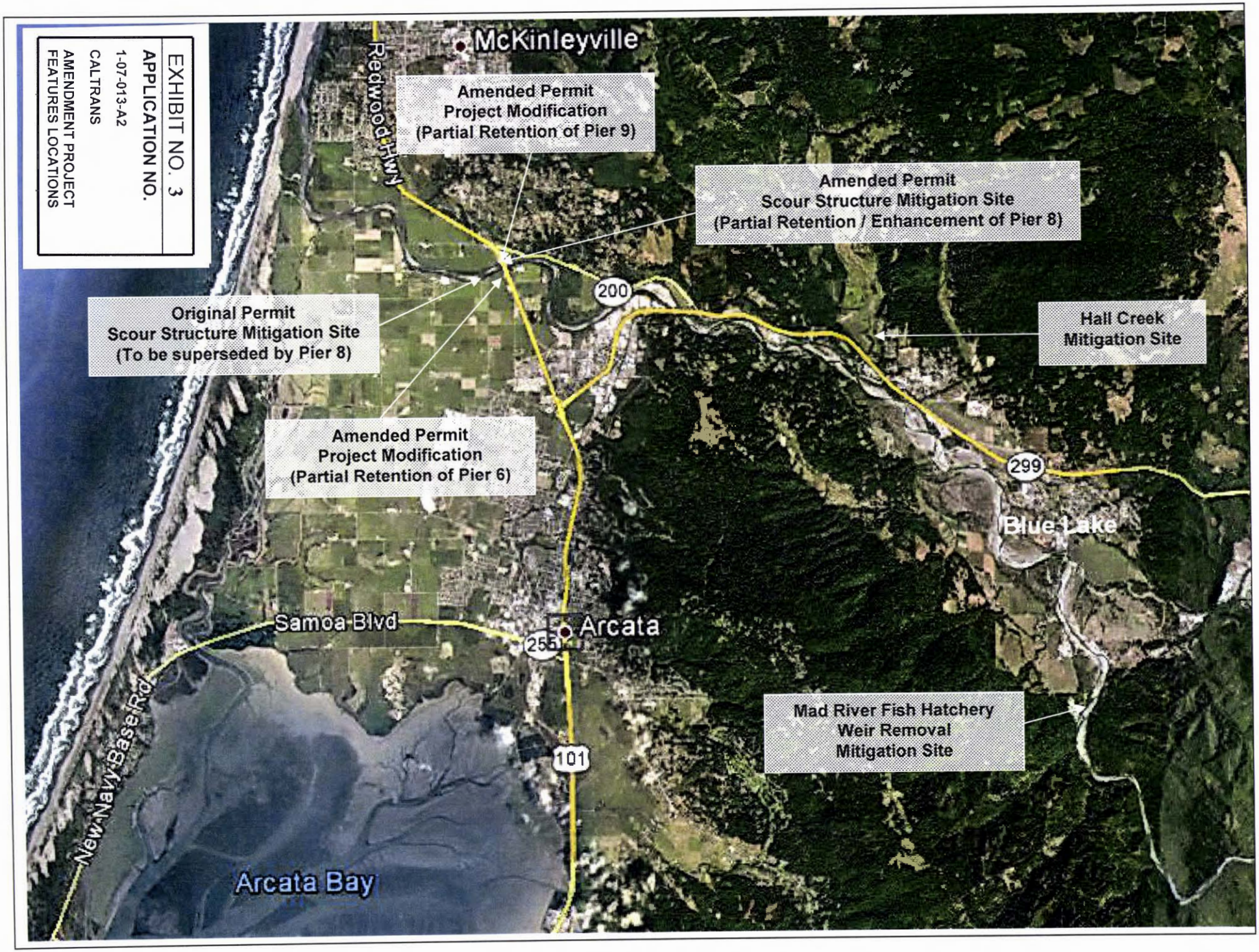


EXHIBIT NO. 3
APPLICATION NO.
1-07-013-A2
CALTRANS
AMENDMENT PROJECT FEATURES LOCATIONS
McKinleyville
Redwood Hwy
Amended Permit
Project Modification
(Partial Retention of Pier 9)
Amended Permit
Scour Structure Mitigation Site
(Partial Retention / Enhancement of Pier 8)
200
Original Permit
Scour Structure Mitigation Site
(To be superseded by Pier 8)
Hall Creek
Mitigation Site
Amended Permit
Project Modification
(Partial Retention of Pier 6)
299
Blue Lake
Samoa Blvd
Arcata
255
Mad River Fish Hatchery
Weir Removal
Mitigation Site
101
Arcata Bay

DEPARTMENT OF TRANSPORTATION
District 1
P.O. Box 3700
Eureka, CA 95502
PHONE (707) 445-6600

Flex your power!
Be energy efficient!

CDP 1-07-013 (Amendment)
US Route 101, Mad River Bridges
District 1 (Eureka)

July 13, 2012

California Coastal Commission
North Coast District Office
710 E Street, Suite 200
Eureka, CA 95501
Attn: Jim Baskin

EXHIBIT NO. **4**
APPLICATION NO.
1-07-013-A2
CALTRANS
AMENDED PROJECT DESCRIPTION OVERVIEW NARRATIVE (1 of 3)

SUBJECT: Amendment to description for CDP 1-07-013

Dear Mr. Baskin:
Enclosed is an amendment to the description for CDP 1-07-013 for the replacement of the Mad River Bridges for Coastal Commission review and acceptance. The enclosed description and attachments supersede those submitted on March 13, 2012; all other information in the application is accurate.

The amendment includes the following items:

1. Per Condition 15, a plan for stream channel impact mitigation (Attachment A). A project description for removing a weir on the Mad River as mitigation for stream channel impacts is attached (B). Attachment C consists of a draft Cooperative Agreement with the Humboldt Resource Conservation District, who will implement the project on Caltrans' behalf, and a Statement of Work. Removal of the weir at Blue Lake also fulfills a portion of the mitigation for fish impacts, and is included in the plan for long term compensatory mitigation of fisheries impacts due to the project (Attachment D), as required by Condition 5 D of the original permit. In the interests of expediting concurrence for the weir removal, which has time constraints, we are deferring consideration of the remaining fish mitigation projects to a subsequent amendment, unless Commission staff directs otherwise.

2. Change to Project Description, Findings, p. 63
   Proposal to allow the footings of the old bridge that are above the top of the bank (piers 6 and 9, shown in Attachments E1 and E2) to be removed only to 1 meter below ordinary ground;

3. Change to Project Description, Findings, p.64
   Proposal to retain Pier 8 to maintain fish habitat it creates, and attach woody debris to minimize the aesthetic impact, rather than removing it completely and establishing a

replacement scour structure in another part of the channel (Attachment F).

Future Wetland Amendment Submission

Item 3 of the March 13, 2012 amendment has been withdrawn; however, we want to let you know our thoughts regarding this permit condition. In 2007 the CDP permit application stated that 1.72 acres of permanent and temporal impacts to coastal wetlands would occur during Project Years 1-3 (Mad River Bridges Replacement On-site Wetland and Riparian Mitigation and Monitoring Plan [MMP], November 2007, Table 1, page 7, submitted with the CDP application). However, on May 30, 2012 during a joint field review of the project site with Coastal Commission staff, we observed that no temporal impacts within the project's N/E quadrant (projected at 0.21 acre) actually occurred (polygons 35, 16, 17, 18 and 19; see MMP Exhibit 5, Impact Mapping). Therefore we will be seeking to amend the CDP to state that 1.51 acres *(vs. 1.72 acres)* of permanent and temporal impact to wetland and riparian habitats occurred during Project Years 1-3.

Further, as mitigation for project impacts, Caltrans may propose to utilize existing bank credits at the Elk River Wildlife Area Mitigation Bank. In this case Caltrans will be seeking to amend the mitigation ratio to a ratio of 3.4:1 (versus 4:1). The Elk River bank was constructed over 20 years ago and wetlands are fully functional; while out-of-kind (tidal), there will be no temporal loss, therefore a ratio of less than 4:1 is justified.

The proposed mitigation ratio would be satisfied as follows:

On-site, in-kind - 1.04:1

Upon project completion it is estimated that 1.57 acres of revegetation can be accomplished on-site (as proposed in the 2007 MMP, minus acreage proposed to be planted under the new bridge deck [as disallowed by the project's CDP]). These areas will be planted following the completion of project construction, as proposed in the project's revegetation plan.

Off-site, in-kind - 1.3:1

The project's CDP allowed for two (2) acres of off-site riparian habitat restoration at the Samoa parcel for mitigation credit; this restoration has occurred.

Off-site (established), out-of-kind - 1.01:1

The Caltrans Elk River Mitigation Bank has a balance of 1.53 acres of available credit. Because this bank was constructed over 20 years ago, wetlands are fully functional.

If you have any questions or require additional information, please contact Valerie Gizinski, project coordinator, at (707) 445-5320, or by e-mail at valerie_gizinski@dot.ca.gov .

Sincerely,

Kathleen Sauch

Dana York
Senior Environmental Planner - Branch E-2

Attachments:
A – Stream Channel Impact Mitigation Plan
B – Project Description for Blue Lake Hatchery Weir Removal
C – Draft Cooperative Agreement for Blue Lake Weir Removal and Statement of Work
D – Long Term Compensatory Fisheries Mitigation Plan
E1 & E 2 – Maps of the footings of Piers 6 and 9 in relation to the Mad River
F – Fish Habitat Structure Proposal for Pier 8

CDP 1-07-13 Amendment - Attachment A
Mad River Bridges, July 13, 2012

EXHIBIT NO. 5
APPLICATION NO.
1-07-013-A2
CALTRANS
PROPOSED STREAM CHANNEL IMPACTS MITIGATION PLAN (1 of 3)

Stream Channel Mitigation Plan

Stream Channel Disturbance

Condition 15 of CDP 1-07-013 requires Caltrans to submit a stream channel mitigation plan to compensate for all impacts to the Mad River stream channel (i.e., below top-of-bank) during the implementation of the project. Prior to the implementation of the project, temporary disturbances to the Mad River channel were projected to be 6.3 acres (2.1 acres per year); the area actually impacted during three years of in-channel construction totaled 1.03 acres, and includes the following:

- Clearing vegetation (once in 2009 to provide access for the duration of the project)
- Constructing an access road on the north bank (2011 and 2012)
- Constructing access road on south bank (2009, 2010, 2011 and 2012)
- Constructing a temporary settling pond on south bank (2009 only)
- Installing and dewatering cofferdams at Pier 3
- Installing gravel bar extension along south bank (2009, 2010, 2011 and 2012) and north bank (2011 and 2012)
- Installing falsework piles along the north bank (2010)

For ease of analysis, areas of the stream channel that were impacted have been broken down into the following categories:

- South bank access and staging area
- North bank access and staging
- Fish Exclusion Zone
- Falsework piles

All of these areas are depicted in Figure 1. The staging areas were digitized on ortho-rectified imagery based on onsite observations. These were large enough in extent to be measured using GIS tools. The areas of impact due to the FEZ and piles were estimated based on their geometry and extent of footprint.

Access to the south bank in 2009 required the removal of riparian vegetation from the channel. An access road was then constructed from the staging area to the gravel bar. A gravel bar extension was installed each year in order to provide a working platform for heavy equipment and falsework construction. In 2009, a settling basin was constructed on the south bank gravel bar on the west side of the southbound bridge. The basin was used to dewater the cofferdam at Pier 3. All of these activities were confined to the *South Bank Access and Staging Area.*

Access along the north bank for staging and construction occurred in 2011, and is anticipated to occur in 2012. The north bank access road was used for falsework construction, and bridge demolition activities.

Stream channel impacts associated with fish exclusion resulted from contact of fish exclusion structures with the streambed. Structures included: gravel bags, metal fence posts, and water bladders. The area of impact to the channel from these structures is estimated at 0.03 acres in 2009 and 0.003 acres in 2011.

Eight 22-inch diameter falsework piles were installed in the channel along the north bank in 2010. The piles had a total impact area of 21 ft^2 (0.000482 acres); they were removed in 2011.

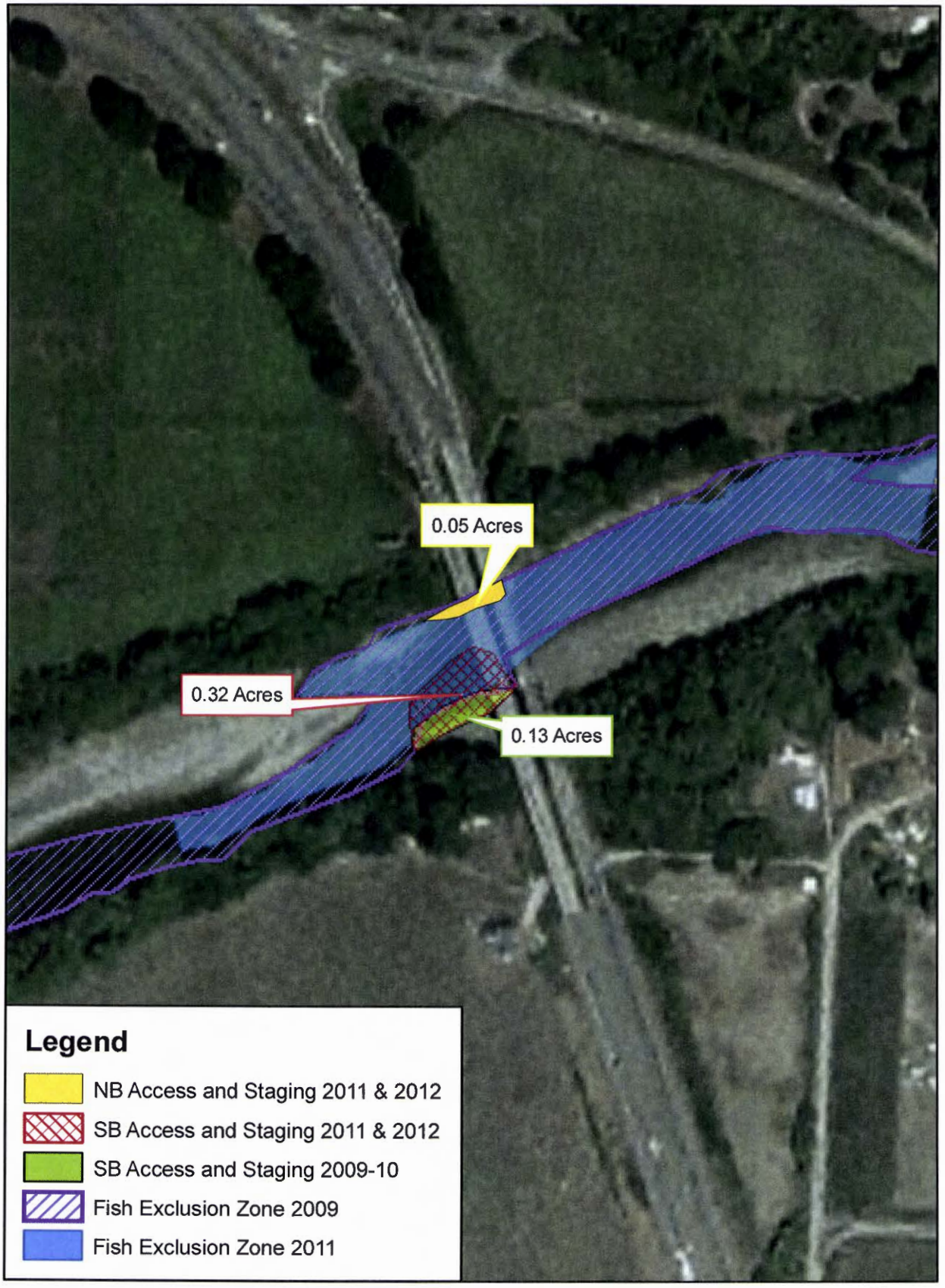
The table below shows the individual area of impact of each location by year, as well as the total area impacted each year of in-channel construction.

Location	**2009 (acres)**	**2010 (acres)**	**2011 (acres)**	**2012 (acres)**
South bank access and staging	0.13	0.13	0.32	0.32
North bank access and staging			0.05	0.05
Falsework piles		0.000482		
FEZ structures	0.03		0.003	
Annual Total	**0.16**	**0.13**	**0.37**	**0.37**
Total for entire project				**1.03**

Proposed Mitigation

Both NOAA Fisheries and the CA Dept of Fish & Game consider the removal of the weir at Blue Lake a high priority for coho recovery within the Mad River watershed. Caltrans is proposing to mitigate for both fish losses and channel impacts by funding this project. Fish production will be increased as a much larger percentage of the population gains access to habitat above the weir. Calculations of fish increases are presented in the Long Term Fisheries Mitigation Plan, which is being submitted as part of this amendment. To determine what amount of the Mad River stream channel would be restored by removal of the Blue Lake weir, the area of the channel that is currently occupied by the weir itself was estimated using manual measurements of digital imagery. A total of 5.9 acres of stream channel would be restored with removal of the weir, which is more than five times the 1.03 acres disturbed during replacement of the Mad River Bridges. If approved by the Commission, the project would be completed in the summer of 2012. Details on the removal can be found in the attached proposal for the Fisheries Restoration Grant Program managed by CA Fish & Game (Attachment B).

Mad River Bridge Replacement
NB & SB Access and Staging Impacts



0 65 130 260 390 520 Feet

N

3 of 3

Long Term Compensatory Fisheries Mitigation Plan

Project Background

The Federal Highway Administration (FHWA) and California Department of Transportation (Caltrans) are in the process of replacing the U.S. Highway 101 bridges that cross the Mad River between Arcata and McKinleyville, California. The project is being constructed so that the bridges meet current seismic, scour, and bridge design standards. As part of this effort, the FHWA and Caltrans are demolishing the existing bridges and constructing two new cast-in-place concrete box girder bridges. All work within and adjacent to the river channel, other than revegetation, will be completed by October 2013.

The new bridges are constructed on two abutments (abutments 1 and 5, at the south and north ends of the bridges, respectively) and are supported by three piers (piers 2, 3, and 4). Each pier was constructed by driving two 7-foot-diameter cast-in-steel-shell (CISS) piles with an impact pile-driver. Although none of the piles were driven in water, the piles for Piers 3 and 4 and the falsework piles were close enough to the river to transmit sound to the water. Piles at piers 3 and 4 were driven in 2009 and 2010. In addition to pile-driving, the project included temporary earthwork within the channel to provide workspace for the installation of the piles; bridge demolition; installation, operation, and removal of a temporary fish exclusion system during the driving of piles at Piers 3 and 4; and construction of temporary access roads to the site.

The Mad River provides habitat for three types of anadromous salmon:

- Chinook salmon (*Oncorhynchus tshawytscha*)
- Coho salmon (*O. kisutch*)
- Steelhead trout (*O. mykiss)*

The area of the project is used primarily as a migration corridor for both adult and juvenile salmon as they migrate to and from marine and freshwater habitats for spawning and rearing. In-channel work windows were established prior to construction in order to avoid direct impacts from underwater noise produced during pile driving as well as other in-water construction activities. Pile driving was permitted to occur only between July 1 and September 1 annually to avoid the period when adult salmonids would be migrating through the project area (September through January), and to avoid the peak juvenile out-migration period of March through June. The above work window was implemented to avoid and minimize fish presence; however, additional minimization measures were taken within the work window to further prevent injury or mortality either from underwater noise or entrapment or impingement by materials and equipment during in-water work.

Mitigation Calculation

Mitigation for juvenile salmonids injured or killed during project activities is based on units of biological production, as outlined in the July 30, 2008 memo submitted to the CCC. The mitigation premise is that an individual fish within the Mad River population contributes to overall fish production by finding suitable spawning habitat within the watershed for the incubation and emergence of offspring. Since the amount of available stream habitat within a watershed generally translates into overall salmonid production, one potential way to facilitate an increase overall fish production is to increase the quantity of spawning habitat available to adult salmon. Therefore, Caltrans has committed to four fish passage enhancement projects on the Mad River: main stem Mad River (Blue Lake Weir removal), and Mill (culvert), Lindsay (removal of boulder barriers), and Hall (placement of weirs and baffles) Creeks, to mitigate for the loss of juvenile salmonids during construction. These projects will provide increased access to approximately 112 miles of salmonid spawning and rearing habitat. In the analysis presented in this plan, the number of smolts expected to be produced through the implementation of these projects will be compared to estimates of salmonid losses during construction.

The amount of fish production that would be gained by implementing the fish passage projects listed above will be calculated to determine if increases in productivity through increased access to suitable habitat are sufficient to offset project losses. The following variables will be used to estimate the productivity of the stream habitats located above the current barriers proposed to be removed in the passage projects:

1. Quantity of spawning habitat above barrier, Q_{sp} (m^2)
2. Egg to fry survival rate, S_{fry} (%)
3. Fry to smolt survival rate, S_{smolt} (%)
4. Total number of juvenile salmonids lost in Mad River project, N_{lost}
5. Ratio of spawning habitat area to fry production, R_{fry} (n/m^2)
6. Total number of smolts produced, N_{prod}

The number of smolts produced by increasing available fish habitat will be calculated as:

$$Q_{sp} * R_{fry} * S_{fry} * S_{smolt} = N_{prod}$$

The number of smolts produced, N_{prod} will have to equal or exceed the number of smolts lost, N_{lost} in order for the fish passage mitigation projects to offset project losses.

Construction activities that could directly injure or kill juvenile and adult salmonids (i.e., losses) from 2009 through 2012 include:

- Installing and dewatering cofferdams around pile installation locations
- Installing gravel bar extension along southbank (2009, 2010, 2011) and northbank (2011 and 2012)

- Installing and clearing a fish exclusion zone (2009 and 2011)
- Installing support piles for Piers 2, 3, and 4
- Removal of old bridge footings at piers 7 and 8

The number of fish lost (injured or killed) during each construction year was estimated from observations reported in the following documents:

1. Snorkel Survey Reports for 2009 and 2011
2. Biological Monitoring Reports prepared for construction seasons 2009, 2010, and 2011
3. Mad River Bridges Replacement Project, Effects of Pile Driving Sound on Juvenile Steelhead, March 2010
4. Hydroacoustic Monitoring Reports for pile driving in 2009 and 2011

Estimate of Fish Losses

2009

Construction activities within the channel in 2009 included:

- Installation and removal of gravel bar extension along the south bank of the Mad River
- Installation of permanent piles at piers 2, 3, and 4.

Gravel Bar Extension

Installation of the gravel bar extension along the south bank began on June 16, 2010. The purpose of the extension was to provide access to the in-water and overhead construction areas for the installation of falsework and to provide a stable work surface for heavy equipment. Prior to the installation of gravel into the wetted channel, fish within the area to be filled were removed first by seining and then electrofishing. The area was surveyed via snorkeling to ensure that all fish had been removed from the area.

Based on observations reported in the *2010 Mad River Bridges Biological Monitoring Report*, no salmonids were injured or killed during the installation of the south bank gravel bar extension. However, it is likely that a large number of juvenile lamprey (ammocoetes) was buried in the native substrate as a result of gravel installation.

Pier Installation

A fish exclusion zone (FEZ) was established prior to pile driving, and fish were relocated during its installation. Snorkel surveys were conducted after fish were removed from the FEZ to estimate the number of fish remaining. The remaining fish were subsequently exposed to underwater noise levels greater than 187 dB SEL AC and are to be considered killed per CDP Condition 4A(1).

In 2009, the FEZ was in operation for a total of a total of 47 days from June 30th to August 5th. After fish were removed, it was estimated that 87 juvenile salmonids (*Mad River Bridges Snorkel Survey Report 2009*) remained within the FEZ (Table 1). These fish were exposed to peak underwater noise levels that ranged from 151 dB re µPa to 194 dB re µPa, and accumulated SEL levels in excess of 187 dB AC SEL on three occasions 35 meters from pile driving (i.e., nearest hydrophone location) (*2009 Mad River Bridges Hydroacoustic Monitoring Report*). Caged fish studies performed concurrently showed no injury to, or mortality of, individual fishes exposed to the highest underwater noise levels produced in 2009 (*Effects of Pile Driving on Juvenile Steelhead, March 24, 2010*). However, fish utilized in those studies were euthanized immediately after each experimental trial. Therefore, it is uncertain whether any delayed mortality of exposed fish occurred as a consequence of exposure to pile driving noise.

In addition, one coho salmon was killed during electrofishing to clear the FEZ. Mortality was also associated with impingement on the nets used to exclude fish from the FEZ once it was cleared (Table 1). It is possible that the impingement mortality may have been a result of high water temperatures and late migrating smolts, since similar rates were not observed under relatively more favorable river conditions (i.e., higher flows, lower water temperatures) during exclusion in 2011 (*2009 Mad River Bridges Biological Monitoring Report*).

Generally, Chinook salmon smolt emigration generally decreases annually in late-May to early-June coincidently with late spring flows. In 2009, flows in the Mad River were lower (below 500 cfs) during this period than those experienced in 2011. In addition, water temperatures in the Mad River taken within the project area during this time exceeded 70°F (21°C) on most days (recorded in daily biological monitoring notes) while the FEZ was in operation. During the parr-to-smolt transformation process juvenile salmonids undergo significant changes in their physiology to prepare for life in a marine environment. This physiological stress can be magnified by increased water temperatures. Exposure to water temperatures in excess of 70°F (21°C) for several hours over consecutive days can cause reduced feeding activity as well as losses in equilibrium (McCullough 1999). Losses in equilibrium and general lethargy caused by environmental stressors could affect the ability of smolts to swim away from obstacles or decrease their ability to free themselves if impinged on a net. Therefore, it is conceivable that increased water temperatures, combined with a relatively large number of late-emigrating smolts in a weakened physiological state, resulted in an increased number of salmonid mortalities being observed at the FEZ nets in 2009.

Table 1: Number of juvenile salmonids injured or killed during 2009.

Cause of Mortality	Coho (n)	Steelhead (n)	Chinook (n)	Unknown Salmonid	Total (N)
Remained in FEZ during pile driving	46	35	6	-	87
FEZ Structures	3	13	28	24	68

Fish removal activities (e.g., seining, electrofishing)	1	-	-	-	1
Total Lost in 2009					***156***

2010

Construction activities within the channel in 2010 included:

- Installation and removal of gravel bar extension along the south bank of the Mad River
- Installation of falsework piles along the north bank

Gravel Bar Extension

Installation of the gravel bar extension along the south bank began on June 16, 2010. The purpose of the extension was to provide access to the in-water and overhead construction areas for the installation of falsework and to provide a stable work surface for heavy equipment. Prior to the installation of gravel into the wetted channel, fish within the area to be filled were removed first by seining and then by electrofishing. The area was snorkeled to ensure that ensure that all fish had been removed.

Based on observations reported in the *2010 Mad River Bridges Biological Monitoring Report*, no salmonids were injured or killed during the installation of the south bank gravel bar extension. However, it is likely that a large number of juvenile lamprey were buried in the native substrate as a result of gravel installation.

Falsework Installation

On July 1, 2010 eight 22-inch diameter steel shell piles were installed along the north bank using a vibratory hammer. Each pile was struck approximately three times using a diesel impact hammer to ensure its stability. Hydroacoustic monitoring was conducted 10 meters and 20 meters from pile driving to ensure that underwater noise levels did not exceed NMFS dual metric criteria (i.e., accumulated SEL of 187 dB re 1μPa2-sec; peak of 206 dB re: 1μPa).

Neither the accumulated SEL criterion of 187 dB re 1μPa2-sec nor the peak criteria of 206 dB re: 1μPa was exceeded at the measurement locations. Therefore, there were no fish injured or killed as a result of pile driving activities in 2010.

2011

Construction activities within the channel in 2011 included:

- Installation and removal of temporary in-river diversions along south bank work platform and north bank falsework pad
- Installation of permanent piles at Piers 3 and 4

Diversions and Falsework Pad

An instream diversion and gravel-filled work area on the south riverbank was to provide access to the in-water and overhead construction area; for placement of falsework bent pads; and to provide a work platform for a crane and other equipment. In addition, a gravel pad was constructed behind sheet piles on the north bank for placement of a falsework pad.

The diversion on the southbank was installed in two stages. The first stage of the south-side diversion began on June 16 and was approximately 80 feet long parallel to the river and extended into the wetted channel approximately 30 feet at the upstream end and 65 feet at the downstream end. Construction of the second phase began on June 28 and extended the south-side diversion by approximately 30 feet into the river, leaving an open channel that varied in width between approximately 40 and 50 feet.

The biological monitor (Mike Kelly) examined the K-rails and sheet piles to be sure they were free of contaminants, and observed their placement. The biological monitor and Caltrans fishery biologist Samantha Hadden then used a beach seine and electrofishing equipment to clear fish from the areas to be filled. They removed one juvenile coho salmon, one adult stickleback, and six lamprey ammocoetes from the first stage of the south-side diversion and two Chinook salmon smolts, two juvenile steelhead, 10 sticklebacks, 10 juvenile lamprey, and a sculpin from the second stage of the south-side diversion. They found no fish within the north-side diversion. The diversions along the north and south banks resulted in no direct losses of juvenile salmonids

Turbidity plumes were created during placement and removal of the diversion barrier sheet pile and K-rail containment structures, and the vibratory hammer developed a minor leak (estimated at less than 3 ounces), which was immediately addressed. The biological monitor did not observe any stressed fish either during turbidity pulses or during the oil leak. Juvenile steelhead continued feeding during all but the most intense turbidity pulses. Water temperatures ranged from 12 to 17°C, during the more significant turbidity events, and up to 19°C during the minor events. Therefore, turbidity did not coincide with the warmest water, which ranged up to 23°C during the season. There were no observed or reported fish losses in 2010 with the exception of an unknown number of lamprey which were likely trapped by diversion structures.

Pier Installation

Fish were cleared from the FEZ using multiple passes with one or two beach seines depending on the width of the reach. When the seine approached the downstream end of the FEZ, a section of the downstream weir was opened temporarily, allowing fish to be crowded out of the FEZ. Fish biologists from ICF International snorkeled the FEZ between seine passes to ensure that only the allowable number of fish, approximately 87 ESA-listed salmonids (i.e., salmonids protected under the Endangered Species Act) remained within the FEZ (*Snorkel Survey Report 2011*).

Fish that remained in the FEZ during pile driving were subjected to elevated sound levels. No dead fish washed up on the downstream weir nor was there other evidence (e.g., altered behavior) suggesting

that acoustic injury occurred to fish remaining in the FEZ. However, three Chinook salmon smolts and one juvenile steelhead were apparently killed on the upstream FEZ weir mesh (Table 2).

Table 2: Number of juvenile salmonids injured or killed during 2011

Cause of Injury/Mortality	Coho (n)	Steelhead (n)	Chinook (n)	Unknown Salmonid	Total (N)
Remained in FEZ during pile driving	-	-	-	87	87
FEZ Structures			3		3
Total Lost in 2011					**90**

Compensation for Fisheries Losses

Steelhead, Coho and Chinook Salmon

A total of 246 salmonids were assumed or observed to be lost during construction from 2009 to 2011 (Table 1 and Table 2). In order to calculate the estimated total number of smolts expected to be produced through completing the fish passage projects being proposed, the following equation was used (as described previously in "Mitigation Calculation"):

$$Q_{sp} * R_{fry} * S_{fry} * S_{smolt} = N_{prod}$$

Several assumptions were made to obtain values for each of the variables, due to the lack of specific information for the Mad River watershed. As part of estimating the area of spawning habitat made available by the proposed projects, an average channel width was assumed for each waterway. Since channel width varies considerably along the length of a channel, a conservative value of 1.8 m (6 ft) was used, along with the total length of channel made passable, to calculate the area of spawning habitat made available, Q_{sp}.

Survival rates for salmonid life stages in the Mad River watershed are not available. Therefore, estimates for egg to fry survival (S_{fry}) and fry to smolt survival (S_{smolt}) were obtained from peer reviewed literature. The average rate of egg to fry survival based on numerous studies reported by Bradford (2005) is 10 percent. Furthermore, the survival rate from fry to smolt can range from 5 to 25 percent depending on physical conditions (e.g., water temperature, hydrology) and density-dependent factors such as food availability.

An additional assumption was made on the ratio of salmon spawning habitat area to fry production, R_{fry}. Redd size varies according to species and the specific size of the female constructing the redd. In general, the larger the female, the larger the redd. Redd sizes reported for coho salmon range from 2.5 m^2 to 4.0 m^2. Chinook salmon redds vary from 2 m^2 to 6 m^2 (Gallagher 2005, Burner 1951). Steelhead redd sizes are within the same range or slightly smaller than coho salmon. Burner (1951) recommends

that the area needed for spawning salmon should be about four times the area of the redd. Based on this recommendation an area of 10 m^2 was selected to use in the production estimate.

The resulting estimates suggest that implementing the proposed fish passage will produce between 165 and 826 salmon smolts per year. Using the lowest survival rate reported for survival from fry to smolt yields 165 individual smolts produced per year (Table 3).

Table 3. Increases in annual production through implementation of the proposed projects using a 5 percent survival rate.

Project	Q_{sp}	S_{fry}	S_{smolt}	R_{prod}	N_{prod}
Mill Cr	8,535	0.1	0.05	0.1	4
Hall Cr	8,152	0.1	0.05	0.1	4
Lindsay Cr	19,424	0.1	0.05	0.1	10
Blue Lake Weir	294,356	0.1	0.05	0.1	147
Total					***165***

Comparatively, using the highest survival rate reported, up to an estimated 826 smolts could be produced per year (Table 4). The actual rate of survival of juvenile salmonids in the Mad River watershed likely fluctuates annually due to changes in environmental conditions and changes in population densities for each cohort (i.e., age class distribution) returning to spawn.

Table 4. Increases in annual production through implementation of the proposed projects using a 25 percent survival rate.

Project	Q_{sp}	S_{fry}	S_{smolt}	R_{prod}	N_{prod}
Mill Cr	8,535	0.1	0.25	0.1	21
Hall Cr	8,152	0.1	0.25	0.1	20
Lindsay Cr	19,424	0.1	0.25	0.1	49
Blue Lake Weir	294,356	0.1	0.25	0.1	736
Total					***826***

Given the uncertainty associated with estimating the actual number of fish produced through the proposed projects, it is prudent to be conservative and use the lower rate of survival. Based on this rate, it will take at least two years for the projects to fully mitigate for losses during construction.

The passage projects proposed are in various stages of development. Mill Creek culvert remediation was completed during the summer of 2011. Representatives from NMFS and CDFG determined that the scope of work needed to provide adequate passage for all life stages of salmonids at Lindsay Creek could be reduced. Caltrans utilized a crew from the California Conservation Corps in 2011 to alter the configuration of boulders at the mouth of Lindsay Creek that was obstructing passage. This work will

be completed in the summer of 2012. Hall Creek is also scheduled to be completed in 2012. All the proposed projects have received concurrence as well as technical support from NMFS and CDFG.

Removal of the weir at Blue Lake was not originally proposed as mitigation for the Mad River Bridges replacement project. Caltrans determined that implementing the project could increase the rate at which fish losses were mitigated, and also provide mitigation for stream channel impacts (see Attachment A). The removal of the Blue Lake weir was chosen because both NOAA Fisheries and the CA Dept of Fish & Game consider it a high priority for the watershed. The project is currently being proposed by the Humboldt County Resource Conservation District (HRCD) for inclusion in the 2012 CDFG Fisheries Restoration Grant Program (Attachment B). The project, if accepted as compensation for fisheries and stream channel impacts by the California Coastal Commission, will be fully funded by Caltrans through an inter-agency cooperative agreement with the HRCD.

Other Affected Species

During the 2009, 2010, and 2011 in-channel construction seasons the presumed burial of lamprey ammocoetes during the installation of gravel is the only known direct impact to aquatic species other than salmonids. However, it is not known how many juvenile lamprey could have been killed or injured. Lamprey occupy many of the same rivers and tributaries as salmonids on the west coast. As a result, it is believed that any project undertaken to improve habit quantity and/or quality for salmonids will also indirectly benefit lamprey and potentially offset any adverse impact to that species during construction. Therefore, no additional mitigation for lamprey species is currently proposed.

References

Burmer, C.J. 1951. Characteristics of spawning nests of Columbia River Salmon. U.S. Fish and Wildlife Service Bulletin 61:97-110.

Gallagher, S.P. 2005. Discrimination of Chinook salmon, coho salmon, and steelhead redds and evaluation of the use of redd data for estimating escapement in several unregulated streams in Northern California. North American Journal of Fisheries Management 25:284-300.

McCullough, D.A. 1999. A review and synthesis of effects of alterations to the water temperature regime on freshwater life stages of salmonids, with special reference to Chinook salmon. U.S. Environmental Protection Agency 910-R-010.

CDP 1-07-013 Amendment - Attachment B

For DFG use only	
Proposal No.	Region
☐	☐ ☐

2011 FRGP Proposal Application Form

Section 1: Summary Information

1. Project type:	**HB**
2. Project title:	MAD RIVER WEIR REMOVAL PROJECT
3. Applicant name:	HUMBOLDT COUNTY RESOURCE CONSERVATION DISTRICT
4. Person authorized to sign grant agreement (Name and Title)**:**	Donna Chambers, Executive Director
5. Contact person (Name and Title)**:**	Donna Chambers, Executive Director
6. Mailing Address: **Check if changed from previous applications** ☐	5630 South Broadway
7. City, State, Zip:	Eureka, CA 95503
8. Telephone #: **Check if changed from previous applications** ☐	707-444-9708 x 117
9. Fax #:	707-442-7514
10. Email address:	donnahcrcd@yahoo.com
11. Type:	Public Agency ☒ Nonprofit Organization ☐ Indian Tribe ☐
12. Certified nonprofit organization:	Yes ☐ No ☒ Nonprofit Organization Number: _____
13. New grantee:	Yes ☐ No ☒

EXHIBIT NO. 7
APPLICATION NO.
1-07-013-A2
CALTRANS
PROPOSED MAD RIVER FISH HATCHERY WEIR REMOVAL MITIGATION PLAN (1 of 29)

14. Licensed Professional	Yes ☒ No ☐ If Yes provide: Name: Glenn Hurlburt, P.E Affiliation: Caltrans North Region Design/Hydraulics District 1, Eureka CA Contact information: 707-444-2037 glenn_hurlburt@dot.ca.gov
15. Amount requested:	$144,549.75
16. Total project cost:	$294,549.75
17. Salmonid species benefited:	**Coho** ☒ **Steelhead** ☐ (Cutthroat ☐ Chinook ☐)
18. Project objectives:	The Project will address CDFG recovery priorities through the removal of a failed weir. The project will remove a man-made barrier to improve fish passage and sediment transport and decrease hazardous conditions posed to recreational users of the Mad River in the area adjacent to California Department of Fish and Game's fish hatchery near Blue Lake, California.
19. Task number or reference: (only list one task)	MR-BL-10 Strategy for California Coho Salmon Treat High Priority Barriers to Coho Salmon Passage
20. Time frame:	June 1, 2012 – December 2012 Work will commence in the summer of 2012 and be completed in a single work season.
21. Stream:	Mad River
22. Tributary to:	Pacific Ocean
23. Watershed System:	Hydrologic Unit Code (HUC 8) - Mad-Redwood
24. County(ies):	Humboldt
25. Coastal Zone:	Yes ☐ No ☒
26. Trinity River Basin:	Yes ☐ No ☒

Section 2: Location Information

1. Township, Range, Section (T/R/S): and the 7.5 USGS Quad map name.	**Township 6 North, Range 2 East Section 31 on the USGS 7.5 Korbel Triangle**

2. Latitude, Longitude (in decimal degrees, Geographic, NAD83):	Latitude 40.51.14.58" N Longitude 123.59.22.83" W
3. Location description:	The proposed project area is located in the Mad River at river mile 12.13. It is adjacent to the California Department of Fish and Game fish hatchery near the town of Blue Lake in Humboldt County, California as shown on the attached vicinity map (page 24). The western edge of the weir is near the hatchery fish ladder. From that point it extends eastward 195 feet perpendicular to the Mad River.
4. Directions:	From Highway 101 take Highway 299 east to the Blue Lake exit. Turn right onto Chartin Rd, left onto Railroad Ave, and right onto Hatchery Rd. to the hatchery parking lot. Follow the signs to the handicap accessible pathway. The weir can be seen from the end of the handicap accessible pathway.

Section 3: Watershed Information:

All questions in this Section refer to the watershed named in Number 1 below.

1. Watershed name:	**Mad River Watershed**
2. Watershed area:	square miles = approximately 497
3. Watershed area directly affected by the proposed project:	percent = 50%
4. Land use statement:	The USDA Forest Service and Bureau of Land Management manage most of the upper one-third of the watershed. Private ownership in the watershed includes industrial timber lands (Green Diamond Resource Company, Sierra Pacific Industries, and Humboldt Redwood Company), smaller private nonindustrial timber and ranch lands, and rural residential properties. Land uses in the watershed include industrial and nonindustrial timber management, ranching and agriculture, gravel mining, urban and rural residential development, road infrastructure, and power and gas line operations. These land uses are not expected to change in the next ten years. Population in the Mad River watershed is expected to increase moderately and steadily, particularly in the Lower Mad River area. Public land areas are not expected to decrease nor increase dramatically in the near future.
5. Watershed ownership:	% Private: 69 % State: 1 % Federal 30

6. Length of anadromous streams in watershed:	miles = 87.5
7. Watershed Plan(s):	California Department of Fish and Game. 2004. Recovery strategy for California coho salmon. Report to the California Fish and Game Commission. 594 pp. Copies/CDs available upon request from California Department of Fish and Game, Native Anadromous Fish and Watershed Branch, 1416 9th Street, Sacramento, CA 95814, or on-line: http://www.dfg.ca.gov/nafwb.cohorecovery
8. Background information	The Mad River is a 4th order stream that drains approximately 497 square miles of the Coast Range Geomorphic Province. It flows for approximately 113 miles in a roughly northwest direction through Trinity County then Humboldt County and empties into the Pacific Ocean north of Humboldt Bay. The river is free-flowing for 85 percent of its length. Matthews Dam, owned by Humboldt Bay Municipal Water District, forms Ruth Reservoir which serves Eureka, Arcata, Blue Lake and numerous unincorporated communities in the area. The dam is located about one third of the way down the river from its source. Based on USGS data for the Mad River, average daily flow for July through September is estimated at 51 cfs. Several native Endangered Species Act (ESA) listed and nonlisted fish species currently inhabit the watershed including, but not limited to, Chinook and coho salmon, summer and winter-run steelhead, resident rainbow trout, coastal cutthroat trout, California roach, three-spine stickleback, riffle and prickly sculpins, Pacific lamprey, brook lamprey, and green sturgeon. Non-native fish species include brown bullhead, channel catfish, Sacramento sucker, largemouth bass, crappie, and bluegills. *(Mad River watershed assessment. 2010. Final report. Prepared by Stillwater Sciences, Arcata, California in association with Redwood Community Action Agency, and Natural Resources Management Corp. Eureka, California.)* Coho salmon enter the Mad River during November and spawn November, December and possibly through January (Zuspan et al. 2002). The coho salmon life history is quite rigid, with a relatively fixed three-year life cycle. Most spawners return to spawn at age three after spending 18 months in the ocean, but some sexually mature males (grilse or jacks) return after six months in the ocean. Generally, coho salmon enter Mad River sexually mature and migrate into small tributaries to spawn. The basin is about 100 miles in length and averages six miles wide. Elevations range from sea level at the mouth to 3,000 feet along the western ridge to 6,000 feet in the headwaters. Vegetation in the watershed is composed of early to late seral

	coniferous forests, hardwoods, and grasslands. Rainfall averages 40 inches along the coast to over 80 inches at the higher elevations. Principal tributaries to the Mad River include South Fork Mad River, North Fork Mad River, Barry Creek, Pilot Creek, Deer Creek, Bug Creek, Graham Creek, Blue Slide Creek, Boulder Creek, Maple Creek, Canõn Creek, Lindsey Creek, and Mill (Hall) Creek. The Mad River watershed can be divided into three subwatershed areas (Upper, Middle and Lower) based on geomorphic characteristics. Resource-based economic activities (Timber, Ranching, and Gravel Mining) occurred historically throughout the watershed and continue today. Ranching and timber harvesting occur predominately in the upper portion of the watershed. Residential development has steadily expanded in the lower and middle areas of the watershed. Gravel mining operations are found in the lower reach of the watershed. The proposed project is located in the Lower Mad River subwatershed which encompasses 226 square miles (45% of the basin) including the lower 37 miles of mainstem river channel. This section of the mainstem river channel has a gentle gradient of 12 feet per mile. The river enters a wide alluvial valley at Blue Lake. The lower Mad River watershed is the most densely populated, with many rural residents drafting domestic water from tributaries. Approximately seven miles upstream from Blue Lake are the remnants of Sweasey Dam. The dam was built in 1938 and subsequently removed in 1970 due to filling with sediment. California Department of Fish and Game's Mad River Fish Hatchery is also found in this reach of the river. Construction on the hatchery started in 1969 and was completed in 1971. The California Wildlife Conservation Board constructed the hatchery to increase salmon and steelhead populations. For many years the hatchery raised salmon and steelhead from all over northern California. The hatchery also raised trout to be stocked in local lakes and lagoons, like Freshwater Lagoon, Ruth Lake, and Fish Lake.

Section 4: Project Objectives

1. **List task information** (for task listed in box 19 Section 1):

Information on the Mad River watershed states that barriers to coho salmon passage should be identified and removed (Recovery Strategy for California Coho Salmon). The plan assigns a SONCC

Task Level "D" and Task Priority Number "4" (MR-BL-10 D 4 Treat high priority barriers to coho salmon passage).

The proposed project will remove a reinforced 18 foot wide, one foot thick concrete slab that extends 195 feet across the Mad River. The slab has started to degrade, exposing the rebar. This structure is a low flow barrier to all salmonids and other fishes. Removal of this barrier achieves the goal identified in the task named above.

2. Need for the project:

The waters of the Mad River provide critical habitat for rare or endangered fish species, including California Coastal Chinook salmon (*Oncorhynchus tshawytscha*), Central California Coast coho salmon *Oncorhynchus kisutch*), Central California Coast steelhead (*Oncorhynchus mykiss*), and Coastal cutthroat trout (*Oncorhynchus clarki clarki*), a California Species of Special Concern. The concrete sill that was the foundation for the Mad River weir was built in the summer of 1989. The purpose of the weir was to direct Chinook salmon and steelhead into the fish ladder at the Mad River Hatchery. The weir structure was never effective in directing Chinook into the ladder and a weir has not been necessary to direct steelhead into the ladder. The concrete sill started to fail after the first high flows in the winter of 1989/1990 (N. Manji, personal communication). In 2002 staff from the Red Bluff Screen Shop attempted to demolish the sill. The structure proved too formidable for their equipment and the project was abandoned.

According to the Recovery Strategy for California Coho Salmon; "Artificial structures on streams fragment aquatic ecosystems by blocking or impeding migration and altering nutrient cycling patterns, streamflows, sediment transport, channel morphology,and stream-corridor species composition. This reduces available habitat, changes habitat conditions for anadromous salmonids, and reduces native biodiversity. Instream structures have the potential to, depending on conditions, either entirely or partially block fish from accessing upstream reaches and block critical habitat necessary for survival. Even if stream barriers are eventually negotiated by fish, the extra energy expended may result in their death prior to spawning or in reductions in viability of eggs and offspring. Barriers that increase the time required for migration can limit the distance adult fish are able to travel upstream before spawning, resulting in the crowding of redds in lower stream reaches and under-utilization of upstream habitat." Removing such barriers is identified in the plan as a priority task.

It is desirable to remove the structure for the following reasons:

- The sill is no longer required for hatchery operations. The sill and weir structure was not effective in diverting Chinook into the ladder and steelhead readily go into the ladder without the need for a weir. This is most likely due to the hatchery using well water to operate the hatchery and ladder.
- The sill is a low flow barrier to all salmonids and other fishes. In 2005 a green sturgeon was found trapped below the structure and had to be relocated (D. Free, personal communication).
- The sill is a safety hazard for boaters and swimmers.
- It is an artificial channel control that locally affects sediment transport.

3. Limiting factors to salmonids remediated by proposed project:	☐ Water quantity (lack of flow, diversions, runoff) ☐ Water quality (temperature, chemistry, turbidity) ☐ Riparian dysfunction (lack of shade, excessive nutrients, roughness, elements) ☐ Excessive sediment yield (pool and gravel quality) ☐ Spawning requirements (gravel, resting areas-pools) ☐ Rearing requirements (velocity, lack of shelter, pools) ☐ Estuary / lagoon issues (closure during migration periods) ☒ Fish passage (emigration and immigration)
4. Limiting factor remediation:	Removing the weir would provide unimpeded fish passage for all fish during all life stages.

Section 5: Project Description

1. *Detailed project description including all tasks to be performed:*

ISSUE: In 1989 a 195 foot long weir was constructed in the Mad River, adjacent to the California Department of Fish and Game (DFG) fish hatchery near Blue Lake (river mile12.3). The weir is clearly visible on the aerial map on page 28. According to DFG documents, the purpose of the weir was to divert Chinook salmon and steelhead into the ladder. The weir's concrete sill started to fail after the first high winter flows. Within a few years, the Department determined that the weir was not achieving its purpose. The weir was not needed to divert Steelhead into the fish ladder and the weir was not effective at diverting Chinook into the ladder. In 2002 there was an unsuccessful attempt to demolish the weir. The partial de-construction and subsequent water damage have exposed more of the internal rebar, posing a trapping hazard for fish and unsafe conditions for the public in this section of the Mad River. Removing the weir from the river will eliminate a man-made barrier to fish passage that also poses a hazard to the recreating public. The weir sill is an artificial channel control that locally affects sediment transport and is a low-flow barrier to all salmonids and other fishes within this reach of the river.

PROJECT OBJECTIVES: Improve fish passage and sediment transport by removing the failed weir.

PROJECT ELEMENTS:

CONTRACT MANAGEMENT, PROJECT COORDINATION AND OVERSIGHT: Humboldt County Resource Conservation District will provide management, coordination, project oversight and invoicing and reporting.

ACCESS: Humboldt County Resource Conservation District (HCRCD) has obtained a provisional access agreement from Green Diamond, the landowner adjacent to the eastern edge of the proposed project location. HCRCD proposes to coordinate with Green Diamond to utilize an existing access road on Green Diamond lands and to subcontract with a reputable local construction firm to construct an access point from that road approximately 75' to the river bar for ingress and egress during project activities. It is approximately 150'-250' from the gravel bar to the weir.

WATER DIVERSION: All work will be conducted during the low flow season with an expected work window of August 1 – September 15. Utilizing existing native materials, a coffer dam comprised of a gravel berm will be constructed upstream of the weir. This will force the channel to the right bank, isolating the work area. The channel will reconnect to the left bank live channel downstream, most likely with a trench. Due to the riverine environment additional dewatering is assumed and will be accomplished by the use of pumps. Best Management Practices will be applied to the management of water pumped from the work area to assure minimal impacts to water quality. HCRCD will work closely with DFG to screen and relocate fish.

WEIR REMOVAL (please refer to page 22 for plan drawings):

A) EXISTING WEIR CONSTRUCTION ELEMENTS:

1. Concrete Deck – The deck or "sill" of the weir is a reinforced concrete slab 195 feet long and 18 feet wide. The slab is one foot thick with a "same pour" concrete perimeter grade beam two feet wide and two feet thick. The slab is reinforced with two layers of steel grid fabricated from 5/8 inch diameter rebar on 10-inch centers.

2. Fish Ladder - From construction drawings, it appears that the concrete deck may be attached to the fish ladder but details of that connection are unknown. For this reason, the proposed project will leave an approximately 15' X 18' section of weir in place adjacent to the existing fish ladder. Please refer to page 23 for a longitudinal profile of the area provided to NOAA as part of monitoring Guynup Enterprises gravel mining operations. According to Margaret Tauzer of NOAA Fisheries, the low water surface will end up around 90 ft NAVD after removal of the weir and related channel adjustments. Tauzer concludes that since this is essentially what exists currently the ladder should continue to operate as it does now.

3. Steel Foundation Piles – The concrete slab is anchored to 48 steel H beams (piles) with 10-inch wide flanges that are 0.42-inches thick. The piles are embedded a minimum of 25 feet into native streambed material described as dense to very-dense, gray silty sand and gravel with occasional cobbles and boulders. In addition, the vertical piles are buttressed by 16 intermediate batter piles of the same size and embedment depth. The concrete slab is joined to each piling with two one inch diameter steel bars and the joint is entombed within the concrete of the grade beam.

4. Riprap Apron – Surrounding the weir on three sides is a six-foot thick rock protection (riprap) apron composed of two- to four-ton boulders. The design shows the riprap key to be seven feet wide and eight feet below the native streambed. The total length of apron is approximately 410 feet, and it is estimated to contain 1,800 cubic yards of riprap.

B) DEMOLITION AND DISPOSAL OF THE REINFORCED CONCRETE SLAB:

Approximately 130 cy of concrete rubble will need to be disposed of along with the steel "H" beams, anticipated to be approximately twenty 10 yd truck loads. The material will most likely be off-hauled to Kernen's construction yard on Glendale Drive, 5.6 miles from the project area.

To reduce the level of noise the subcontractor will be directed to use a pneumatic hammer or another suitable option that provides the least impact in terms of noise. Should the subcontractor determine to use a hydraulic hoe ram, they will be required to monitor noise levels and not exceed peak levels of 187 scls daily.

C) REMOVAL OF STEEL H-BEAM PILES

All 64 piles would be removed utilizing vibratory techniques. These techniques are commonly used by bridge-type contractors and would not require substantial in-channel excavation.

D) REDISTRIBUTE AND PLACE EXISTING 2-4 TON RIPRAP

Once the weir has been removed, the existing 2-4 ton boulders will be placed along the left bank as rock groins or clusters to create habitat diversity or transported and stockpiled at the hatchery yard for future use.

2. *Time frame:*

Assuming an executed contract with DFG by June of 2012, implementation on the proposed project would follow the timeline below:

June 2012	Finalize FRGP contract, submit subcontract to DFG for review, execute subcontract.
July 2012	Coordinate with Green Diamond and Contractor to develop access location and mobilize equipment.
August 1-September 15 (or as determined by DFG)	Instream work window: Coordinate with DFG and Grant Manager on expected timeframe for water diversion and dewatering; implement water quality BMPs; construct coffer dam; divert channel; screen and relocate fish; dewater; remove weir and off-haul materials; place boulders and displaced gravel/ rocks; remove coffer dam; recondition access point.
September-December	Final field inspection, prepare Final Report

3. *Deliverables:*

Monthly invoices and reports will be prepared and submitted. Upon completion of the project a final written report will be submitted. The report will contain: 1) general grant information, 2) location of work, 3) project start and end dates, 4) an accounting of fund sources, 5) expected benefits to anadromous salmonids, 6) pre and post photos, 7) access information, 8) as built information, and 9) measurable metrics which include a post-project longitudinal profile.

4. ***DFG protocols to be used in project development and implementation (check applicable box):***

☒ DFG *California Salmonid Stream Habitat Restoration Manual*

Manual part number: Part VI – 51 Human Induced Obstructions

☐ DFG monitoring protocols for restoration project effectiveness and validation monitoring

List part number:

5. ***Other protocols:***

In developing this proposal, HCRCD has consulted with engineers, fisheries biologists, and hydrologists from Department of Fish and Game, NOAA, and Caltrans.

6. ***Expected quantitative results (project summary):***

Instream Barrier Modification for Fish Passage (HB)

a. **Miles** of stream treated (include only the actual length of stream *treated* by the project, not the length of stream *affected* by the project)	0.25 miles
b. **Number** of barriers other than culverts improved for fish passage	1 #
c. **Type(s)** of barriers treated	☐ diversion dam ☐ push-up dam ☐ wood or concrete dam ☒ weir ☐ logs ☐ debris
d. **Miles** of stream made more accessible by removing barriers other than culverts (accessible to next barrier or to upstream end of anadromy)	87.7 miles
e. **Number** of fishway chutes/pools installed	N/A #
f. **Number** of fish ladders installed/improved	N/A #

7. ***Other products and results:***

This proposal takes advantage of a unique opportunity to leverage funding available through a Cooperative Agreement between HCRCD and Caltrans for an enhancement project on the Mad River.

Section 6: Qualifications and experience of applicant and professionals:

1. ***Applicant's qualifications and experience:***

The expertise of HCRCD core personnel is augmented by working in collaborative agency partnerships and retaining professional consultants and contractors for specific tasks as needed. To develop this project HCRCD has partnered with representatives of Caltrans, Department of Fish and Game and NOAA fisheries. HCRCD also has a strong working relationship with USDA/Natural Resources Conservation Service, through which technical and professional assistance is provided to landowners for developing and implementing resource conservation and habitat improvement practices. HCRCD also retains and collaborates with professional engineers, geologists, foresters, biologists and botanists as needed.

Over the past 24 years, HCRCD has worked with individuals, groups and in partnerships such as this to complete over 50 federal and state contracts. The RCD has a history of positive audits; testimony to the RCD's ability to effectively manage public funds. The RCD currently holds 17 project contracts with a total funding value of $8,719,789 and is administering 17 subcontracts valued at $3,154,275.

Throughout its history HCRCD has collaborated with landowners, agency partners, consultants and contractors to implement a range of water quality improvement projects, from sediment reduction to dairy nutrient management. HCRCD has extensive experience in completing cooperative upslope sediment reduction projects and in-stream improvement projects on private lands. HCRCD completed three phases of the Eel River Cooperative Sediment Reduction and Water Quality Improvement Program funded through State Water Resources Control Board. Through this program, HCRCD worked with private landowners to complete 35 projects for sediment reduction and stream bank stabilization in the Van Duzen River Watershed and 31 such projects in the South Fork Eel River Watershed. Activities included such tasks such as installing culverts, armoring and storm-proofing stream crossings, stabilizing streambanks and streamside landslides, installing cattle exclusion fencing, and riparian revegetation. HCRCD has also implemented a number of projects for sediment control and riparian corridor improvement practices in the Lower Eel Delta region. Over the past several years, HCRCD has also worked collaboratively to implement road decommissioning work on private lands.

HCRCD is currently the lead project proponent for the Salt River Ecosystem Restoration Project, a multi-agency, multi-disciplinary, multi-million dollar watershed scale restoration project. With its many partners, HCRCD has completed the project Environmental Impact Report, coordinated regular meetings of involved partners, provided outreach and education about the project and its benefits, assured compliance with state contracts, administered an array of subcontracts to achieve multiple objectives, accomplished regular invoicing and reporting to the state, and worked collaboratively with Department of Fish and Game, Western Rivers Conservancy, Natural Resources Conservation Service, State Coastal Conservancy, Ducks Unlimited, NOAA and others to leverage additional project funding.

2. ***Previous projects funded by FRGP:***

P0410509: Lower Eel River Basin Watershed Organizational Support Phase IV: Completed
P0310520: Salt River Restoration Feasibility Phase- Completed
P0710527: Freshwater Creek Road Decommissioning – On-going
P0710528: Elk River Road Decommissioning – Completed
P0710543: Iaqua Ranch Roads Sediment Reduction – Completed
P0810513: South Fork Elk Road Decommissioning – On-going
P0810308: Freshwater Creek – Cloney Gulch Road Decommissioning – Not started
P0910509: Refuge Creek – Ongoing

3. ***Professionals qualifications and experience:***

Glenn Hurlburt has a BS degree in Fisheries from Humboldt State University. He is a Registered Professional Engineer in Civil Engineering with 30 years experience working at Caltrans in different functional units including Surveying, Design, Seismic, Construction and Hydraulics. He designed and administered two fish passage projects completed in 2007 and 2010. Mr. Hurlburt is currently working as fish passage designer for mitigation projects associated with the Mad River Bridges project. Those mitigation projects are separate and distinct from this enhancement project. Mr. Hurlburt is working with project partners and providing his expertise in project budgeting and engineering to this collaborative fish passage enhancement project.

Margaret Tauzer of NOAA Fisheries and Mark Smelser, Engineering Geologist with DFG have also been consulted in the development of this project.

These partners have been involved with the planning of the project and will work with HCRCD to identify an expereinced contractor and develop the contract to complete the work.

4. ***Examples of similar work:***

HCRCD is partnering on this project with Caltrans engineers who have experience in working in this type of environment and with the demolition of similar structures.

Section 7: Landowners Access, Permits

1. Landowners Granting Access for Project: (Attach provisional access agreement[s] and indicate here if applicant is the landowner). Please see attached Provisional Landowner Access Agreement on pages 25-26 executed by representatives of Green Diamond, the landowner adjacent to project area.	
2. Permits:	1600
3. Lead CEQA agency:	Department of Fish and Game

4. Required mitigation:	Yes ☐ No ☒
5. Listed species:	Individual consultation or surveys will not be required for this project. All mitigation measures described in the Regional General Permit will be followed.

Section 8: Project Budget

1. Detailed Project Budget

DETAILED PROJECT BUDGET

PROJECT NAME: Mad River Weir Removal

	Hours or Units of Amount Requested	Hours or Units of Applicant Cost Share	Hours or Units of Partner Cost Share	Hourly Rate or Unit Price	Amount Requested	Applicant Amt. of Cost Share	Partner Amt. of Cost Share	Total Project Cost
A. PERSONNEL SERVICES								
Level of Staff								
Executive Director	20			$ 31.18	$ 623.60			$ 623.60
Project Manager	100			$ 27.73	$ 2,773.00			$ 2,773.00
Project Coordinator	10			$ 16.83	$ 168.30			$ 168.30
Office Manager	10			$ 15.73	$ 157.30			$ 157.30
Subtotal	140				**$ 3,722.20**			$ 3,722.20
Benefits @ 30%					$ 1,116.66			$ 1,116.66
				TOTAL PERSONNEL SERVICES	**$ 4,838.86**			$ 4,838.86

B. OPERATING EXPENSES								
Description	**# Of Units Amount Requested**	**# Of Units Applicant Cost Share**	**# Of Units of Partner Cost Share**	**Unit Price**	**Amount Requested**	**Applicant Amt. of Cost Share**	**Partner Amt. of Cost Share**	**Total Project Cost**
Subcontractors/Materials/Supplies:								$ -
								$ -
Access Rd (400 ft on gravel bar)	100 cy			$ 50.00	$ 5,000.00			$ 5,000.00
Water Diversion								$ -
Place Gravel Berm	500 cy			$ 100.00	$ 16,000.00		$ 34,000.00	$ 50,000.00
Pumps	3 ea			$ 3,000.00	$ 9,000.00			$ 9,000.00
Water Pollution Control (BMP.s)	1 ea			$ 7,000.00	$ 7,000.00			$ 7,000.00
Fish Exclusion/Removal								
Fish Screen	60 ft			$ 2.00	$ 120.00			$ 120.00
"T" Posts	60 ea			$ 10.00	$ 600.00			$ 600.00
Sand Bags	80 ea			$ 5.00	$ 400.00			$ 400.00
Electrofishing	4 passes			$ 1,500.00	$ 6,000.00			$ 6,000.00
Fish Screen Maintenance	40 hrs			$ 30.00	$ 1,200.00			$ 1,200.00
Right of Way Access (Road Improvements)	1 mi			$ 5,000.00	$ 5,000.00			$ 5,000.00
Concrete Weir Removal	3330 sf			$ 25.00	$ 33,250.00		$ 50,000.00	$ 83,250.00
Relocate Rip Rap	30 T			$ 500.00	$ 7,000.00		$ 8,000.00	$ 15,000.00
Remove Piles	64 ea			$ 1,000.00	$ 14,000.00		$ 50,000.00	$ 64,000.00
Erosion Control	.5 ac			$ 3,000.00	$ 3,000.00			$ 3,000.00
Permits	1 ea			$ 5,000.00	$ 5,000.00			$ 5,000.00
Disposal	170 cy			$ 100.00	$ 9,000.00		$ 8,000.00	$ 17,000.00
Miscellaneous Items	1 ls			$ 3,000.00	$ 3,000.00			$ 3,000.00
Labor Compliance	1			$ 2,000.00	$ 2,000.00			$ 2,000.00
				TOTAL OPERATING COST	**$ 126,570.00**	**$ -**	**$ 150,000.00**	**$ 276,570.00**

C. SUBTOTALS & ADMIN								
Subtotal A + B (Personnel + Operating)					$ 131,408.86	$ -	$ 150,000.00	$ 281,408.86
Administrative Overhead (max 15%) @		10.00%			$ 13,140.89	$ -		$ 13,140.89
D. GRANT TOTAL					**$ 144,549.75**	**$ -**	**$ 150,000.00**	**$ 294,549.75**
SOFT COST SHARE PERCENTAGE								
HARD COST SHARE PERCENTAGE	50.93%							
SOURCE AND AMOUNT OF COST SHARE:	Applicant=							
	Partners (State)=		Cal Trans				$ 150,000.00	
	Partners (Federal)=							

2. ***Budget justification:***

The budget reflects prevailing wage rates for the subcontractor and a labor compliance plan. Project proponents have been advised that the Caltrans funds typically require paying prevailing wage and documentation of compliance with certain labor regulations, so that has been factored into the budget.

3. ***Administrative overhead:***

An administrative rate of 10% is being applied to the project. HCRCD administrative overhead costs include accounting, audit, insurance, postage, utilities, and audit file storage fees.

4. ***Summary project costs***

Sources of Funds	Cash	In-kind (if applicable)	Status S,P,U (secured, pending, unknown)	Anticipated award date	Total
Fisheries Restoration Grant Program	$144,549.75				$144,549.75
Other State Agencies Name(s) and amount(s) of each:	Caltrans $150,000.00		P		$150,000.00
Federal Name(s) and amount(s) of each:	N/A				
Applicant (indicate if Federal):	N/A				
Other Sources Name(s) and amount(s) of each:	N/A				
Total	$294,549.75				$294,549.75

5. ***Is any of the cost share being used as match for other (non-FRGP) funding for the project?***

NO

6. ***In-kind Detail:***

In-kind Detail: Labor				
Type of In-kind Contribution	**Source of In-kind Contribution**	**Total Hours**	**Value of Labor ($)**	**Describe how the labor value was determined**
Volunteer labor	N/A			
Non-volunteer labor (employees whose labor is not paid for by FRGP funding)	N/A			

In-kind Detail: Materials and Equipment		
Description of In-kind Contribution (materials, equipment, etc.) ***[Add rows as needed]***	**Source of In-kind Contribution**	**Value of contribution ($)**
N/A		

7. ***Estimated Project Cost by Task***

Estimated Project Cost by Task - Project Name *MAD RIVER WEIR REMOVAL*			
Type of Work	**Amount Requested**	**Cost Share**	**Total**
Fish Screens			
Fish Passage	$144,549.00	$150,000.00	$294,549.00
Instream Flow			

Instream Habitat			
Riparian Habitat			
Upland Habitat			
Wetland Habitat			
Estuarine Habitat			
Total	**$144,549.75**	**$150,000.00**	**$294,549.00**

Section 9: Supplemental or Specialized Information

In the order listed below, please attach the following required items to the application, as appropriate to the proposal project type:

☐ 1. Intermediate Plans.

(Project Types: FP, SC)

☐ 2. Conceptual Plans.

(Project Types: HS, HU, WC)

☒ 3. Intermediate **or** Conceptual Plans.

(Project Types: HB, HI, WD)

☒ 4. Project Location Topographic Map.

(Project Types: FP, HA, HB, HI, HR, HS, HU, MD, MO, PD, PL, RE, SC, TE, WC, WD, WP)

☐ 5. Watershed (or County) Map.

(Project Types: AC, HA, HU, MD, MO, OR, PD, PI, PL, RE, TE, WD, WP)

☒ 6. Provisional Landowner Access Agreement/Provisional Resolution.

(Project Types: FP, HA, HB, HI, HR, HS, HU, MD, MO, PD, PL, RE, SC, TE, WC, WD, WP)

☒ 7. Water Right Verification

(Project Types: FP, HB, SC, WC, WD, WP)

☒ 8. Photographs

(Project Types: FP, HA, HB, HI, HR, HS, PD, RE)

☐ 9. Status Report (Existing projects only).

(Project Types: OR, PI)

☐ 10. Fence Maintenance Plan.

(Project Type: HR)

☐ 11. Riparian Restoration Plan.

(Project Type: HR)

☐ 12. Quality Assurance and Quality Control (QA/QC) Plan

(Project Type: MD, MO)

☐ 13. Existing Condition Sketch.

(Project Type: PD)

☐ 14. Narrative appraisal.

(Project Type: WP)

☐ 15. Five year Management Plan

(Project Type: RE)

☐ 16. Ownership Deed

(Project Type: HA)

☐ 17. Regional Assessor Site Specific Map

(Project Type: HA)

☐ 18. Evaluation Plan

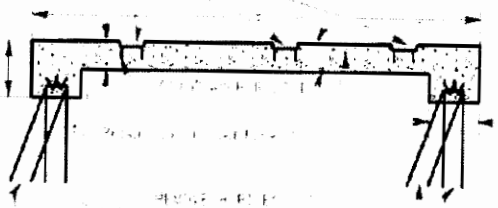
(Project Type: TE)

SECTION 9

SUPPLEMENTAL INFORMATION

- ✓ PLANS
- ✓ PRE-PROJECT LONGITUDINAL PROFILE
- ✓ VICINITY MAP
- ✓ ACCESS AGREEMENT
- ✓ WATER RIGHTS VERIFICATION
- ✓ PHOTOS

PROFILE



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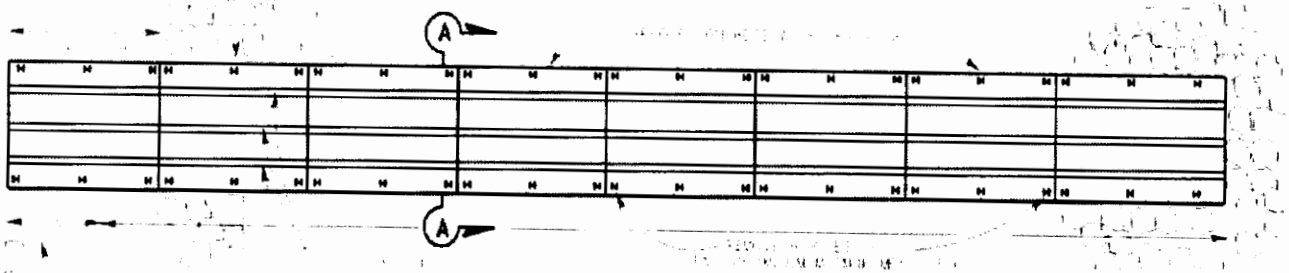

PLAN

MAD RIVER

EXISTING CONCRETE FISH WEIR

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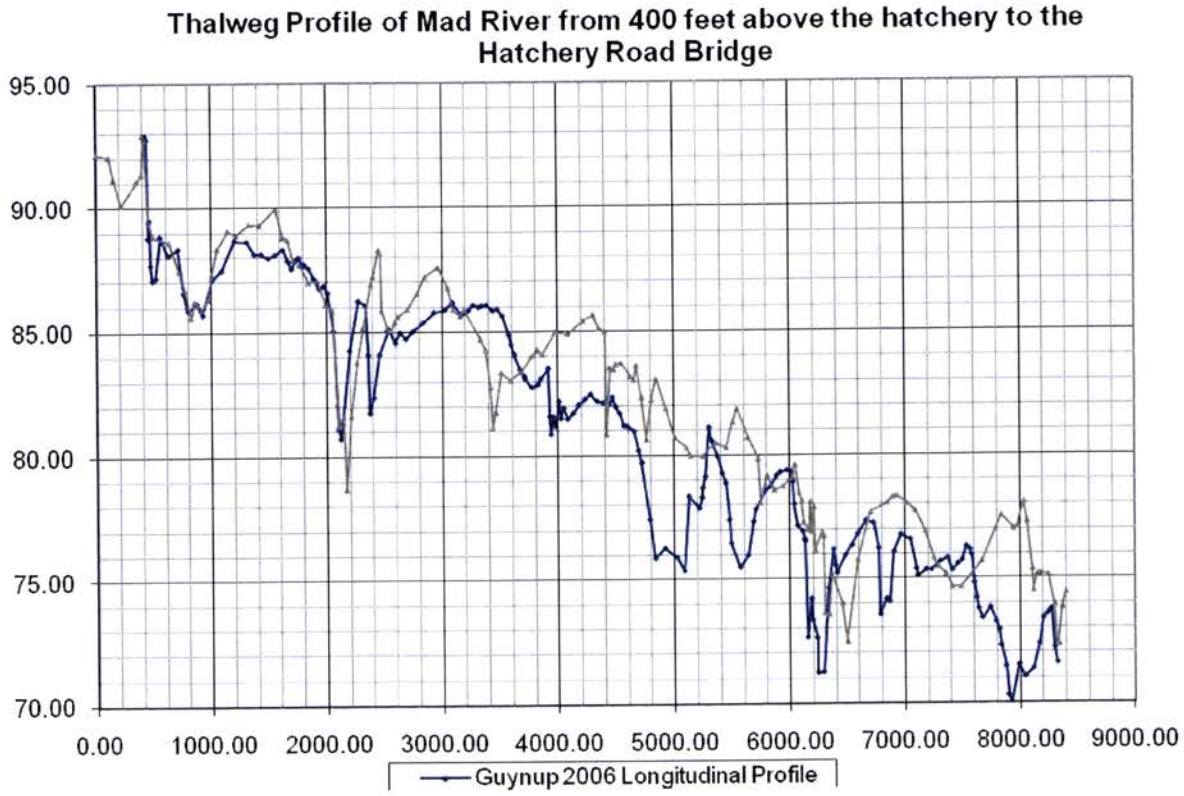
EA 000000


Thalweg Profile of Mad River from 400 feet above the hatchery to the Hatchery Road Bridge
95.00
90.00
85.00
80.00
75.00
70.00
0.00
1000.00
2000.00
3000.00
4000.00
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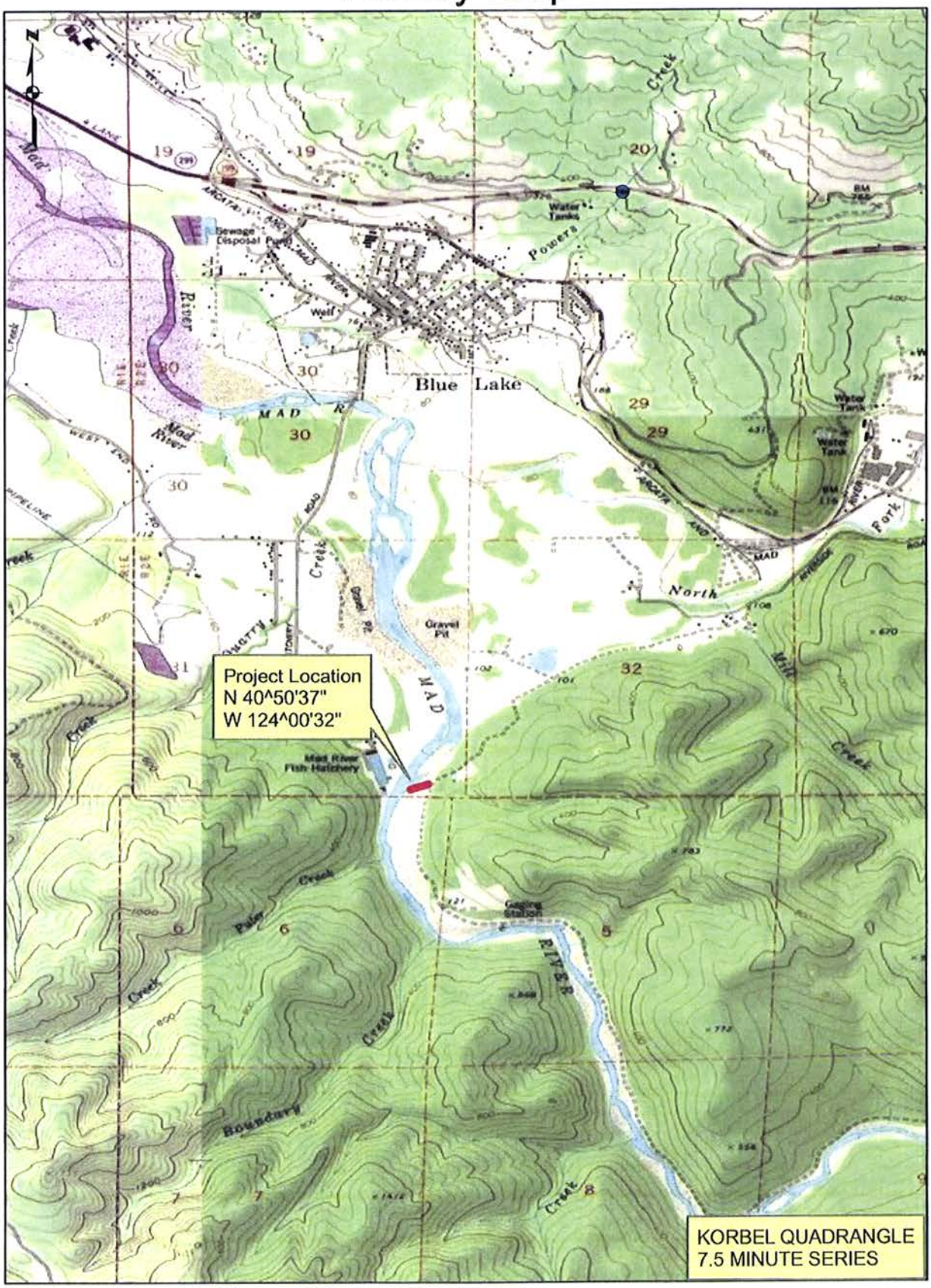
9000.00
Guynup 2006 Longitudinal Profile

Mad River Weir Removal
Humboldt County RCD

Vicinity Map



Humboldt County Resource Conservation District

5630 South Broadway, Eureka, CA 95503-6905
Phone: (707) 444-9708 Ext 115 FAX: (707) 442-7514
www.humboldtrcd.org

Provisional Landowner Access Agreement

Access/Entry Agreement

MAD RIVER WEIR REMOVAL PROJECT

I. PURPOSE

The following agreement details requirements of both the landowner and the Humboldt County Resource Conservation District regarding the proposed Mad River Fish Hatchery Weir Removal Project. Green Diamond property on the east side of Mad River will be traversed to allow ingress and egress to the project site which is located in the Mad River adjacent to the California Department of Fish and Game (DFG) Fish Hatchery near Blue Lake, California.

Green Diamond, hereinafter called "Landowner", is aware that a habitat restoration project grant application has been submitted to the California Department of Fish and Game (DFG) for funding. The project has been explained to Green Diamond representatives by the Humboldt County Resource Conservation District and/or their representatives. Green Diamond supports the goals of the project and is willing to provide access to the project site as needed for pre and post-project reviews and for construction. If the project is selected for funding, the Landowner will enter into an access agreement that will be project specific.

II. ACCESS PERMISSION

Landowner hereby grants representatives of Humboldt County Resource Conservation District, DFG, and NOAA Fisheries permission to enter onto real property owned by the Landowner to perform pre-project evaluation. Access shall be limited to those portions of Landowner's real property that must be traversed to gain access to the work site. The applicant will contact the Landowner at least 72 hours prior to any visit. At no time will DFG or NOAA Fisheries representatives access the property without the applicant unless expressively given permission by the Landowner.

III. DURATION OF NOTICE

The term of this agreement shall commence upon signing of this Agreement and terminate on March 31, 2012.

IV. LIABILITIES

Reasonable precautions will be exercised by Humboldt County Resource Conservation District to avoid damage to persons and property. Humboldt County Resource Conservation District agrees to indemnify and hold harmless the Landowner and agrees to pay for reasonable damages proximately caused by reason of the uses authorized by this agreement, except those caused by the gross negligence or intentional conduct of the Landowner.

MAD RIVER WEIR REMOVAL PROJECT – ACCESS AGREEMENT

Landowner Signature
NEAL EWALD VP GM
Box 68 KORBEL CA 95550
Landowner Address

MARCH 7, 2011
Date

707 668 4400
Landowner Phone Number

Executive Director
Humboldt County Resource Conservation District
707-444-9708 ext 117
donnahcrcd@yahoo.com

3·7·2011
Date

MAD RIVER WEIR REMOVAL PROJECT

SUPPLEMENTAL INFORMATION

WATER RIGHTS VERFIFICATION

This project will have no impact on water rights.

Photo 1. Aerial photograph of the Mad River fish hatchery and weir (Google, 2010)

Photo 2. Warning sign at the weir (January 10, 2011).

Photo 3. Mad River weir (January 10, 2011).

Photo 4. Weir and ladder connection (January 10, 2011).

Attachment C
Cooperative Agreement and Scope of Work for the removal of the Blue Lake Weir

COOPERATIVE AGREEMENT

THIS AGREEMENT, ENTERED INTO EFFECTIVE ON ___, 2012, is between the STATE OF CALIFORNIA, acting by and through its Department of Transportation, referred to herein as "CALTRANS," and the HUMBOLDT COUNTY RESOURCE CONSERVATION DISTRICT, hereinafter referred to as "HCRCD."

RECITALS

1. CALTRANS and HCRCD, hereinafter referred to as "PARTIES," pursuant to Streets and Highways Code sections 114 and/or 130, are authorized to enter into this Cooperative Agreement.

2. CALTRANS is implementing the replacement of two bridges on State Route 101 in Humboldt County, hereinafter referred to as "PROJECT." Implementation of the PROJECT has resulted in 1.03 acre of temporal impacts to stream channel habitat within the Mad River, hereinafter referred to as "IMPACTS." Stream channel habitat (i.e. below top-of-bank) is protected under the jurisdiction of the California Coastal Commission, hereinafter referred to as "CCC".

3. Pursuant to consultation in compliance with the CCC's Coastal Development Permit 1-07-013, as amended and dated (not yet issued), incorporated herein by reference and referred to hereinafter as "COASTAL PERMIT."

4. In order to satisfy in full Condition 15 of COASTAL PERMIT hereinafter referred to as "MITIGATION REQUIREMENTS," CALTRANS intends to fund the Mad River Weir Removal Project, hereinafter referred to as "MITIGATION PROJECT." MITIGATION PROJECT is summarized in Exhibit A, referred to herein as "SCOPE OF WORK," attached hereto and made part of this Agreement. MITIGATION PROJECT has been previously permitted under the California Department of Fish and Game's 2011 Fisheries Restoration Grant Program.

5. PARTIES have determined that the estimated cost to implement MITIGATION PROJECT is $249,549.75 as described in Exhibit B, attached hereto and made part of this Agreement

6. Upon receipt of funding by CALTRANS, HCRCD will fully implement MITIGATION PROJECT, as more particularly described in the SCOPE OF WORK.

7. PARTIES now define herein below the terms and conditions under which this Agreement will be implemented.

EXHIBIT NO. 8
APPLICATION NO.
1-07-013-A2
CALTRANS
DRAFT COOPERATIVE INTERAGENCY AGREEMENT
(1 of 7)

SECTION I

HCRCD AGREES:

1. All work performed by HCRCD, or performed on behalf of HCRCD, to implement MITIGATION PROJECT, shall be performed in accordance with all applicable state and federal laws, regulations, policies, procedures, and standards.

2. To obtain any and all environmental approvals and/or resource agency agreements, approvals, and/or permits required prior to implementation of MITIGATION PROJECT and for full compliance with any terms and conditions thereof.

3. To obtain any and all necessary property rights and/or rights of entry required prior to the implementation of MITIGATION PROJECT and for full compliance with any terms and conditions thereof. Said rights of entry shall also include rights for CALTRANS personnel.

4. To implement MITIGATION PROJECT, including all of the requirements and/or conditions set forth in SCOPE OF WORK.

5. To use one hundred percent (100%) of CALTRANS's funds provided pursuant to this Agreement, in order to satisfy HCRCD's obligation and responsibilities set forth in this Agreement.

6. To submit an invoice to CALTRANS, within thirty (30) days of execution of this Agreement, in the amount of $249,549.75, which amount represents CALTRANS' total financial obligation for all work to be performed pursuant to the terms of this Agreement. However, this article shall not preclude CALTRANS, at CALTRANS' sole discretion, to authorize a greater amount pursuant to an amendment to this Agreement.

7. To retain all books, documents, papers, accounting records, and other evidence pertaining to cost incurred, including support data for cost proposals, and to make such materials available at the respective offices of CALTRANS at all reasonable times for three (3) years after the termination date of this Agreement. CALTRANS, the Federal Highway Administration (FHWA), or any duly authorized representative of the Federal Government shall have access to any books, records, and documents of HCRCD that are pertinent to this Agreement for audits, examinations, excerpts, and transactions, and copies thereof shall be furnished when requested.

SECTION II

CALTRANS AGREES:

1. To deposit with HCRCD within sixty (60) days of receipt of HCRCD's billing thereof the amount of $249,549.75, which amount represents CALTRANS' total financial obligation for all work to be performed pursuant to the terms of this Agreement, provided that CALTRANS may, at its sole discretion and pursuant to an amendment to this Agreement, authorize a greater amount.

SECTION III

IT IS MUTUALLY AGREED:

1. All obligations of CALTRANS under the terms of this Agreement are subject to the appropriation of resources by the Legislature, State Budget Act authority and the allocation of funds by the California Transportation Commission (CTC).

2. All applicable laws, rules and policies relating to the use of federal or state funds shall apply, notwithstanding other provisions of this Agreement.

3. The party that discovers hazardous material (HM) will immediately notify the other party(ies) to this Agreement. HM-1 is defined as hazardous material (including but not limited to hazardous waste) that requires removal and disposal pursuant to federal or state law, whether it is disturbed by MITIGATION PROJECT or not. HM-2 is defined as hazardous material (including but not limited to hazardous waste) that may require removal and disposal pursuant to federal or state law, only if disturbed by MITIGATION PROJECT. Management activities associated with either HM-1 or HM-2 include, without limitation, any necessary manifest requirements and designation of disposal facility.

4. CALTRANS, independent of MITIGATION PROJECT, is responsible for any HM-1 found within existing State Highway System (SHS) right of way. CALTRANS will undertake HM-1 management activities with minimum impact to MITIGATION PROJECT schedule and will pay all costs associated with HM-1 management activities.

   CALTRANS has no responsibility for management activities or costs associated with HM-1 found outside the existing SHS right of way. HCRCD, independent of MITIGATION PROJECT, is responsible for any HM-1 found within MITIGATION PROJECT limits outside existing SHS right of way. HCRCD will undertake, or cause to be undertaken, HM-1 management activities with minimum impact to MITIGATION PROJECT schedule, and HCRCD will pay, or cause to be paid, all costs associated with HM-1 management activities.

5. If HM-2 is found within MITIGATION PROJECT limits, HCRCD will be responsible for the HM-2 management activities.

6. CALTRANS' acquisition of or acceptance of title to any property on which any hazardous material is found will proceed in accordance with CALTRANS's policy on such acquisition.

7. Neither CALTRANS nor any officer or employee thereof is responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by HCRCD and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon HCRCD under this Agreement. It is understood and agreed that, HCRCD and/or its agents will fully defend, indemnify, and save harmless CALTRANS and all of its officers and employees from all claims, suits, or actions of every name, kind and description brought forth under, including, but not limited to, tortious, contractual, inverse condemnation, or other theories or assertions of liability occurring by reason of anything done or omitted to be done by HCRCD and/or its agents under this Agreement.

8. Neither HCRCD nor any officer or employee thereof is responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by CALTRANS and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon CALTRANS under this Agreement. It is understood and agreed that, CALTRANS and/or its

agents will fully defend, indemnify, and save harmless HCRCD and all of its officers and employees from all claims, suits, or actions of every name, kind and description brought forth under, including, but not limited to, tortious, contractual, inverse condemnation, or other theories or assertions of liability occurring by reason of anything done or omitted to be done by CALTRANS and/or its agents under this Agreement.

9. In the event of any breach of this Agreement by either party, the other party may enforce this Agreement by any means available at law or in equity. In the event of litigation, mediation or arbitration to resolve any breach of, or dispute related to this Agreement, each party agrees to pay for their own attorneys' cost and expenses, without regard to who prevails.

10. A failure by either party to enforce any provision of this Agreement shall not be construed as a continuing waiver, or as a waiver of the right to compel enforcement of that provision.

11. This Agreement may be executed in several counterparts and all counterparts so executed shall constitute one agreement that shall be binding on all of the parties, notwithstanding that all of the parties are not a signatory to the original or the same counterpart. If any provision of this Agreement is held invalid, the other provisions shall not be affected thereby.

12. No alteration or variation of the terms of this AGREEMENT shall be valid unless made by a formal amendment executed by the parties hereto and no oral understanding or agreement not incorporated herein shall be binding on any of the parties hereto.

13. This Agreement shall terminate upon CALTRANS's written acceptance that HCRCD has satisfied MITIGATION REQUIREMENTS or December 31, 2015, whichever is earlier in time.

IN WITNESS WHEREOF, CALTRANS and HCRCD have executed this AGREEMENT by their duly authorized officers:

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

By: _____
CHARLES C. FIELDER
District 1 Director

Approved as to form and procedure:

By: _____
CASSANDRA HOFF
Attorney, Department of Transportation

Certified as to funds:

By: _____
BEVERLY CHANG
District Budget Manager

Certified as to financial terms and policies:

_____
ANGIE VILORIA
Accounting Administrator

HUMBOLDT COUNTY RESOURCE
CONSERVATION DISTRICT

By: _____
DONNA CHAMBERS
Executive Director

Approved as to form and procedure:

By: _____
HCRCD Counsel

Certified as to funds:

By: _____
HCRCD Chief Financial Officer

EXHIBIT A

SCOPE OF WORK

1. Coordinate with California Department of Fish and Game to obtain all necessary regulatory permits, agreements, consultations, and/or approvals for implementation of MITIGATION PROJECT.
2. Coordinate with California Department of Fish and Game to complete any required environmental review for MITIGATION PROJECT.
3. Conduct pre-project longitudinal profile upstream and downstream of the sill.
4. Establish pre-and-post photo monitoring sites.
5. Develop and implement plans and best management practices for fish removal, water diversion and sediment control in coordination with California Department of Fish and Game and/or National Marine Fisheries Service and in accordance with relevant guidelines and criteria promulgated by each.
6. Conduct any dewatering and fish relocation in accordance with Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual.*
7. Engage a qualified fisheries biologist for any electrofishing needed and conduct electrofishing in accordance with National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
8. Document all fish relocation data.
9. Identify and engage qualified contractor to perform demolition and removal work.
10. Break apart and remove the concrete and rebar sill from the stream channel, leaving an approximately 15 by 18 foot section on the river left bank adjacent to the existing fish ladder.
11. Haul materials to a proper disposal site.
12. Remove and haul off 48 steel "H" beam piles and 16 intermediate batter piles.
13. Remove the estimated 1,800 cubic yards of rip rap surrounding the weir and redistribute the 2 to 4 ton boulders along the left bank or use the boulders to create habitat diversity in the channel in coordination with and under direction of California Department of Fish and Game and/or National Marine Fisheries Service.
14. Seed and mulch any disturbed soils with potential for sediment delivery.
15. Document completion of the work with a final report formatted as specified in Project Evaluation and Monitoring, Vol. I, Part VIII of the *California Salmonid Stream Habitat Restoration Manual.* Include photopoints taken before and after construction. Submit report to Caltrans by December 1st of that year.
16. After the first winter post-MITIGATION PROJECT construction, perform low-flow survey to ascertain that no artificial structure (e.g. concrete, rebar) remains within the stream channel of the MITIGATION PROJECT (other than the 15 x 18 foot section adjacent to the fish ladder). Summarize low-flow survey findings in a memo format, and include photographs of site. Provide memo to CALTRANS by December 1st of that year.
17. Perform contract management, MITIGATION PROJECT coordination, overall supervision and oversight, and invoicing, budgeting, payment and reporting functions.

MITIGATION PROJECT Timeline: (assumes funding in place by December 31, 2012)

February - May 2013 contract out project; July 2013 develop access location and mobilize equipment. In-stream work window will be determined in coordination with the California Department of Fish and Game and National Marine Fisheries Service, but work will occur within the months of August and September of 2013. Post-construction low-flow survey will occur during low-flow conditions in 2014.

HCRCD will fully implement the MITIGATION PROJECT no later than December 31, 2015.

STATE's Total Funding = **$294,549.75**

CDP 1-07-013 Amendment - Attachment E-1

Location of Pier 6 relative to Mad River Top-of-Bank

Mad River Bridge Replacement

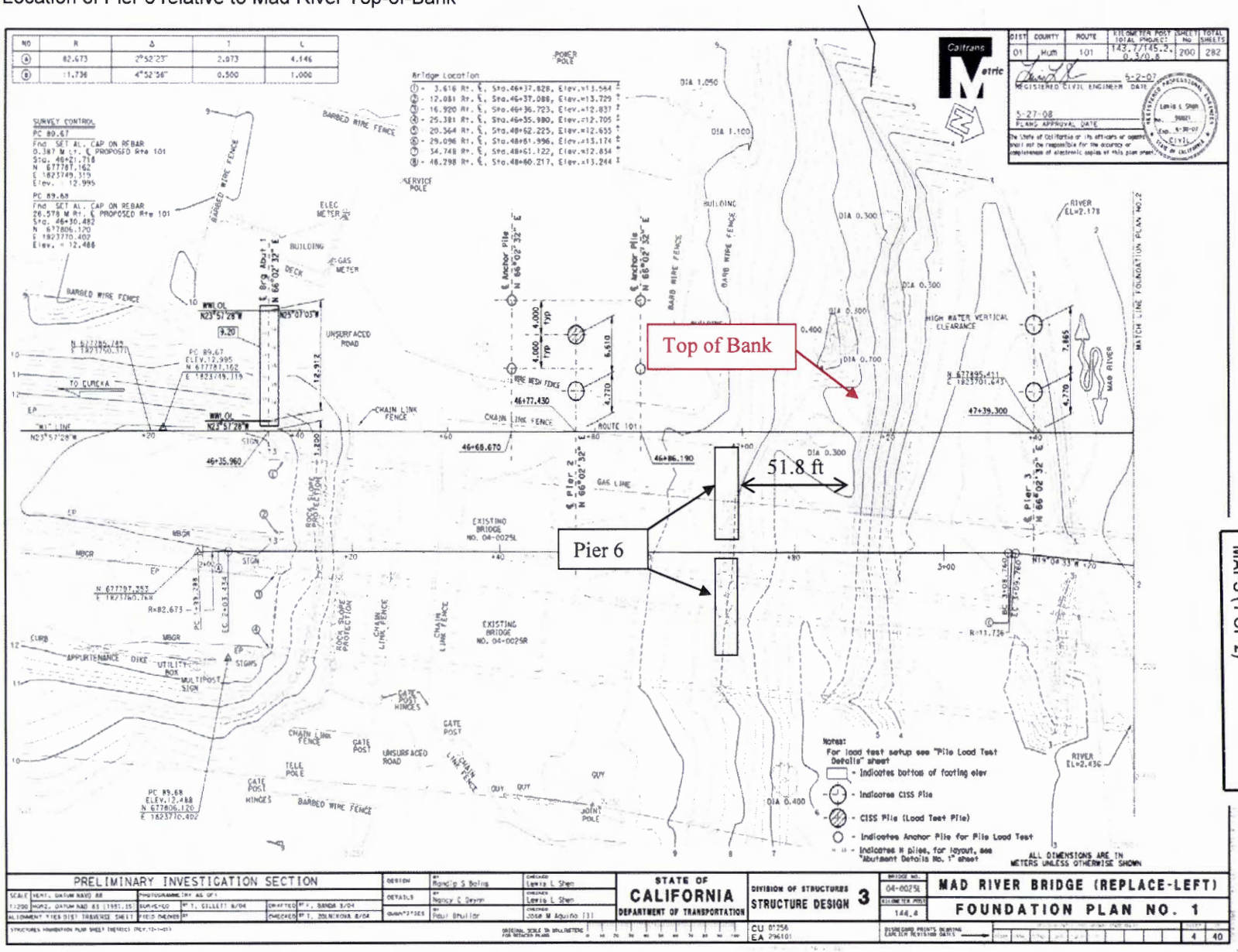
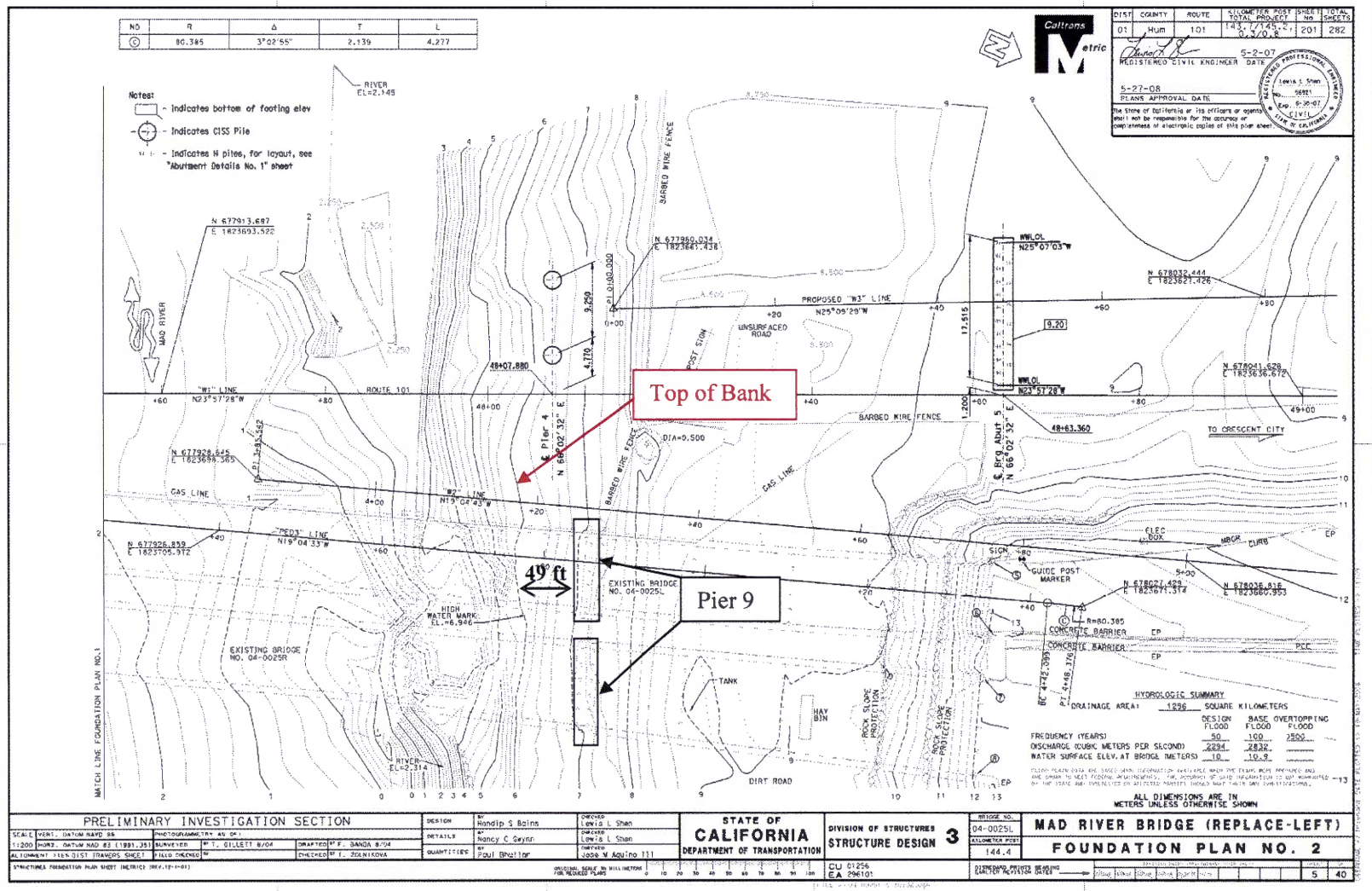


EXHIBIT NO. 9
APPLICATION NO.
1-07-013-A2
CALTRANS
PIERS 6 AND 9 LOCATION MAPS (1 OF 2)

CDP Amendment – Attachment E-2.

Mad River Bridge Replacement

Location of Pier 9 relative to Mad River Top-of-Bank



2 of 2

State of California Department of Transportation

Caltrans

Mad River Bridges Replacement Project
US 101 PM 89.1/90.8, Humboldt County

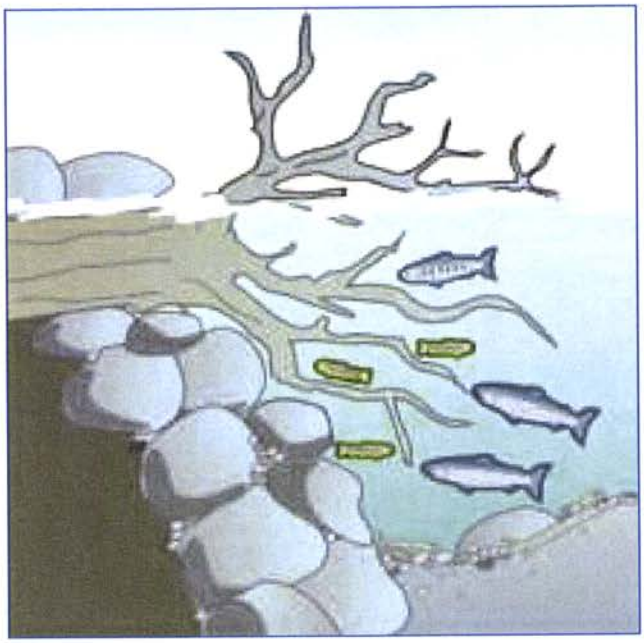


EXHIBIT NO. **10**
APPLICATION NO.
1-07-013-A2
CALTRANS
PIER 8 FISH HABITAT MITIGATION AND ENHANCEMENT PLAN (1 of 8)

Fish Habitat Retention Proposal

CDP 1-07-013 Amendment – Attachment F

Summary

The scour hole adjacent to Pier 8 (consisting of two separate footings) along the north bank of the Mad River has been identified by NOAA Fisheries Service (NMFS) and California Department of Fish and Game (CDFG) as valuable holding habitat for adult chinook salmon and summer steelhead. The removal of Pier 8 could modify hydraulic conditions that created the scour feature, thereby eliminating it. Caltrans originally agreed to create a scour feature just downstream from the new bridge adjacent to the south bank of the Mad River in order to mitigate for the loss of the scour feature at Pier 8.

However, the proposed location of the replacement scour hole is in an area of the channel where sediments are deposited rather than removed, making it less likely to be self-sustaining than the location of Pier 8. Furthermore, there are potential hydroacoustic impacts to fish and degradation of water quality associated with removal of the pier that would be difficult to avoid. For these reasons, and after discussions with both NMFS and CDFG, Caltrans now proposes to maintain the scour feature at Pier 8 by retaining the lower portion of the footings and minimizing the visual impact with large wood. Biologists from both the NMFS and CDFG support this alternative, and will be directly involved in the final field design and construction of the feature.

Proposed Change

During the summer of 2010 Caltrans began planning for the removal of the footings at Pier 8. The removal of the footings is particularly problematic because they are located within a relatively deep portion of the channel (i.e., scour hole). The full removal of the footings would require placement of a cofferdam, which would need to be dewatered in order to provide a dry work area for the demolition of concrete. However, complete dewatering for demolition may not be possible due to the depth of the water potentially causing upwelling of the river substrate.

The cofferdam would be constructed by the installation of sheet piles with a vibratory hammer. Due to the long history of scour at this location a significant amount of RSP has been placed at the base of the pier footing. The presence of this rock complicates the installation of sheet piles, causing sheets to be bent and misaligned or both as they are vibrated into the substrate. Bent or misaligned sheets compromise the integrity of the cofferdam, which would pose a significant threat to water quality should the cofferdam fail or leak during concrete demolition or footing excavation. Our experience removing other bridge piers in other locations has shown us that it is virtually impossible to completely remove the water at the bottom of the coffer dam around the piers. The water

that remains transmits high levels of noise vibrations created during demolition that are damaging to fish. It is to avoid the risk to fisheries resources and water quality associated with the full removal of footings at Pier 8 that Caltrans is proposing to leave a portion of each footing in place, and attach redwood and Douglas fir logs and root wads to their tops. The cut-off footings will maintain the scour pool that functions as fish habitat.

Comparison of impacts

Pier 8 can be modified under this plan without the need for a cofferdam. Full footing removal would require a four sided cofferdam to prevent bank failure during deep excavation and containment turbidity and debris. The proposed alternative, by contrast, would not require underwater work, eliminating the impact of the cofferdam installation and the substrate disturbance and the risk of release of contaminants from the containment structure that deep demolition work would cause. The only containment needed would be a membrane formed into a basin around the perimeter of the column. Water and cutting would be collected in the basin and pumped into a tank for disposal off site. Minor amounts of dust and cuttings generated when holes are drilled to attach wood to the concrete will be contained by catch tarps and vacuuming.

Demolition methods used for the proposed alternative would also be quite different from full demolition. Approximately 100 cubic yards of concrete would need to be removed with full demolition, requiring hours of work using a hoe ram and generating the hydroacoustic vibrations that present a risk of damage to fish. Under the proposed alternative, the column would be removed above the waterline with non-impact methods (saw cutting), producing a negligible amount of noise. Only a minor amount of concrete debris would be generated in the process of shaping and drilling the remaining concrete with pneumatic tools for fitting and attaching the woody debris.

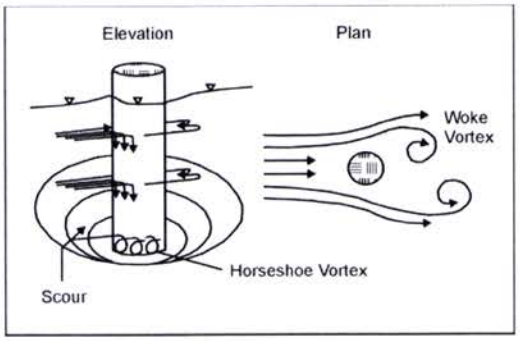
The proposed habitat structure also eliminates the need to excavate river substrate. In contrast, in order to completely remove the footings, many cubic yards of river substrate would be disturbed and removed during cleanout and removal of the concrete rubble.

Access for the construction of the habitat structure is similar to that required for footing demolition and removal.

Pier 8 Modification Design

The location of Pier 8 has caused a scour hole to be formed around its footings. When the flow of water collides with the pier column the water is forced downward (downwelling)

creating localized vertical and horizontal vortices which scour substrates around the footings. See image below.

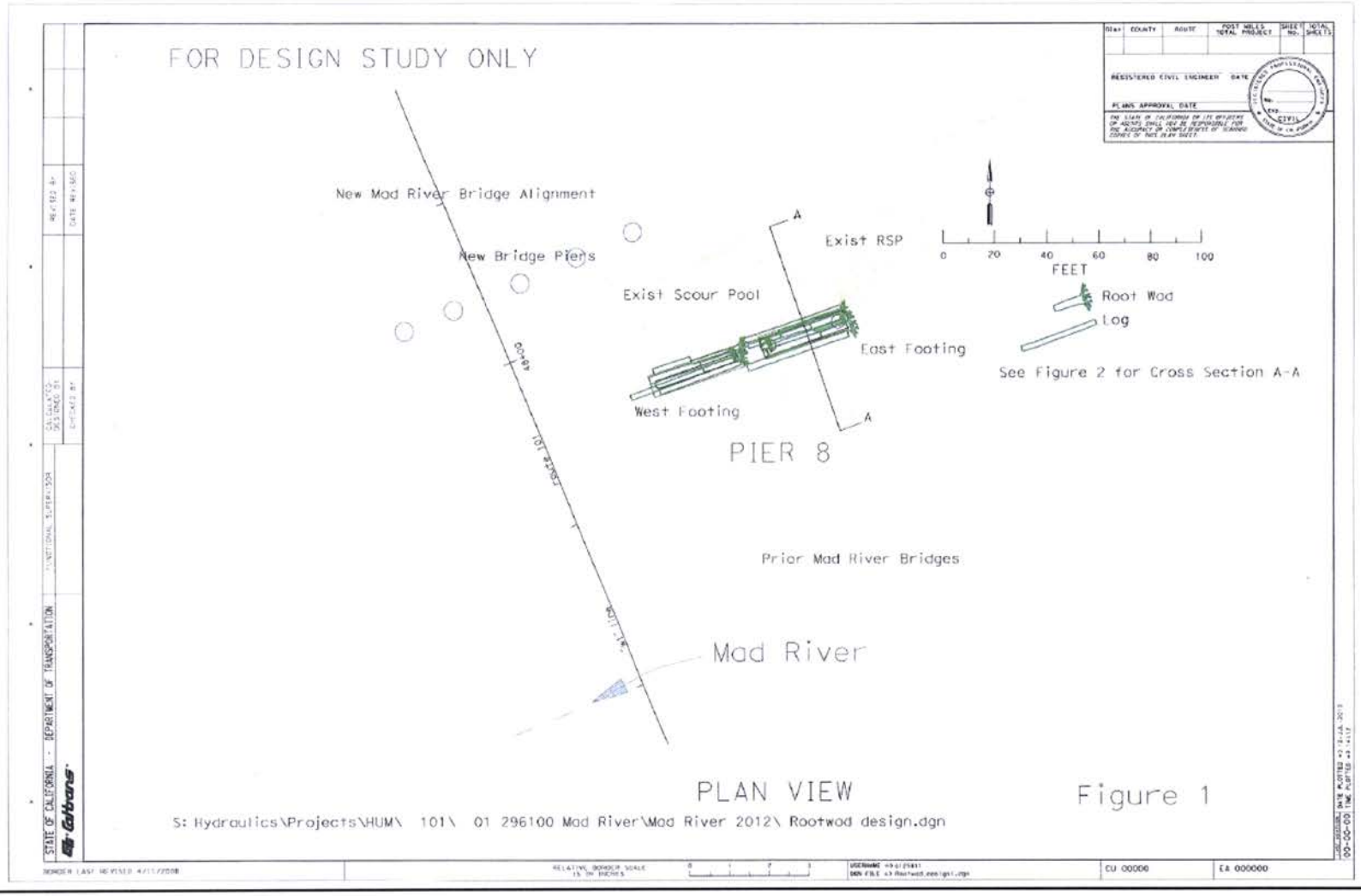


From Federal Highways Administration (FHWA) Evaluating Scour at Bridges. HEC -18. 2011

Pier 8 would be modified with the attachment of whole logs and root-wads (see Figures 1 and 2). The structure is designed to maintain the scour hole and is intended to meet the following objectives:

1. Maintain channel capacity
2. Maintain fish passage at all flow levels
3. Maintain safe passage for and enhance recreational boating opportunities
4. Maintain fish habitat
5. Be visually compatible with the natural channel
6. Be self-sustaining

Current conditions indicate root wads will likely entrain woody material, but no more that is usual. The photo below, taken March 24, 2004 of the east footing of Pier 8, shows the accumulation of woody debris on the existing pilings.


FOR DESIGN STUDY ONLY
New Mad River Bridge Alignment
New Bridge Piers
Exist Scour Pool
Exist RSP
East Footing
West Footing
A
A
PIER 8
0 20 40 60 80 100
FEET
Root Wad
Log
See Figure 2 for Cross Section A-A
Prior Mad River Bridges
Mad River
PLAN VIEW
Figure 1
S: Hydraulics\Projects\HUM\ 101\ 01 296100 Mad River\Mad River 2012\ Rootwad design.dgn
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
REGISTERED CIVIL ENGINEER
PLANS APPROVAL DATE

598

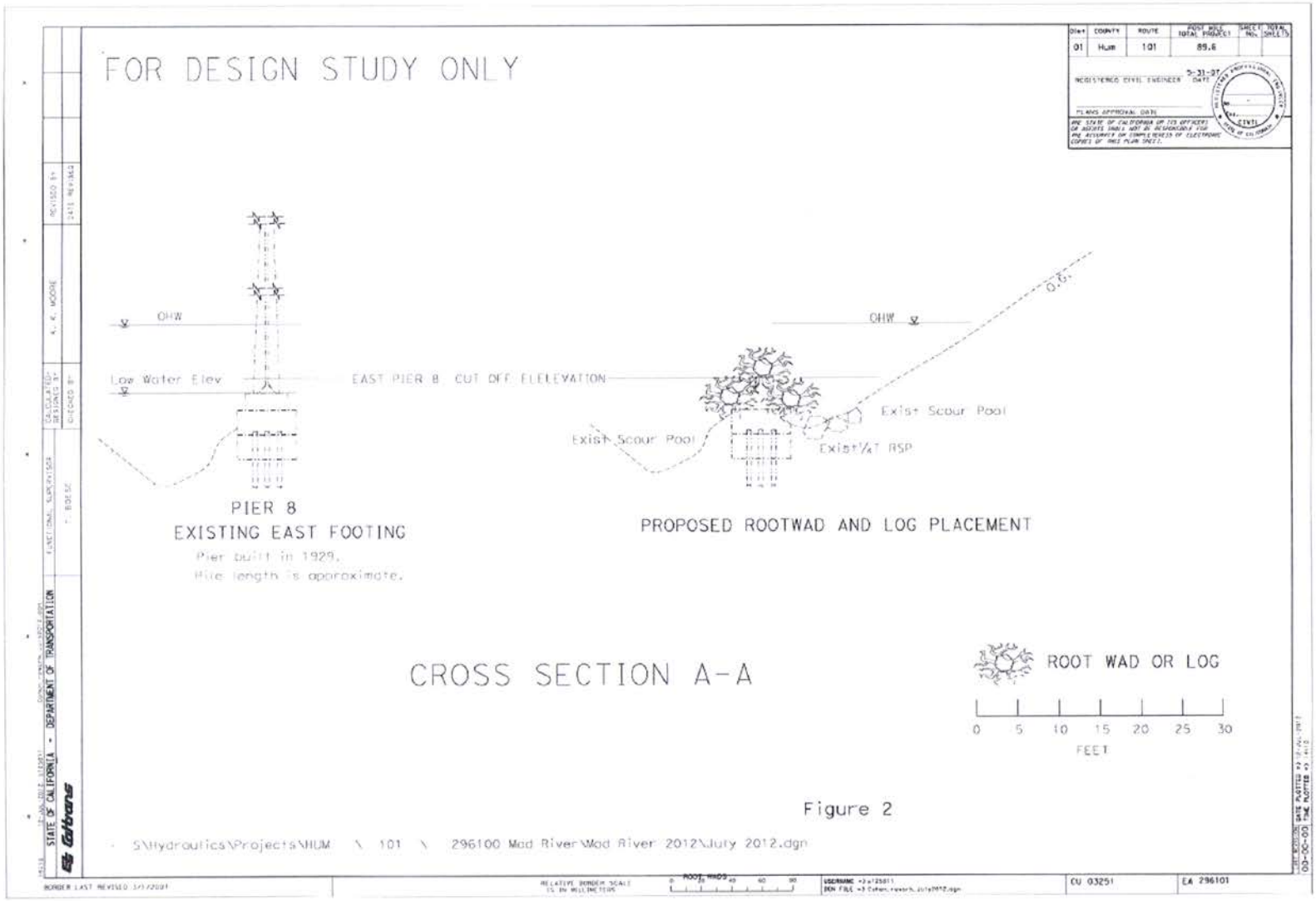

FOR DESIGN STUDY ONLY
OHW
Low Water Elev
EAST PIER 8 CUT OFF ELELEVATION
PIER 8
EXISTING EAST FOOTING
Pier built in 1929.
Pile length is approximate.
O.C.
OHW
Exist Scour Pool
Exist Scour Pool
Exist 1/4" RSP
PROPOSED ROOTWAD AND LOG PLACEMENT
CROSS SECTION A-A
ROOT WAD OR LOG
0 5 10 15 20 25 30
FEET
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
S:\Hydraulics\Projects\HUM \ 101 \ 296100 Mad River\Mad River 2012\July 2012.dgn

Figure 2

Dimensions

The modification when completed will occupy an area of approximately 1,300 ft^2, 85 feet in length, 15 feet wide. Douglas fir and redwood logs, including their root-wads, will be secured to the pier footings (see Figure 1).

Construction Summary

The fish habitat retention structure would be constructed during low-flow conditions in the late-summer or early-fall. Construction is anticipated to begin in August 2012. Access to the work will be along the north bank of the Mad River.

The work to install the fish habitat structure will include three operations: 1) access; 2) demolition and containment; and 3) construction. The Caltrans resident engineer and the following personnel will be involved in making field decisions during modification of the pier footings: Caltrans hydraulics engineer, Caltrans environmental construction liaison, the project fisheries monitor.

Work outlined in this scenario will be performed by Contract Change Order and will be paid for through a Force Account. The contractor will be reimbursed for all labor, equipment, and materials that are actually used to complete the work. This method was selected because it allows the engineers and biologists to direct the work to be done.

Access

Access to the work will be from the north bank of the Mad River on the west side of the footings. The access was constructed in the summer of 2011 to begin demolition of Pier 8.

Demolition and Containment

The Pier 8 column will be cut with a wire saw as close to the summer flow water surface elevation as possible. Additional demolition of the concrete column is necessary to stabilize the logs used in the habitat feature. This work will be done with pneumatic jack hammers.

Although there will be no in-water demolition work, above-water removal of concrete will require containment. Because the work will be accomplished almost entirely by non-impact saw cutting, all that would be needed is an impermeable membrane material (such as a rubber pond liner) secured and sealed around the column just below the saw cut elevation. The membrane will be formed into a basin around the perimeter of the

column. Water and cutting slurry generated from the concrete cutting operation will be collected in the basin from which it can pumped into a portable water tank for disposal off site.

Construction

Construction of the habitat structure will involve placing and securing large woody material on the Pier 8 footing. Mechanical anchors including bolts, cables, and steel dowels may also be used where needed to attach the woody debris to the footings. If mechanical anchors are used, they will be hidden from view as much as possible. This work will involve drilling holes into both the wood and the concrete. Best Management Practices (BMPs) such as catch tarps, and vacuuming will be used during this work but minor incidental discharges of dust and cuttings are likely to occur. It should be noted that while a coffer dam containment area could prevent these minor discharges from entering the active channel, the impact of installing the cofferdam far outweigh that benefit.

Post-Construction Monitoring

Baseline information regarding the width and average and maximum depths of the existing scour hole will be recorded. The scour feature will be monitored on an annual basis for five years after construction. Measurements of the width and depth of the scour feature will be taken to ensure that it is self-sustaining. Structural components of the habitat feature (i.e., logs and root wads) will also be inspected for stability to ensure that the structure is holding up to seasonal high flows. Remedial action will be taken if monitoring shows it is needed.

Permanent photo locations upstream, downstream and from the south bank will be used to document the stability of the structure. Annual reports will be sent to requesting agencies by February 1 of each year for five years following completion.

Discussion

Retention of the footings at Pier 8 would eliminate the hydroacoustic and water quality impacts associated with their removal, as well as maintain fish habitat. Caltrans will maintain responsibility for all structural components for the life of the structure. If, after that period, the structure ceases to provide any fish or wildlife benefit, or becomes a hazard, Caltrans will undertake a project to remove the footings in consultation with NMFS, CDFG and the Coastal Commission.