FOR CONTRACT NO.: **01-412214**

INFORMATION HANDOUT

WATER QUALITY

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
NORTH COAST REGION

PERMITS

UNITED STATES ARMY CORPS OF ENGINEERS
NON-REPORTING NATIONWIDE 404 PERMIT

AGREEMENTS

CALIFORNIA DEPARTMENT OF FISH AND GAME
NOTIFICATION NO. 1600-2012-0116-R1

U. S. DEPARTMENT OF THE ARMY, SAN FRANSCISCO DISTRICT CORPS OF ENGINEERS (Biological Opinion)

ROUTE: 01-Men-101-R84.0

December 21, 2012

In the Matter of

Water Quality Certification

for the

California Department of Transportation
Highway 101 – Rattlesnake Creek Culvert Repair Project
WDID No. 1B03169WNME

APPLICANT:	California Department of Transportation
RECEIVING WATER:	Streams and riparian areas
HYDROLOGIC AREA:	Eel River Hydrologic Unit No. 111.00
COUNTY:	Mendocino
FILE NAME:	CDOT Highway 101 – Rattlesnake Creek Culvert Repair Project WDID No. 1B03169WNME

BY THE EXECUTIVE OFFICER:

1. On May 9, 2012, the North Coast Regional Water Quality Control Board (Regional Water Board) received an application from the California Department of Transportation (Caltrans), requesting Federal Clean Water Act (CWA), section 401, Water Quality Certification for activities related to the proposed Highway 101 – Rattlesnake Creek Culvert Repair Project (project). The proposed project will cause disturbances to waters of the United States (U.S.) and waters of the State associated with the Eel River Hydrologic Unit No. 111.00 (Benbow Hydrologic Sub-Area 111.32). The Regional Water Board provided public notice of the application pursuant to title 23, California Code of Regulations, section 3858 on November 20, 2012, and posted information describing the project on the Regional Water Board's website. No comments were received.

2. The proposed project is located on Highway 101 at post mile (PM) 84.0, in Mendocino County. The purpose of the project is to repair and lower the elevation of the bottom of the southern barrel in a 300 foot long double barrel culvert. The scope of work includes

repairing the outlet apron, repairing and elevating the outlet weir, and reinforcing the culvert inlet. In addition, the repairs to the culvert and weir include design elements to improve passage conditions at the site for adult and juvenile salmonids.

3. Caltrans has determined that the proposed project will result in 0.20 acres (8,950 feet^2) of temporary impacts to waters of the U.S. (Rattlesnake Creek), 0.04 (2,500 feet^2) of new permanent impact and an additional 0.023 acres (1,100 feet^2) of temporary impacts to waters of the State (riparian areas). Caltrans proposes to replace the riparian vegetation in kind after the completion of the project.

4. The proposed project will be conducted in summer months during low flow conditions between June 15th and October 15th. The project will result in less than one acre disturbed soil area. Caltrans will utilize Best Management Practices (BMPs) to provide erosion control and pollution prevention throughout the project area during construction. All graded areas within the project affected by the construction activities will be appropriately stabilized and/or replanted with appropriate native vegetation.

5. Caltrans has received authorization from the U.S. Army Corps of Engineers to perform the project under their Nationwide Permits No. 27 (aquatic habitat restoration projects) pursuant to Clean Water Act, section 404. Caltrans has also applied for a California Department of Fish and Game 1602 Streambed Alteration Agreement. On June 19, 2003, Caltrans, acting as lead agency, certified a Mitigated Negative Declaration for the proposed project in order to comply with the California Environmental Quality Act (CEQA) (State Clearing House No. 20120102048). The Regional Water Board has considered the environmental documentation, including any proposed changes, and incorporates any avoidance, minimization, and mitigation measures into the project as a condition of approval to avoid significant affects to the environment.

6. The Eel River watershed is listed on the Clean Water Act section 303(d) list as impaired for sediment and temperature. In 1999, the U.S. EPA established sediment and temperature total maximum daily loads (TMDLs) for the South Fork Eel River Watershed. Roads are a significant source of sediment in the watershed (directly, from surface erosion, and, indirectly, by triggering landslides). In addition, activities that impact the riparian zone and reduce riparian vegetation are identified as sources contributing to increased stream temperatures. A focus on measures to reduce sediment discharges to surface waters from roads in the watershed, and measures to avoid, minimize, and mitigate impacts on riparian zones is essential for achieving TMDL, Basin Plan, and CEQA compliance.

7. Pursuant to Regional Water Board Resolution R1-2004-0087, *Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters within the North Coast Region* (Sediment TMDL Implementation Policy), the Executive Officer is directed to "rely on the use of all available authorities, including existing regulatory

standards, and permitting and enforcement tools to more effectively and efficaciously pursue compliance with sediment-related standards by all dischargers of sediment waste."

8. Pursuant to Regional Water Board Resolution R1-2012-0013, *Implementation of the Water Quality Objective for Temperature in the North Coast Region* (Temperature Implementation Policy), Regional Water Board staff is directed to address factors that contribute to elevated water temperatures when issuing 401 certifications or WDRs (permits) for individual projects. Any permit should be consistent with the assumptions and requirements of temperature shade load allocations in areas subject to existing temperature TMDLs, including EPA- established temperature TMDLs, as appropriate. If applicable, any permit or order should implement similar shade controls in areas listed as impaired for temperature but lacking a TMDL and region-wide as appropriate and necessary to prevent future impairments and to comply with the intrastate temperature objective.

9. The federal antidegradation policy requires that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. This Order is consistent with applicable federal and State antidegradation policies, as it does not authorize the discharge of increased concentrations of pollutants or increased volumes of treated wastewater, and does not otherwise authorize degradation of the waters affected by this project.

10. To ensure compliance with Water Quality Objectives within the Basin Plan, adequate wetland and riparian protection and stringent requirements to avoid, minimize, and mitigate the sediment and temperature impacts associated with the proposed project will be incorporated as enforceable conditions in this Water Quality Certification. In addition, Caltrans will be required to conduct surface water monitoring, sampling, and analysis in accordance with the conditions of the Water Quality Certification. The surface water data collected will be utilized to assess the adequacy of BMPs during construction as well as site specific mitigation measures proposed to minimize impacts to the environment, including sediment and temperature impacts.

11. The South Fork Eel River from the middle of Section 29, T23N, R16W (approximately one-half mile upstream of Rattlesnake Creek confluence) to the confluence with the Eel River is designated as a recreational reach under both federal and California Wild and Scenic Rivers Acts. These acts require preservation of the river's free-flowing condition; anadromous and resident fisheries; and outstanding geologic, wildlife, flora

and fauna, historic and cultural, visual, recreational, and water quality values. Recreational segments are generally developed, with parallel roads, bridges, and structures. All activities normally associated with public lands are permitted subject to the protection of free flowing conditions and outstanding values. Implementation of the Project would not affect the free-flowing condition of the South Fork Eel River and would not affect the extraordinary values for which the segment was listed. The project will have minor effects on the tributaries to the Eel River; however, there will be no modifications or structures placed within the Eel River itself.

12. This discharge is also regulated under State Water Resources Control Board Order No. 2003-0017-DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification," which requires compliance with all conditions of this certification.

Receiving Waters:	Streams and riparian areas Eel River Hydrologic Unit No.111.00 Benbow Hydrologic Sub-Area 111.32
Filled and/or Excavated Areas:	Permanent – streams (Waters of U.S.): 0.16 acres (6,950 feet^2) Includes 0.1 acres (4,431 feet^2) of existing concrete structure Temporary – streams (Waters of U.S.): 0.04 acres (2,000 feet^2) Temporary – riparian (Waters of State): 0.02 acres (960 feet^2)
Total Linear Impacts:	Permanent – streams (Waters of U.S.): 296 linear feet Temporary – streams (Waters of U.S.): 400 linear feet Temporary – riparian (Waters of State): 80 linear feet
Dredge Volume :	None
Fill Volume:	Permanent –streams (Waters of the U.S.): 257 cubic yards Temporary – streams (Waters of U.S.): 135 cubic yards Temporary – riparian (Waters of State): 40 cubic yards
Latitude/Longitude:	39.7500 N / 123.500 W

Accordingly, based on its independent review of the record, the Regional Water Board certifies that the Caltrans – Highway 101 Rattlesnake Culvert Repair Project (WDID No. 1B03169WNME), as described in the application will comply with sections 301, 302, 303, 306 and 307 of the Clean Water Act, and with applicable provisions of state law, provided that the Caltrans complies with the following terms and conditions:

All conditions of this order apply to Caltrans (and all its employees) and all contractors (and their employees), sub-contractors (and their employees), and any other entity or agency that performs activities or work on the project (including the off-site mitigation lands) as related to this Water Quality Certification.

1. This certification action is subject to modification or revocation upon administrative or judicial review; including review and amendment pursuant to Water Code section 13330 and title 23, California Code of Regulations, section 3867.

2. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to title 23, California Code of Regulations, section 3855, subdivision (b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. The validity this certification is conditioned upon total payment of any fee required under title 23, California Code of Regulations, section 3833, and owed by the applicant.

4. All conditions required by this Order shall be included in the Plans and Specifications prepared by Caltrans for the Contractor. In addition, Caltrans shall require compliance with all conditions included in this Order in the bid contract for this project.

5. Caltrans shall provide a copy of this order and State Water Resources Control Board (SWRCB) Order No. 2003-0017-DWQ (web link referenced below) to the contractor and all subcontractors conducting the work, and require that copies remain in their possession at the work site. Caltrans shall be responsible for work conducted by its contractor or subcontractors.

6. The Regional Water Board shall be notified in writing each year at least five working days (working days are Monday – Friday) prior to the commencement of ground disturbing activities, water diversion activities or construction activities with details regarding the construction schedule, in order to allow Regional Water Board staff to be present on-site during installation and removal activities, and to answer any public inquiries that may arise regarding the project. Caltrans shall provide Regional Water Board staff access to the project site to document compliance with this order.

7. The Resident Engineer (or appropriately authorized agent) shall hold on-site water quality permit compliance meetings (similar to tailgate safety meetings) to discuss permit compliance, including instructions on how to avoid violations and procedures for reporting violations. The meetings shall be held at least every other week, before forecasted storm events, and when a new contractor or subcontractor arrives to begin

work at the site. The contractors, subcontractors and their employees, as well as any inspectors or monitors assigned to the project, shall be present at the meetings. Caltrans shall maintain dated sign-in sheets for attendees at these meetings, and shall make them available to the Regional Water Board on request.

8. All activities and best management practices (BMPs) shall be implemented according to the submitted application and the conditions in this certification. BMPs for erosion, sediment, turbidity and pollutant control shall be implemented and in place at commencement of, during, and after any ground clearing activities, construction activities, or any other project activities that could result in erosion, sediment, or other pollutant discharges to waters of the State. The BMPs shall be implemented in accordance with the Caltrans Construction Site Best Management Practice Manual (CCSBMPM) and all contractors and subcontractors shall comply with the CCSBMPM. In addition, BMPs for erosion and sediment control shall be utilized year round, regardless of season or time of year. Caltrans shall stage erosion and sediment control materials at the work site. All BMPs shall be installed properly and in accordance with the manufacturer's specifications. If the project Resident Engineer elects to install alternative BMPs for use on the project, Caltrans shall submit a proposal to Regional Water Board staff for review and concurrence.

9. Caltrans shall prioritize the use of wildlife-friendly biodegradable (not photo-degradable) erosion control products wherever feasible. Caltrans shall not use or allow the use of erosion control products that contain synthetic netting for permanent erosion control (i.e. erosion control materials to be left in place for two years or after the completion date of the project). If Caltrans finds that erosion control netting or products have entrapped or harmed wildlife, personnel shall remove the netting or product and replace it with wildlife-friendly biodegradable products. Caltrans shall not use or allow the use of erosion control products that contain synthetic materials within waters of the United States or waters of the State at any time. Caltrans shall request approval from the Regional Water Board if an exception from this requirement is needed for a specific location.

10. Work in flowing or standing surface waters, unless otherwise proposed in the project description and approved by the Regional Water Board, is prohibited. If construction dewatering of groundwater is found to be necessary, Caltrans shall use a method of water disposal other than disposal to surface waters (such as land disposal) or Caltrans shall apply for coverage under the Low Threat Discharge Permit or an individual National Pollutant Discharge Elimination System (NPDES) Permit and receive notification of coverage to discharge to surface waters, prior to the discharge.

11. Caltrans is prohibited from discharging waste to waters of the State, unless explicitly authorized by this Order. For example, no debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or concrete washings, welding slag, oil or petroleum products, or other organic or earthen material from any construction or associated

activity of whatever nature, other than that authorized by this Order, shall be allowed to enter into waters of the State. In addition, none of the materials listed above shall be placed within 150 linear feet of waters of the State or where the materials may be washed by rainfall into waters of the State.

12. Caltrans shall submit, subject to review and concurrence by the Regional Water Board staff, a dewatering and/or diversion plan that appropriately describe the dewatered or diverted areas and how those areas will be handled during construction. The diversion/dewatering plans shall be submitted no later than 30 days prior to conducting the proposed activity. Information submitted shall include the area or work to be diverted or dewatered and method of the proposed activity. All diversion or dewatering activities shall be designed to minimize the impact to waters of the State and maintain natural flows upstream and downstream. All dewatering or diversion structures shall be installed in a manner that does not cause sedimentation, siltation or erosion upstream or downstream. All dewatering or diversion structures shall be removed immediately upon completion of project activities. This Order does not authorize Caltrans to draft surface waters.

13. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall be outside of waters of the U.S. and the State. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall not result in a discharge or a threatened discharge to any waters of the State or the U.S. At no time shall Caltrans use any vehicle or equipment which leaks any substance that may impact water quality.

14. If, at any time, an unauthorized discharge to surface water (including wetlands, rivers or streams) occurs, or any water quality problem arises, the associated project activities shall cease immediately until adequate BMPs are implemented. The Regional Water Board shall be notified promptly and in no case more than 24 hours after the unauthorized discharge or water quality problem arises.

15. Caltrans and their contractor are not authorized to discharge wastewater (e.g., water that has contacted uncured concrete or cement, or asphalt) to surface waters, ground waters, or land. Wastewater may only be disposed of to a sanitary waste water collection system/facility (with authorization from the facility's owner or operator) or a properly-licensed disposal or reuse facility. If Caltrans or their contractor proposes an alternate disposal method, Caltrans or their contractor shall request authorization from the Regional Water Board. Plans to reuse or recycle wastewater require written approval from Regional Water Board staff.

16. Caltrans shall provide analysis and verification that placing non-hazardous waste or inert materials (which may include discarded product or recycled materials) will not result in degradation of water quality, human health, or the environment. All project-generated waste shall be handled, transported, and disposed in strict compliance with

all applicable State and Federal laws and regulations. When operations are complete, any excess material or debris shall be removed from the work area and disposed of properly and in accordance with the Special Provisions for the project and/or Standard Specification 7-1.13, Disposal of Material Outside the Highway Right of Way. Within 30 days of disposing of materials off-site Caltrans shall submit to the Regional Water Board the satisfactory evidence provided to the Caltrans Engineer by the Contractor referenced in Standard Specification 7-1.13. In accordance with State and Federal laws and regulations, Caltrans is liable and responsible for the proper disposal of waste generated by their project.

17. All imported fill material shall be clean and free of pollutants. All fill material shall be imported from a source that has the appropriate environmental clearances and permits. The reuse of low-level contaminated solids as fill on-site shall be performed in accordance with all State and Federal policies and established guidelines and must be submitted to the Regional Water Board for review and concurrence.

18. Only clean washed spawning gravel (0.25" – 6") with a cleanliness value of at least 85, using the Cleanness Value Test Method for California Test No. 227 will be placed in the streams. Gravel bag fabric shall be nonwoven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements:
    - Mass per unit area, grams per square meter, min ASTM Designation: D 5261 – 270
    - Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632* 0.89
    - Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D4355, xenon arc lamp method 70 or appropriate test method for specific polymer
    - Gravel bags shall be between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width.
    - Yarn used in construction of the gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color. Gravel shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 13 kg and 22 kg in mass.
    - Caltrans shall request approval from the Regional Water Board if an exception from this requirement is needed for a specific location.

19. In order to demonstrate compliance with receiving water limitations and water quality objectives surface water monitoring shall be conducted. When conducting surface water monitoring Caltrans shall establish discharge, upstream (background) and downstream monitoring locations to demonstrate compliance with applicable water quality objectives. The downstream location shall be no more than 100 feet from the discharge location.

A. Surface water monitoring shall be conducted whenever a project activity is conducted within waters of the State (e.g. including but not limited to the installation, use or removal of stream diversions, pile installations, and cofferdams). Measurements and observations shall be collected from each sampling location four times daily.

B. Surface water monitoring shall be conducted immediately when any project activity has mobilized sediment or other pollutants resulting in a discharge and/or has the potential to alter background conditions within waters of the State (including but not limited to storm water runoff, concrete discharges, leaks, and spills.). The continuing frequency is contingent upon results of field measurements and applicable water quality objectives.

Surface water monitoring field measurements shall be taken for pH and turbidity. In addition, visual observations of each location shall be documented daily for each established monitoring location and monitoring event and include the estimate of flow, appearance of the discharge including color, floating or suspended matter or debris, appearance of the receiving water at the point of discharge (occurrence of erosion and scouring, turbidity, solids deposition, unusual aquatic growth, etc), and observations about the receiving water, such as the presence of aquatic life. If a project activity has reached a steady state and is stable then Caltrans may request a temporary reprieve from this condition from the Regional Water Board until an activity or discharge triggers the monitoring again.

20. Whenever, as a result of project activities (in-stream work or a discharge to receiving waters), downstream measurements exceed any water quality objective 100 feet downstream of the source(s) all necessary steps shall be taken to install, repair, and/or modify BMPs to control the source(s). The frequency of surface water monitoring shall increase to hourly and shall continue until measurements demonstrate compliance with water quality objectives for each parameter listed below and measured levels are no longer increasing as a result of project activities. In addition, the overall distance from the source(s) to the downstream extent of the exceedence of water quality objectives shall be measured.

Monitoring results shall be reported to appropriate Regional Water Board staff person by telephone within 24 hours of taking any measurements that exceed the limits detailed below (only report turbidity if it is higher than 20 NTU).

pH	<6.5 or >8.5 (any changes >0.5 units)
turbidity	20% above natural background

Monitoring results and upstream and downstream pictures within the working and/or disturbed area and discharge location shall be taken and submitted to the appropriate Regional Water Board staff within 24 hours of the incident. All other monitoring data

documenting compliance with water quality objectives shall be reported on a monthly basis and is due to the Regional Water Board by the 15th of the following month.

21. Post Storm Event Reports:

- Once the project has begun ground-disturbing activities, and subsequent to a qualifying rain event that exceeds 0.5-inches of precipitation, Caltrans shall inspect the project within 24 hours and take photos of all discharge locations, and disturbed areas, including all excess materials disposal areas, in order to demonstrate that erosion control and revegetation measures are present and have been installed appropriately and are functioning effectively. A brief report containing these photos, corrective actions (if necessary), and any surface water monitoring results collected pursuant to this Order or the Construction General Permit (SWRCB Order 2009-009 DWQ) shall be submitted to the Regional Water Board within 10 days after the end of the qualifying rain event. Inspections are required daily during extended rain events. Once the project site is stable, in a steady state (channel- ground- or vegetation-disturbing activities have ceased), and has demonstrated sufficient and effective erosion and sediment control, Caltrans may request a reprieve from this condition from the Regional Water Board. At least one post-construction inspection is required to demonstrate sufficient and effective erosion and sediment control and compliance with the Basin Plan.

- Rain events are periods of precipitation that that are separated by more than 48-hours of dry weather. Rainfall amounts may be taken from on-site rain gauges, from the nearest California Data Exchange Center station (http://cdec.water.ca.gov), or by a custom method or station approved by Regional Water Board staff.

22. Subsequent to the completion of the project Caltrans shall implement revegetation actions. At least 90 days prior to conducting any channel- ground- or vegetation-disturbing activities, Caltrans shall provide a riparian revegetation plan to the Executive Officer of the Regional Water Board for review, consideration, and concurrence. The plan shall include proposed revegetation actions with the appropriate native vegetation to achieve the maximum site potential shade and replacement or improvement of the existing biotic structure. The plan shall include a time frame for implementation, success criteria, and monitoring period. The revegetation actions shall be implemented the first fall immediately after project completion and no later than December 31, 2013.

23. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under applicable state or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation

constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Order. In response to a suspected violation of any condition of this certification, the State Water Board may require the holder of any federal permit or license subject to this Order to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In response to any violation of the conditions of this Order, the Regional Water Board may add to or modify the conditions of this Order as appropriate to ensure compliance.

24. The Regional Water Board may add to or modify the conditions of this Order, as appropriate, to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act.

25. This Order is not transferable. In the event of any change in control of ownership of land presently owned or controlled by the Applicant, the Applicant shall notify the successor-in-interest of the existence of this Order by letter and shall forward a copy of the letter to the Regional Water Board. The successor-in-interest must send to the Regional Water Board Executive Officer a written request for transfer of this Order to discharge dredged or fill material under this Order. The request must contain the following:

    a. requesting entity's full legal name
    b. the state of incorporation, if a corporation
    c. address and phone number of contact person
    d. description of any changes to the project or confirmation that the successor-in-interest intends to implement the project as described in this Order.

26. Except as may be modified by any preceding conditions, all certification actions are contingent on: a) the discharge being limited, and all proposed revegetation, avoidance, minimization, and mitigation measures being completed, in strict compliance with Caltrans' project description and CEQA documentation, as approved herein, b) Caltrans shall construct the project in accordance with the project described in the application and the findings above, and c) compliance with all applicable water quality requirements and water quality control plans including the requirements of the Water Quality Control Plan for the North Coast Region (Basin Plan), and amendments thereto. Any change in the design or implementation of the project that would have a significant or material effect on the findings, conclusions, or conditions of this Order must be submitted to the Executive Officer of the Regional Water Board for prior review, consideration, and written concurrence. If the Regional Water Board is not notified of a significant alteration to the project, it will be considered a violation of this Order, and Caltrans may be subject to Regional Water Board enforcement actions.

27. The authorization of this certification for any dredge and fill activities expires on December 21, 2017. Conditions and monitoring requirements outlined in this Order are not subject to the expiration date outlined above, and remain in full effect and are enforceable.

28. Please contact our staff Environmental Specialist / Caltrans Liaison Jeremiah Puget at (707) 576-2835 or jeremiah.puget@waterboards.ca.gov if you have any questions.

Original Signed By

_____

Matthias St. John
Executive Officer

121221_JJP_ef_CDOT_Hwy101_RattlesnakeCulvert_401Cert

Web link:	State Water Resources Control Board Order No. 2003-0017 -DWQ, General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification can be found at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0017.pdf
Original to:	Ms. Lisa Embree – North Region Environmental, 1656 Union Street, Eureka, CA 95502-3700
Copies to:	Mr. Dana York, Caltrans – North Region Environmental, 1656 Union Street, Eureka, CA 95502-3700
Electronic Copies to:	U.S. Army Corps of Engineers, Regulatory Functions - San Francisco District

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO
ATTENTION OF

JUL 27 2012

Regulatory Division

SUBJECT: File Number 2002-269110N

Mr. Steve Blair
California Department of Transportation, District 1
1656 Union Street
Eureka, California 95501

Dear Mr. Blair:

This correspondence is in reference to your submittal of May 4, 2012 concerning Department of the Army (DA) authorization to improve fish passage in Rattlesnake Creek located on State Route 101, Post Mile 84, approximately 7 miles south of the town of Leggett in Mendocino County, California (39.82782, -123.60424).

Work within U.S. Army Corps of Engineers' (Corps) jurisdiction will include completing repairs and improvements to the south barrel of the culvert, outlet apron, and outlet weir. This will require 1) repair, lower elevation, and remove the bottom of the south barrel of the culvert; 2) repair and repave the outlet apron; 3) repair and elevate the outlet weir; 4) reinforce the culvert entrance; dewater and conduct fish relocation within the construction limits; and 5) complete work necessary for site access. Work will require temporary placement of 134 cubic yards of fill within 1,998 square feet of Rattlesnake Creek. Work will also require permanent placement of 258 cubic yards of fill within 6,948 square feet of Rattlesnake Creek. All work shall be completed in accordance with the plans and drawings titled "*USACE File #2002-269110, Rattlesnake Creek Fish Passage Culvert Repair, July 11, 2012, Figures 1 to 3*" (enclosure 1).

Section 404 of the Clean Water Act (CWA) generally regulates the discharge of dredged or fill material below the plane of ordinary high water in non-tidal waters of the United States, below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters. Section 10 of the Rivers and Harbors Act generally regulates construction of structures and work, including excavation, dredging, and discharges of dredged or fill material, occurring below the plane of mean high water in tidal waters of the United States; in former diked baylands currently below mean high water; outside the limits of mean high water but affecting the navigable capacity of tidal waters; or below the plane of ordinary high water in non-tidal waters designated as navigable waters of the United States. Navigable waters of the United States generally include all waters subject to the ebb and flow of the tide; and/or all waters presently used, or have been used in the past, or may be susceptible for future use to transport interstate or foreign commerce. A Preliminary JD has been completed for your site. Preliminary JDs are written indications that there may be waters of the U.S. on a parcel or indications of the approximate location(s) of waters of the U.S. on a parcel. Preliminary JDs are

advisory in nature and may not be appealed. You are requested to sign and date this form and return it to this office within two (2) weeks of receipt. Please see the enclosed PJD map titled, "*Rattlesnake Creek Fish Passage Culvert Repair, Mendocino County, California*" and dated "July 11, 2012" (enclosure 2).

Based on a review of the information in your submittal, the project qualifies for authorization under Department of the Army Nationwide Permit (NWP) 27 for Aquatic Habitat Restoration, Establishment, and Enhancement Activities, 77 Fed. Reg. 10184, February 21, 2012, pursuant to Section 404 of the CWA of 1972, as amended (33 U.S.C. § 1344 *et seq.*). The project must be in compliance with the terms of the NWP, the general conditions of the Nationwide Permit Program, and the San Francisco District regional conditions cited in enclosure 3. You must also be in compliance with any special conditions specified in this letter for the NWP authorization to remain valid. Non-compliance with any term or condition could result in the revocation of the NWP authorization for your project, thereby requiring you to obtain an Individual Permit from the Corps. This NWP authorization does not obviate the need to obtain other State or local approvals required by law.

This verification will remain valid for two years from the date of this letter. Activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon a NWP will remain authorized provided the activity is completed within 12 months of the date of a NWP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 330.4(e) and 33 CFR 330.5 (c) or (d). The Chief of Engineers will periodically review NWPs and their conditions and will decide to either modify, reissue, or revoke the permits. If a NWP is not modified or reissued within five years of its effective date, it automatically expires and becomes null and void. It is incumbent upon you to remain informed of any changes to the NWPs. Changes to the NWPs would be announced by Public Notice posted on our website (http://www.spn.usace.army.mil/regulatory/index.html). Upon completion of the project and all associated mitigation requirements, you shall sign and return the Certification of Compliance, enclosure 4, verifying that you have complied with the terms and conditions of the permit.

This authorization will not be effective until you have obtained a Section 401 water quality certification from the North Coast Regional Water Quality Control Board. If the RWQCB fails to act on a valid request for certification within two months after receipt of a complete application, the Corps will presume a waiver of water quality certification has been obtained. You shall submit a copy of the certification to the Corps prior to the commencement of work.

General Condition 18 stipulates that project authorization under a NWP does not allow for the incidental take of any federally-listed species in the absences of a biological opinion (BO) with incidental take provisions. As the principal federal lead agency for this project, the Corps initiated consultation with the National Marine Fisheries Service (NMFS) to address project related impacts to list species, pursuant to Section 7(a) of the Endangered Species Act of 1973, as amended (16 U.S.C. Section 1531 *et seq.*). By letter of October 25, 2011, the NMFS issued a BO (2010/.6445) cited in enclosure 5, with an incidental take statement for California Coast Chinook salmon and northern California steelhead. As the principal federal lead agency for this project, the Corps also initiated consultation with the NMFS to address project related impacts to Essential Fish Habitat (EFH) for various life stages of fish species managed with the Pacific Groundfish Fishery Management Plan, Coastal Pelagics Fishery Management Plan, and Pacific Coast Salmon Fishery Management Plan, pursuant to Magnuson-Stevens Fishery Conservation and Management Act of 1996, as amended (16 U.S.C. § 1801 *et seq.*). NMFS issued conservation recommendations in the same correspondence.

In order to ensure compliance with this NWP authorization, the following special conditions shall be implemented:

1. The work area will be de-watered prior to construction. Appropriate measures must be taken to maintain near normal downstream flows and to minimize flooding. Fill must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Following completion of construction, temporary fill must be entirely removed.

2. Work in the creek will be limited to the low-flow season, June 15 – October 15 to protect water quality.

3. You shall employ sediment and erosion control best management practices as needed throughout the project area. No objects or fill shall be placed where they can be eroded or washed into drainage systems in the project area. All debris generated as a result of the project, shall be removed from the site and disposed of at an approved location outside of Corps jurisdiction. All project staging and equipment storage areas shall be located away from areas subject to the jurisdiction of the Corps.

4. Within 1-year of initiation of construction, you shall as depicted in the Planting Plan titled "*Plant List and Planting Plan, Rattlesnake Creek, Mendocino County, Route 101, Post Mil 84.0*" dated July 11, 2012. Only native plant species may be utilized.

5. This Corps permit does not authorize you to take an endangered species. In order to legally take a listed species, you must have a separate authorization under the Endangered Species Act (ESA) (e.g., an ESA Section 10 permit or a Biological Opinion (BO) under

ESA Section 7 with "incidental take" provisions with which you must comply). The enclosed National Marine Fisheries Service BO dated October 25, 2011 (see enclosure 5), contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that are also specified in the BO. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take authorized by the attached BO and letter of concurrence, whose terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO or letter of concurrence, where a 'take' of the listed species occurs, would constitute an unauthorized take and it would also constitute non-compliance with this Corps permit. The NMFS is the appropriate authority to determine compliance with the terms and conditions of their BO and with the ESA.

6. Fifty linear feet upstream and downstream of the project reach shall be monitored annually for a five year period post construction to qualitatively assess channel conditions. Evidence of channel instability (e.g. migrating headcuts, undercutting, or bank erosion) shall be documented. Remediation measures shall be proposed for any adverse conditions that develop as a direct result of project implementation. After receiving approval from the USACE proposed measures shall be implemented. Photographs and a brief summary discussion of work performed shall be provided with the annual monitoring report. The report shall be submitted to the Corps no later than December 31 of each year.

You may refer any questions on this matter to Paula Gill of my Regulatory staff by telephone at 415-503-6776 or by e-mail at Paula.C.Gill@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner, while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: http://www.spn.usace.army.mil/regulatory/.

Sincerely,

Jane Moriarty

for Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copy Furnished (w/ encl 1 only):

CA RWQCB, Redding, CA

Copies Furnished (w/o encls):

US EPA, San Francisco, CA
US F&WS, Arcata, CA
US NMFS, Arcata, CA
CA DFG, Yountville, CA

Enclosure 3:

Nationwide Permit 27 - *Aquatic Habitat Restoration, Establishment, and Enhancement Activities*

Activities in waters of the United States associated with the restoration, enhancement, and establishment of tidal and non-tidal wetlands and riparian areas, the restoration and enhancement of non-tidal streams and other non-tidal open waters, and the rehabilitation or enhancement of tidal streams, tidal wetlands, and tidal open waters, provided those activities result in net increases in aquatic resource functions and services.

To the extent that a Corps permit is required, activities authorized by this NWP include, but are not limited to: the removal of accumulated sediments; the installation, removal, and maintenance of small water control structures, dikes, and berms, as well as discharges of dredged or fill material to restore appropriate stream channel configurations after small water control structures, dikes, and berms, are removed; the installation of current deflectors; the enhancement, restoration, or establishment of riffle and pool stream structure; the placement of in-stream habitat structures; modifications of the stream bed and/or banks to restore or establish stream meanders; the backfilling of artificial channels; the removal of existing drainage structures, such as drain tiles, and the filling, blocking, or reshaping of drainage ditches to restore wetland hydrology; the installation of structures or fills necessary to establish or re-establish wetland or stream hydrology; the construction of small nesting islands; the construction of open water areas; the construction of oyster habitat over unvegetated bottom in tidal waters; shellfish seeding; activities needed to reestablish vegetation, including plowing or discing for seed bed preparation and the planting of appropriate wetland species; re-establishment of submerged aquatic vegetation in areas where those plant communities previously existed; re-establishment of tidal wetlands in tidal waters where those wetlands previously existed; mechanized land clearing to remove non-native invasive, exotic, or nuisance vegetation; and other related activities. Only native plant species should be planted at the site.

This NWP authorizes the relocation of non-tidal waters, including non-tidal wetlands and streams, on the project site provided there are net increases in aquatic resource functions and services. Except for the relocation of non-tidal waters on the project site, this NWP does not authorize the conversion of a stream or natural wetlands to another aquatic habitat type (e.g., stream to wetland or vice versa) or uplands. Changes in wetland plant communities that occur when wetland hydrology is more fully restored during wetland rehabilitation activities are not considered a conversion to another aquatic habitat type. This NWP does not authorize stream channelization. This NWP does not authorize the relocation of tidal waters or the conversion of tidal waters, including tidal wetlands, to other aquatic uses, such as the conversion of tidal wetlands into open water impoundments. Compensatory mitigation is not required for activities authorized by this NWP since these activities must result in net increases in aquatic resource functions and services.

Reversion. For enhancement, restoration, and establishment activities conducted: (1) In accordance with the terms and conditions of a binding stream or wetland enhancement or restoration agreement, or a wetland establishment agreement, between the landowner and the U.S. Fish and Wildlife Service (FWS), the Natural Resources Conservation Service (NRCS), the Farm Service Agency (FSA), the National Marine Fisheries Service (NMFS), the National Ocean Service (NOS), U.S. Forest Service (USFS), or their designated state cooperating agencies; (2) as voluntary wetland restoration, enhancement, and establishment actions documented by the NRCS or USDA Technical Service Provider pursuant to NRCS Field Office Technical Guide standards; or (3) on reclaimed surface coal mine lands, in accordance with a Surface Mining Control and Reclamation Act permit issued by the Office of Surface Mining Reclamation and Enforcement (OSMRE) or the applicable state agency, this NWP also authorizes any future discharge of dredged or fill material associated with the reversion of the area to its documented prior condition and use (i.e., prior to the restoration, enhancement, or establishment activities). The reversion must occur within five years after expiration of a limited term wetland restoration or establishment agreement or permit, and is authorized in these circumstances even if the discharge occurs after this NWP expires. The five-year reversion limit does not apply to agreements without time limits reached between the landowner and the FWS, NRCS, FSA, NMFS, NOS, USFS, or an appropriate state cooperating agency. This NWP also authorizes discharges of dredged or fill material in waters of the United States for the reversion of wetlands that were restored, enhanced, or established on prior-converted cropland or on uplands, in accordance with a binding agreement between the landowner and NRCS, FSA, FWS, or their designated state cooperating agencies (even though the restoration, enhancement, or establishment activity did not require a section 404 permit). The prior condition will be documented in the original agreement or permit, and the determination of return to prior conditions will be made by the Federal agency or appropriate state agency executing the agreement or permit. Before conducting any reversion activity the permittee or the appropriate Federal or state agency must notify the district engineer and include the documentation of the prior condition. Once an area has reverted to its prior physical condition, it will be subject to whatever the Corps Regulatory requirements are applicable to that type of land at the time. The requirement that the activity results in a net increase in aquatic resource functions and services does not apply to reversion activities meeting the above conditions. Except for the activities described above, this

NWP does not authorize any future discharge of dredged or fill material associated with the reversion of the area to its prior condition. In such cases a separate permit would be required for any reversion.

Reporting: For those activities that do not require pre-construction notification, the permittee must submit to the district engineer a copy of: (1) The binding stream enhancement or restoration agreement or wetland enhancement, restoration, or establishment agreement, or a project description, including project plans and location map; (2) the NRCS or USDA Technical Service Provider documentation for the voluntary stream enhancement or restoration action or wetland restoration, enhancement, or establishment action; or (3) the SMCRA permit issued by OSMRE or the applicable state agency. The report must also include information on baseline ecological conditions on the project site, such as a delineation of wetlands, streams, and/or other aquatic habitats. These documents must be submitted to the district engineer at least 30 days prior to commencing activities in waters of the United States authorized by this NWP.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing any activity (see general condition 31), except for the following activities: (1) Activities conducted on non-Federal public lands and private lands, in accordance with the terms and conditions of a binding stream enhancement or restoration agreement or wetland enhancement, restoration, or establishment agreement between the landowner and the U.S. FWS, NRCS, FSA, NMFS, NOS, USFS or their designated state cooperating agencies; (2) Voluntary stream or wetland restoration or enhancement action, or wetland establishment action, documented by the NRCS or USDA Technical Service Provider pursuant to NRCS Field Office Technical Guide standards; or (3) The reclamation of surface coal mine lands, in accordance with an SMCRA permit issued by the OSMRE or the applicable state agency. However, the permittee must submit a copy of the appropriate documentation to the district engineer to fulfill the reporting requirement. (Sections 10 and 404)

Note: This NWP can be used to authorize compensatory mitigation projects, including mitigation banks and in-lieu fee projects. However, this NWP does not authorize the reversion of an area used for a compensatory mitigation project to its prior condition, since compensatory mitigation is generally intended to be permanent.

Enclosure 4:

Permittee: California Department of Transportation, Mr. Mr. Steve Blair

File Number: 2002-269110N

Certification of Compliance
for
Nationwide Permit

"I hereby certify that the work authorized by the above referenced File Number and all required mitigation have been completed in accordance with the terms and conditions of this Nationwide Permit authorization."

_____ _____

(Permittee) (Date)

Return to:

Paula Gill
U.S. Army, Corps of Engineers
San Francisco District
Regulatory Division, CESPN-R-S
1455 Market Street
San Francisco, CA 94103-1398

Enclosure 1:

Figure 4 Temporary Creek Diversion System, Diversion 1
Rattlesnake Creek, Mendocino County, Route 101, Post Mile 84.0

REVISED BY	DATE REVISED
MARLENE E. GIBB	MARTIN GARCIA

CALCULATED-DESIGNED BY	FUNCTIONAL SUPERVISOR	CHECKED BY
	ROBERT E. POLGAR	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	MEN	101	R84.0		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
MARLENE E. GIBB
No. C 51513
Exp. 6/30/12
CIVIL
STATE OF CALIFORNIA

NOTES:
1. EXACT LOCATION AND DETAILS OF TEMPORARY STREAMBED DIVERSION TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

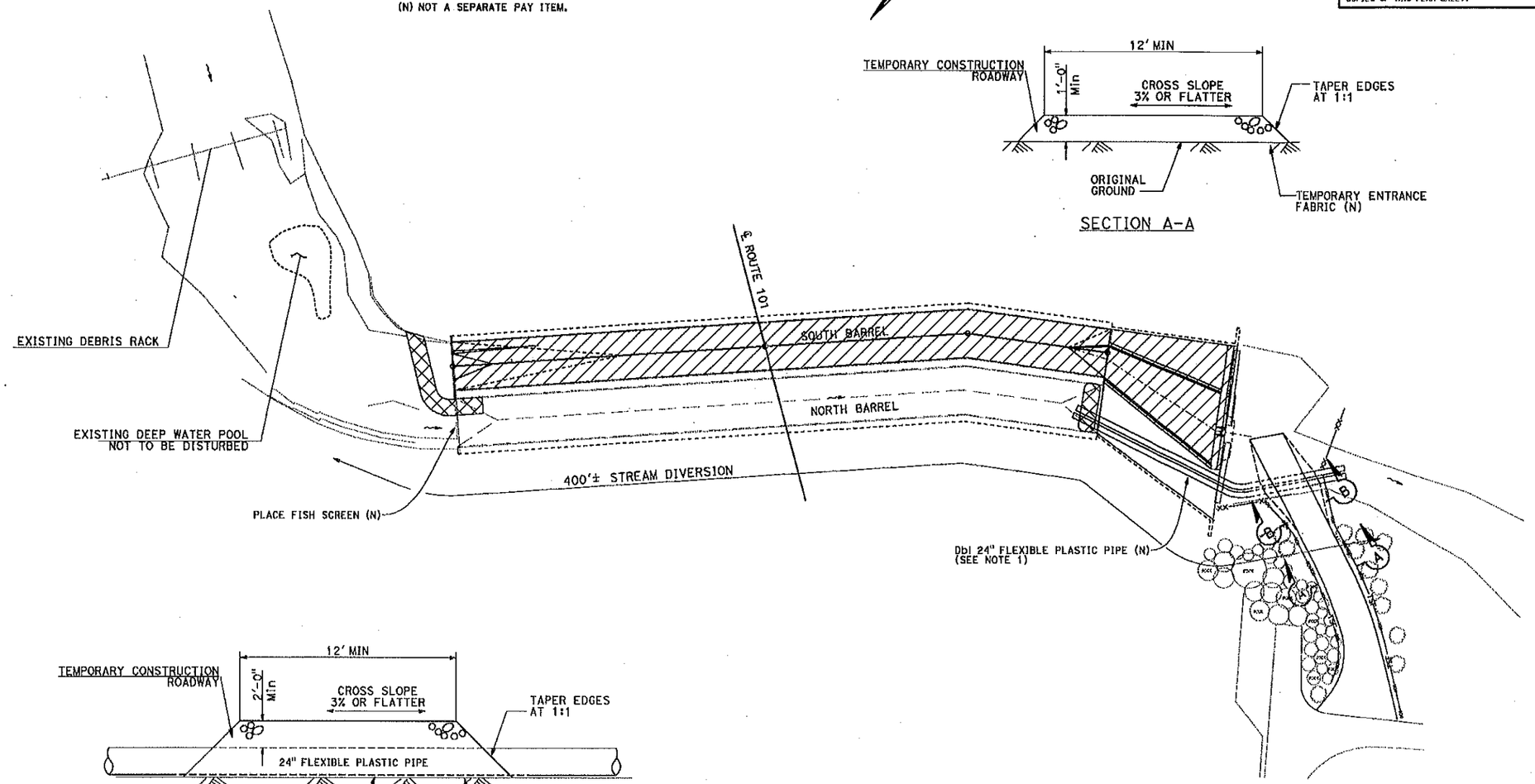
LEGEND

TEMPORARY DAM - WATER FILLED BLADDERS OR SANDBAGS (TYPE AND PLACEMENT TO BE DETERMINED BY ENGINEER)

CONSTRUCTION WITH DIVERSION 1

TEMPORARY SILT FENCE

(N) NOT A SEPARATE PAY ITEM.



SECTION A-A

SECTION B-B

DIVERSION 1

TEMPORARY WATER POLUTION CONTROL DETAILS (TEMPORARY CREEK DIVERSION SYSTEM)

NO SCALE

WPC-1

LAST REVISION 00-00-00 | DATE PLOTTED => 12-MAR-2012 | TIME PLOTTED => 16:16

BORDER LAST REVISED 7/3/2010 | USERNAME => 6112203 | RELATIVE BORDER SCALE 0 1 2 3 | UNIT 0306 | PROJECT NUMBER & PHASE 0100000166

Figure 5 Temporary Creek Diversion System, Diversion 2
Rattlesnake Creek, Mendocino County, Route 101, Post Mile 84.0

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	MEN	101	R84.0		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER MARLENE E. GIBB No. C 51513 Exp. 6/30/12 CIVIL STATE OF CALIFORNIA

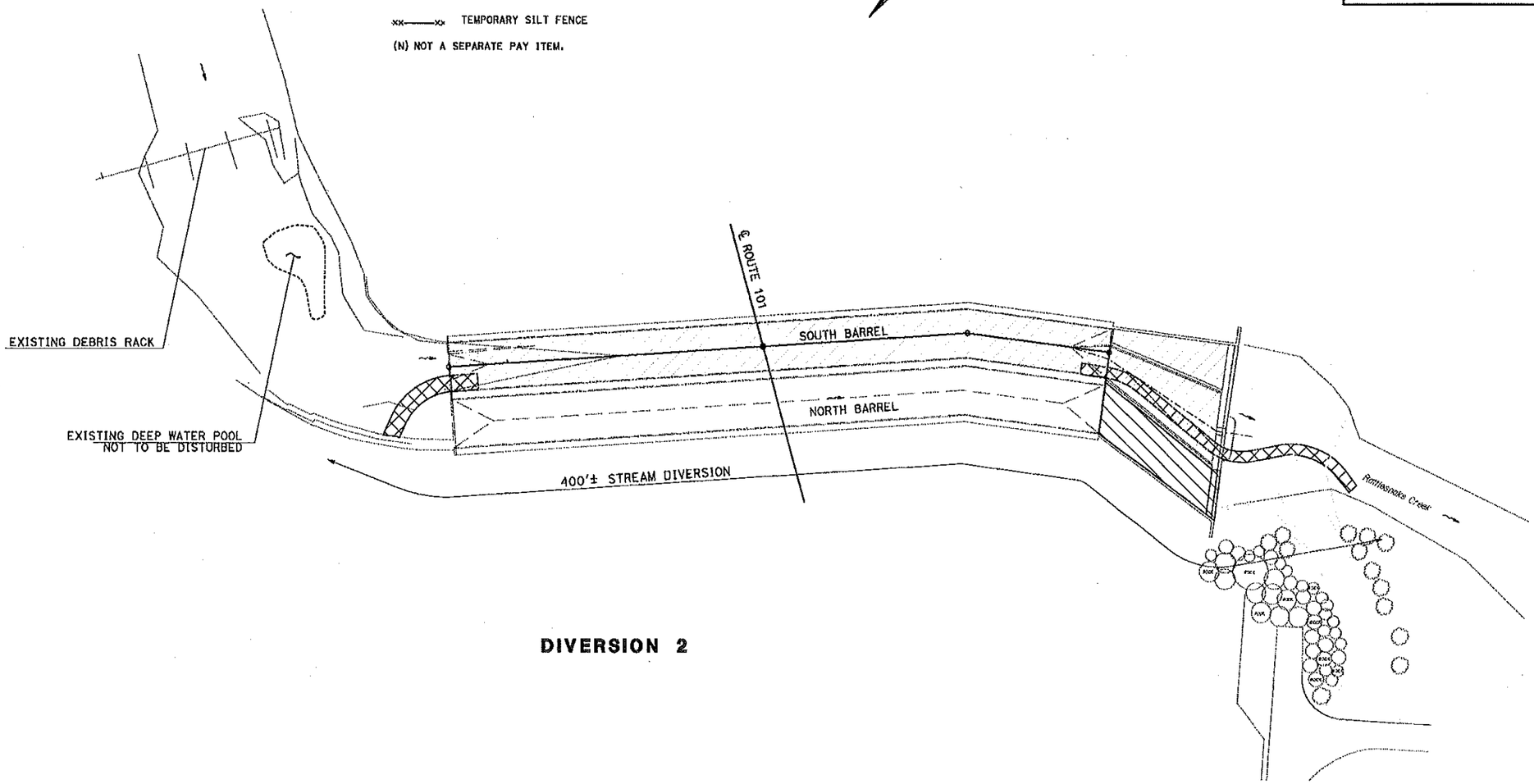
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:
1. EXACT LOCATION AND DETAILS OF TEMPORARY ROADWAY AND STREAMBED DIVERSION TO BE DETERMINEDIN THE FIELD BY THE ENGINEER.

LEGEND

- TEMPORARY DAM - WATER FILLED BLADDERS OR SANDBAGS (TYPE AND PLACEMENT TO BE DETERMINED BY ENGINEER)
- CONSTRUCTION WITH DIVERSION 1 (SEE WPC-1)
- CONSTRUCTION WITH DIVERSION 2
- TEMPORARY SILT FENCE

(N) NOT A SEPARATE PAY ITEM.



DIVERSION 2

TEMPORARY WATER POLUTION CONTROL DETAILS
(TEMPORARY CREEK DIVERSION SYSTEM)

NO SCALE

WPC-2

MARLENE E. GIBB	REVISED BY	CALCULATED-DESIGNED BY	
MARTIN GARCIA	DATE REVISED	CHECKED BY	
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR		
Caltrans	ROBERT E. POLGAR		

LAST REVISION 00-00-00 | DATE PLOTTED => 13-MAR-2012 | TIME PLOTTED => 09:42

Figure 7 Erosion Control Plan and Quantities
Rattlesnake Creek, Mendocino County, Route 101, Post Mile 84.0

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Men	128			

LICENSED LANDSCAPE ARCHITECT

PLANS APPROVAL DATE

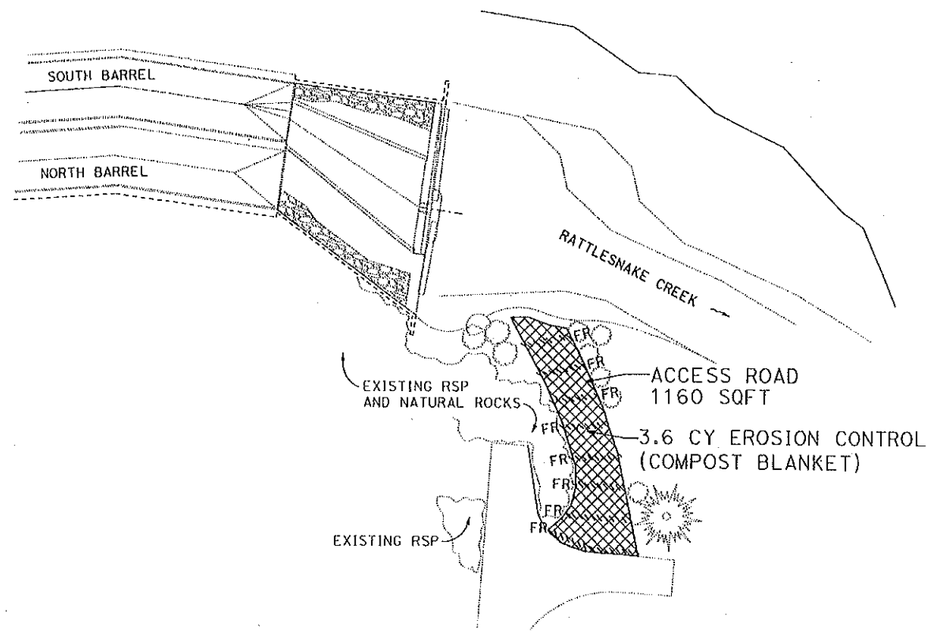
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LICENSED LANDSCAPE ARCHITECT — Laura Lazzarotto — Signature — 8-31-11 Renewal Date — Date — STATE OF CALIFORNIA

LEGEND

FR FIBER ROLLS

EROSION CONTROL (COMPOST BLANKET)



EROSION CONTROL PLAN
SCALE: 1"=20'

EROSION CONTROL

LOCATION	AREA (N)	EROSION CONTROL (COMPOST BLANKET)	PURE LIVE SEED (N)	FIBER ROLLS
	SQFT	CY	LBS	LF
ACCESS ROAD	1,160	3.6	3.5	140
TOTAL	1,160	3.6	3.5	140

NOTE: (N) DENOTES NON PAY ITEM, FOR INFORMATION ONLY

EROSION CONTROL PLAN AND QUANTITIES
SCALE: 1"=20'

EC-1

REVISED BY	---	CALCULATED-DESIGNED BY	LAURA LAZZAROTTO
DATE REVISED	---	CHECKED BY	---

SENIOR LANDSCAPE ARCHITECT: RON FLORY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans 03-DESIGN

LAST REVISION 00-00-00 | DATE PLOTTED => 17-APR-2012 | TIME PLOTTED => 12:42

RELATIVE BORDER SCALE 0 1 2 3 | USERNAME => s125545

U.S. Army Corps of Engineers
San Francisco District
Regulatory Division

Figure 8 Plant List and Planting Plan
Rattlesnake Creek, Mendocino County, Route 101, Post Mile 84.0

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Men	101			

LICENSED LANDSCAPE ARCHITECT

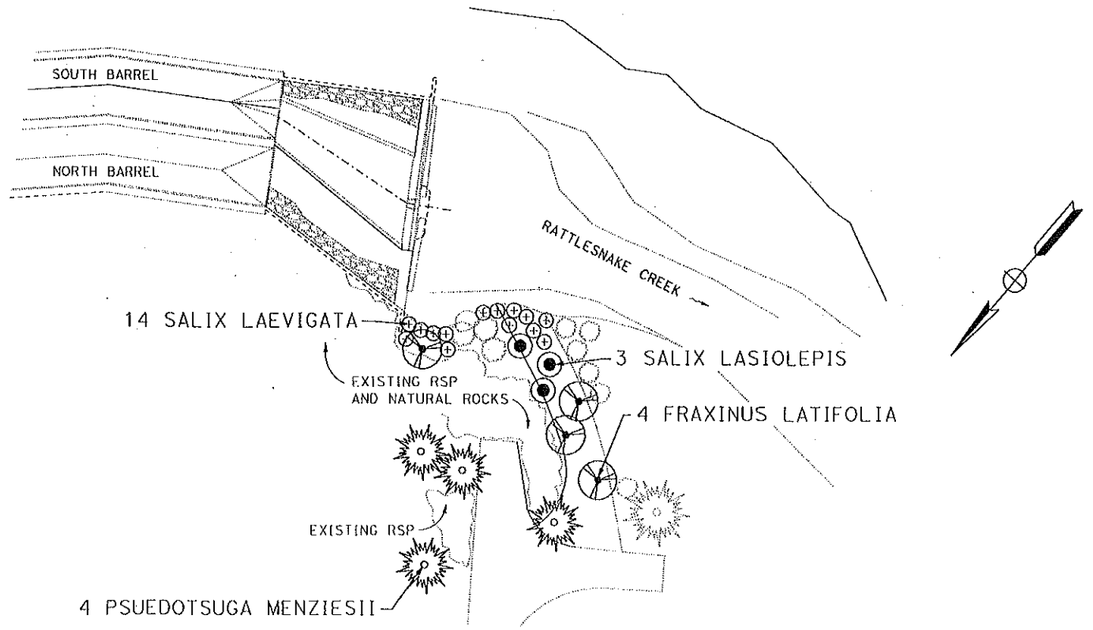
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

LEIGH ED LANDSCAPE ARCHITECT — Signature 8-31-13 Renewal date — STATE OF CALIFORNIA

PLANT LIST AND PLANTING SPECIFICATIONS

PLANT GROUP	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY EACH	HOLE SIZE (INCH) Dia	HOLE SIZE (INCH) DEPTH	BASIN TYPE	SOIL AMEND ①	BASIN MULCH (CY)	SPACING	REMARKS
I		FRAXINUS LATIFOLIA ③	OREGON ASH	TREEPOT	4	8	16	II	.16 CF	.03	⑦	MIN. POT SIZE 4"x14"
		PSUEDOTSUGA MENZIESII ③	DOUGLAS FIR	TREEPOT	4	8	16	II	.16 CF	.03	⑦	MIN. POT SIZE 4"x14"
		SALIX LASIOLEPIS ③	ARROYO WILLOW	TREEPOT	3	8	16	II	.16 CF	.03	⑦	MIN. POT SIZE 4"x14"
		SALIX LAEVIGATA ③	RED WILLOW	TREEPOT	14	8	16	II	—	—	⑦	MIN. POT SIZE 4"x14"



PLANTING PLAN
SCALE: 1"=20'

ABBREVIATIONS:

AMEND — amendment
Dia — diameter
EA — each
LB — pound
Oz — ounce
Ft — foot/feet
SQFT — square feet
SQYD — square yard
CF — cubic feet
CY — cubic yard
Max — maximum
Min — minimum
NCN — no common name
No. — number
Pkt — packet
PLT ESTB — plant establishment
Pvmt — pavement
R/W — right of way
SF — state furnished

APPLICABLE WHEN CIRCLED:

① - Quantities shown are "per plant" unless shown as SQFT or SQYD application rates
2 - Basin mulch is included with mulch quantities shown on Planting Plan
③ - Plants to be grown from Mendocino County plant stock only
4 - See Detail
5 - See Special Provisions
6 - See Standard Specifications
⑦ - As shown on plans
8 - Unless otherwise shown on plans
9 - Foliage Protector required
10 - State-Furnished

PLANT LIST AND PLANTING PLAN
SCALE: 1"=20'

PL-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
03-DESIGN
SENIOR LANDSCAPE ARCHITECT: RON FLORY
CALCULATED-DESIGNED BY:
CHECKED BY:
REVISED BY | DATE REVISED
LAURA LAZZAROTTO

LAST REVISION 00-00-00 | DATE PLOTTED = 23-APR-2012 | TIME PLOTTED: 23 10:15

Enclosure 2:

Rattlesnake Creek Fish Passage Culvert Repair
Mendocino County, California

U.S. Army Corps of Engineers
San Francisco District
Regulatory Division

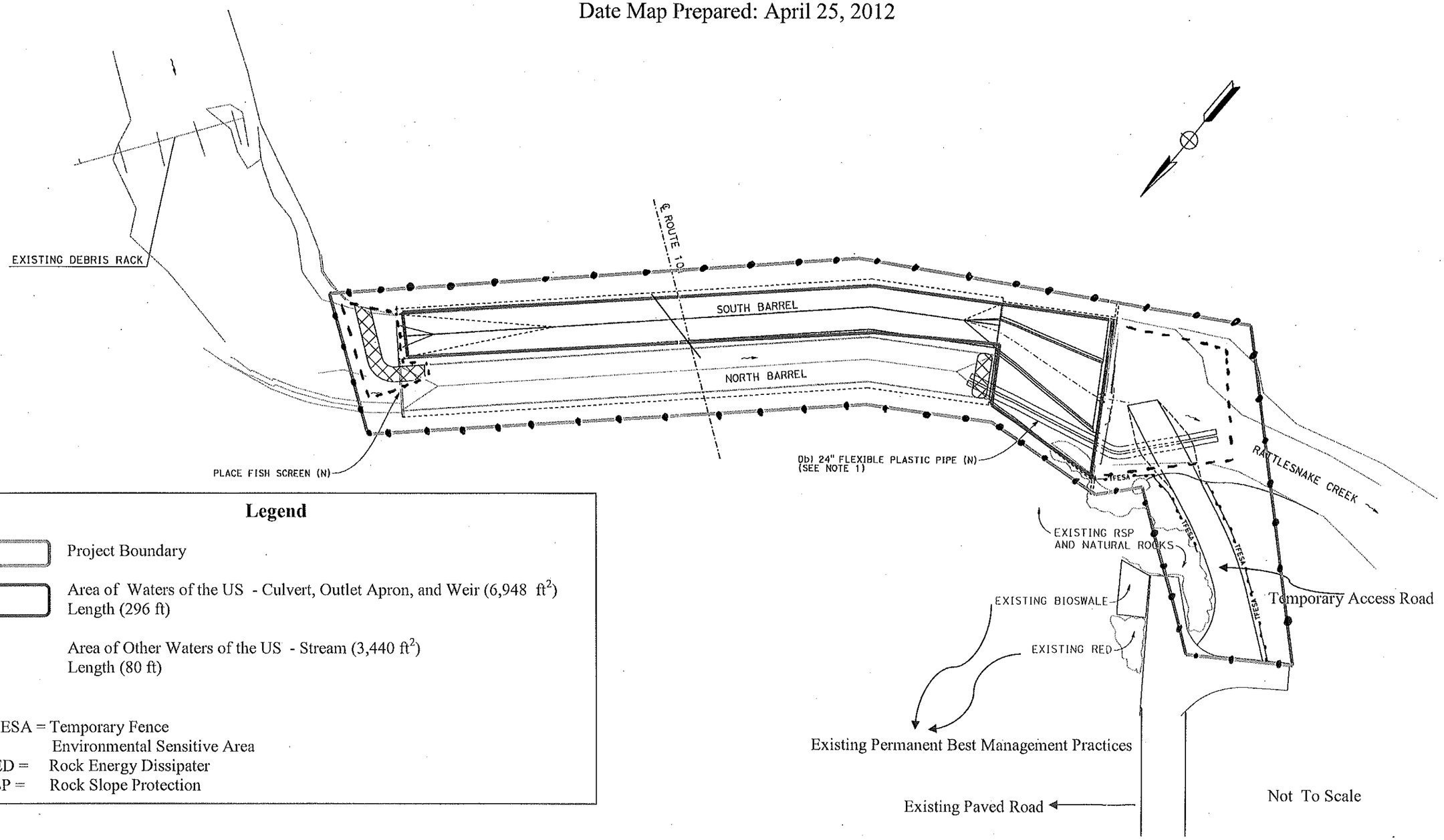
Preliminary Jurisdictional Determination
Pursuant to Section 404 of Clean Water Act

Project Boundary

Other Waters of the U.S.

FILE NUMBER : 2002-269110N **DATE: 7/11/12**

Figure 4
Rattlesnake Creek, Mendocino County, Route 101, Post Mile 84.0
U. S. Army Corps of Engineers Jurisdiction (Existing Conditions)
Date Map Prepared: April 25, 2012



Legend

Project Boundary

Area of Waters of the US - Culvert, Outlet Apron, and Weir (6,948 ft^2)
Length (296 ft)

Area of Other Waters of the US - Stream (3,440 ft^2)
Length (80 ft)

TFESA = Temporary Fence
Environmental Sensitive Area
RED = Rock Energy Dissipater
RSP = Rock Slope Protection

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

October 25, 2011

In response refer to:
2010/06445

Lieutenant Colonel Torrey A. DiCiro
U.S. Department of the Army
San Francisco District Corps of Engineers
1455 Market Street, 16th Floor
San Francisco, California 94103-1398

Dear Colonel DiCiro:

Thank you for your letter of August 11, 2011, requesting re-initiation of formal consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*) for the California Department of Transportation's (Caltrans) proposed Rattlesnake Creek Culvert Repair and Improvement Project in Mendocino County, California (Corps File No. 2011-00279S). The U.S. Army Corps of Engineers (Corps) proposes to authorize this project under Nationwide Permit 3 ("Maintenance") and Nationwide Permit 33 ("Temporary Construction, Access, and Dewatering") pursuant to section 404 of the Clean Water Act for Caltrans to repair to an existing double arch culvert, upstream debris rack, and an existing weir at the outlet of the culvert on Rattlesnake Creek at Highway 101.

The enclosed biological opinion is based on our review of Caltrans' proposed project and describes NMFS' analysis of potential effects on the threatened California Coastal (CC) Chinook salmon (*Oncorhynchus tshawytscha*) Evolutionary Significant Unit (ESU) and the threatened Northern California (NC) steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS), and critical habitat for Southern Oregon Northern California Coast (SONCC) coho salmon and CC Chinook salmon, in accordance with the ESA.

In the enclosed biological opinion, NMFS concludes the Rattlesnake Creek Culvert Repair and Improvement Project is not likely to jeopardize the continued existence of the CC Chinook salmon ESU, or the NC steelhead DPS. NMFS has also concluded the project is not likely to result in the destruction or adverse modification of critical habitat for SONCC coho salmon or CC Chinook salmon. However, NMFS anticipates take of listed CC Chinook salmon and NC steelhead may occur as a result of project construction. An incidental take statement with non-discretionary terms and conditions is included with the enclosed biological opinion. In addition, conservation recommendations have been included in the enclosed biological opinion.

This letter also transmits NMFS' Essential Fish Habitat (EFH) conclusions pursuant to section 305(b) of the Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA). Rattlesnake Creek at the Highway 101 crossing includes areas identified as EFH for SONCC coho salmon and CC Chinook salmon, which are managed under the Pacific Coast Salmon Fishery Management Plan (FMP). The proposed action has the potential to adversely affect EFH. However, the proposed action contains adequate measures to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH. With the terms and conditions set forth in the biological opinion, NMFS has no additional EFH Conservation Recommendations to provide.

If you have any questions regarding the enclosed biological opinion, please contact Mr. Joel Casagrande at (707) 575-6016, or joel.casagrande@noaa.gov.

Sincerely,

for Rodney R. McInnis
Regional Administrator

cc: Chris Yates, NMFS Long Beach
Paula C. Gill, Corps, San Francisco
Dana York, Caltrans Eureka
Lisa Embree, Caltrans Eureka
Richard Macedo, CDFG
Copy to file 151422SWR2002SR8263

BIOLOGICAL OPINION

ACTION AGENCY: U.S. Army Corps of Engineers, San Francisco District

ACTION: Rattlesnake Creek Culvert Repair and Improvement Project, Mendocino County, California

CONSULTATION CONDUCTED BY: National Marine Fisheries Service, Southwest Region

TRACKING NUMBER: 2010/06445

DATE ISSUED: **October 25, 2011**

I. CONSULTATION HISTORY

On June 4, 2002, the U.S. Army Corps of Engineers (Corps) requested formal consultation with NMFS pursuant to section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*) on the effects of the proposed Rattlesnake Creek Culvert Repair and Improvement Project on the threatened Southern Oregon/Northern California Coast (SONCC) coho salmon (*Oncorhynchus kisutch*) Evolutionarily Significant Unit (ESU), the threatened California Coastal (CC) Chinook salmon (*O. tshawytscha*) ESU, and the threatened Northern California (NC) steelhead (*O. mykiss*) ESU and critical habitat designated for SONCC coho salmon. On May 16, 2003, NMFS issued a biological opinion for the Rattlesnake Creek Culvert Repair and Improvement Project which included an incidental take statement for each of the three salmonid species (NMFS 2003). Activities originally proposed included resurfacing of a double-barrel culvert under Highway 101, bolstering the center support for an upstream debris rack, repairing a small concrete weir downstream of the culvert outlet, and construction of a permanent access road from the highway to the creek.

Work completed by the applicant (Caltrans) during 2004 and 2005 included resurfacing the north barrel of the culvert and the construction of the permanent access road. Multiple attempts to dewater the action area were unsuccessful and most of the proposed tasks were not completed. Prior to dewatering, over 800 steelhead (consisting of multiple age classes) were relocated. The project was put on hold by Caltrans due to funding issues and because incidental take had been exceeded.

On December 22, 2008, NMFS was contacted by the applicant (Caltrans) with questions regarding the possible need to re-initiate consultation for the Rattlesnake Creek Culvert Repair and Improvement Project. Caltrans met with the California Department of Fish and Game

(CDFG) and NMFS to discuss the remaining work on the debris rack, south barrel of the culvert, and the outlet weir repairs. NMFS requested additional hydraulic data as well as stream flow and fish passage information.

In 2005, NMFS revised the designated critical habitat for ESA-listed salmonid species (70 FR 52488, September 5, 2005) and as a result, Rattlesnake Creek was designated as critical habitat for CC Chinook salmon. The effects analysis included in the original 2003 biological opinion for the dewatering and fish relocation activities was for one year, however following discussions with NMFS, a second year of dewatering and fish relocation was allowed which again failed and the activities were not completed. In May 2009, NMFS determined re-initiation of consultation was necessary due to the revised critical habitat designation for CC Chinook salmon and the exceedance of take during the initial dewatering attempts. As requested, Caltrans submitted additional hydraulic data and flow and fish passage information to NMFS in August and December 2009. Caltrans put the project on hold in February 2010 because of state budget issues, but resumed work in July 2010. In August 2010, NMFS conducted a site visit and determined additional modifications to the design were not warranted and in January 2011, CDFG also determined the project designs were suitable and additional modifications were not warranted.

On August 15, 2011, NMFS received a letter, dated August 11, 2011, from the Corps requesting re-initiation of formal consultation for the Rattlesnake Creek Culvert Repair and Improvement Project. The letter requested re-initiation of consultation because the Corps determined the project is likely to adversely the following species and critical habitats: the SONCC coho salmon ESU, the CC Chinook salmon ESU, and the NC steelhead DPS, and critical habitat for SONCC coho salmon and CC Chinook salmon. At this time, NMFS determined the information provided was sufficient to initiate consultation.

II. DESCRIPTION OF THE PROPOSED ACTION

The Corps proposes to issue a Clean Water Act permit to Caltrans for the remaining repairs and improvements to a double arch culvert crossing on Rattlesnake Creek (a tributary to the South Fork Eel River) at post mile 84.0 on Highway 101 in Mendocino County, California. Caltrans will repair the bottom of the south barrel of the culvert, repair and elevate the outlet weir, reinforce the culvert entrance, and repair the footing at the upstream debris rack. The repairs and improvements to the culvert and weir include design elements to improve fish passage conditions at the site for adult and juvenile salmonids. All in-water work will be conducted during the dry season (between June 15 and October 15) in 2013 or 2014 to avoid potential impacts on migrating and spawning adult salmon and steelhead. Dewatering will be required at two locations, around the upstream debris rack, and from the culvert inlet downstream through the culvert and past the outlet weir. Caltrans will incorporate several measures to minimize the magnitude, extent, and duration of potential impacts, including limiting in-water construction

activities to the summer low flow period, prohibiting heavy equipment in the live stream, using cofferdams to isolate the construction areas from the flowing stream, restricting access to the stream to a single access road, and implementing a re-vegetation and monitoring plan. There are no interrelated or interdependent actions associated with this project.

A. Description of Project Activities

1. Debris Rack

The debris rack, located upstream of the culvert, consists of four pier-like structures (also called standards) cemented into the creek bed. These structures prevent large debris such as boulders and trees from impinging on the culvert and potentially destroying the structure during storm events. The debris rack is functional but sections of the base have begun to erode. Only one standard needs to be repaired to maintain the function of the debris rack. Repairs will reduce the risk of failure of the debris rack, damage to the culvert, and potential damage to the creek downstream of the culvert.

Repair of the debris rack will require dewatering of approximately 2,500 square feet to allow installation of a reinforced concrete bolster. Caltrans proposes to limit dewatering to the channel area immediately surrounding the debris rack, avoiding the need to dewater the large pool immediately downstream of the debris rack where relatively large numbers of fish typically reside. Prior to construction of the water diversion facilities, block nets will be placed at the upstream and downstream end of the area to be dewatered. Once the nets are in place, a NMFS approved fisheries biologist will capture and relocate salmonids from the isolated area until they are confident few or no fish remain. Fish will be captured using authorized methods and relocated to suitable pool habitat downstream of the construction area.

Cofferdams constructed of clean imported gravel, impermeable liners (*e.g.*, plastic), water bladders, and/or sand bags will be used in conjunction with a pipe (large enough to accommodate the entire stream flow) to isolate the construction area and bypass the flow of the creek around the construction area to the large pool immediately downstream of the debris rack. Cofferdams will be placed within the netted isolated area once fish have been removed.

Water will be pumped out of the isolated construction area to water storage containers or a temporary detention or filtration basin away from the stream channel to prevent direct discharge of this water to the creek. Pump intakes will be screened in accordance with NMFS criteria to prevent accidental entrainment of juvenile salmonids. Fish relocation efforts will continue as needed during pumping activities until all salmonids have been removed.

The isolated construction area around the debris rack standard will be cleared of any loose debris and then refilled with a reinforced concrete bolster. Steel rebar will be drilled and grouted into existing bedrock to hold the concrete bolster in place. The work method will avoid the

deposition of concrete into flowing water. Following installation, the concrete will be washed and the wash water removed from the channel before stream flow is restored to the work areas. All wash water will be pumped to storage containers or a temporary detention or filtration basin. No equipment will be allowed in the flowing water of Rattlesnake Creek. All gravel, sand bags, liners, pipes, concrete debris, and other materials will be removed from the channel before stream flow is restored to the dewatered area.

2. Culvert and Outlet Weir

The culvert is a double arch structure consisting of two barrels (north and south). Each barrel is approximately 18 feet wide, 17.5 feet in height, and 245 feet long. The arch (ceiling) and side walls of the structure are intact. The bottom of each barrel is a concrete slab that is not structurally connected to the arch and side walls. The south barrel is lower in elevation than the north barrel. Consequently, the south barrel maintains flow for longer periods of time; however, the south barrel may be impassable to salmonids at very low flows. The existing concrete slab of the south barrel will be replaced with a new reinforced concrete slab approximately 1 foot thick. To improve fish passage through the culvert, the inlet of the new slab will be lowered 1 foot and the outlet lowered 0.5 foot from the existing elevations. The slope of the south barrel will be reduced from 0.4 percent to 0.2 percent. Lowering the culvert bottom in combination with raising the outlet weir (discussed below) will raise the water surface elevation and depth in the south barrel and create year-round fish passage conditions. The bottom of the north barrel was repaired in 2005. No changes in elevation of the north barrel are required because fish passage at lower flows will be provided by the south barrel. A ¼-inch thick galvanized metal plate will be installed to the concrete face of the inlet of the culvert to protect the face of the inlet and the concrete slabs from debris. The metal plate will not impede flow or fish migration at any flow level.

An existing weir located downstream of the culvert outlet (outlet weir) will be replaced with a larger concrete structure conforming to NMFS fish passage guidelines. The new weir will have a wider crest that will be covered with a ¼-inch thick galvanized metal plate. The weir includes a central notch that will be 0.5 feet above the existing slab. This will create a backwater into the culvert and provide fish passage through the culvert during low flows.

Dewatering will also be necessary to repair the south barrel of the culvert and the downstream (outlet) weir. Prior to construction of the water diversion facilities, block nets will be placed at the upstream and downstream end of the area to be dewatered. Once the nets are in place, a NMFS approved fisheries biologist will capture and relocate salmonids from this section of the creek until they are confident few or no fish remain. Fish will be captured using authorized methods and relocated to suitable habitat downstream of the construction area. Following fish removal, a temporary cofferdam will be constructed immediately upstream of the inlet of the culvert to isolate the construction area and bypass the flow of the creek through a pipe (large enough to accommodate the entire stream flow) that will extend through the culvert to the

channel downstream of the weir. Another cofferdam may be needed downstream of the weir to prevent water from entering the work area. Once the cofferdam(s) are in place, fish relocation efforts and pumping activities will proceed as described above for the debris rack. Overall this will dewater approximately 7,500 square feet of live stream.

Cast-in-place methods will be used to repair the debris rack, replace the concrete bottom of the south culvert, and reconstruct the outlet weir. These areas will be completely isolated from the stream by cofferdams and dewatered before any concrete is poured. Preventative measures will be taken to ensure no uncured concrete contacts the flowing water of the creek. All cured concrete will be washed and the wash water pumped to water storage containers or a temporary detention or filtration basin. All gravel, sand bags, liners, pipes, concrete debris, and other materials will be removed from the channel before stream flow is restored to the dewatered areas.

3. Access Road

A permanent access road was constructed in 2004 to provide construction and maintenance access to the culvert and outlet weir. The road is paved and extends from a gravel turnout west of the stream crossing, down the embankment where it stops approximately 80 feet short of the active creek channel downstream of the outlet weir. In order to access the outlet weir and culvert during construction, a temporary access road approximately 80 feet long and 10 feet wide will need to be constructed between the end of the permanent access road and the creek.

Following construction, Caltrans proposes to apply appropriate erosion control treatments to all disturbed areas and implement a re-vegetation and monitoring plan to replace the losses of native trees and shrubs and restore riparian habitat values to pre-construction levels.

B. Description of the Action Area

The action area includes "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR § 402.02). The action area for the proposed project includes the in-channel construction area (up to the elevation of ordinary high water), which is approximately 426 feet in length and includes the debris rack, culvert, and downstream weir. NMFS expects there will be temporary increases in turbidity related to the construction and removal of dewatering facilities. Adverse effects related to increased turbidity are not expected to extend beyond approximately 1,000 feet, at which point, much of the suspended material will have settled and the effects related to the turbidity will have become negligible. The 1,000 foot extended impact area is based on observations of the downstream extent of turbidity during similar activities at other where substrate quality was worse (*i.e.,* finer) and summer stream flows were greater (discussed in greater detail in the *Effects of the Action* section).

III. ANALYTICAL FRAMEWORK

A. Jeopardy Analysis

In accordance with policy and regulation, the jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which evaluates the CC Chinook salmon ESU's and NC steelhead DPS's range-wide conditions, the factors responsible for that condition, and the species' likelihood of both survival and recovery; (2) the Environmental Baseline, which evaluates the condition of this listed species in the action area, the factors responsible for that condition, and the relationship of the action area to the likelihood of both survival and recovery of this listed species; (3) the Effects of the Action, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on this species in the action area; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on this species.

The jeopardy determination is made by adding the effects of the proposed Federal action and any Cumulative Effects to the Environmental Baseline and then determining if the resulting changes in species status in the action area are likely to cause an appreciable reduction in the likelihood of both the survival and recovery of this listed species in the wild.

The jeopardy analysis in this biological opinion places an emphasis on the range-wide likelihood of both survival and recovery of this listed species and the role of the action area in the survival and recovery of the listed species. The significance of the effects of the proposed Federal action is considered in this context, taken together with cumulative effects, for purposes of making the jeopardy determination. We use a hierarchical approach that focuses first on whether or not the effects on salmonids in the action area will impact their respective population. If the population will be impacted, we assess whether this impact is likely to affect the ability of the population to support the survival and recovery of the ESU and DPS.

B. Adverse Modification Determination

This biological opinion does not rely on the regulatory definition of destruction or adverse modification of critical habitat at 50 CPR 402.02[1]. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

The adverse modification analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which evaluates the range-wide condition of critical habitat for the SONCC coho salmon and CC Chinook salmon ESU's in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended conservation value of the critical habitat overall; (2) the Environmental Baseline, which evaluates the condition of critical

[1] This regulatory definition has been invalidated by Federal Courts.

habitat in the action area, the factors responsible for that condition, and the conservation value of the critical habitat in the action area; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the PCEs in the action area and how that will influence the conservation value of affected critical habitat units; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the PCEs and how that will influence the conservation value of affected critical habitat units.

For purposes of the adverse modification determination, we add the effects of the proposed Federal action on CCC steelhead critical habitat in the action area, and any Cumulative Effects, to the Environmental Baseline and then determine if the resulting changes to the conservation value of critical habitat in the action area are likely to cause an appreciable reduction in the conservation value of critical habitat range-wide. If the proposed action will negatively affect PCEs of critical habitat in the action area we then assess whether or not this reduction will impact the value of the DPS or ESU critical habitat designation as a whole.

C. Use of Best Available Scientific and Commercial Information

To conduct the assessment, NMFS examined an extensive amount of information from a variety of sources. Detailed background information on the biology and status of the listed species and critical habitat has been published in a number of documents including peer reviewed scientific journals, primary reference materials, and governmental and non-governmental reports. Additional information regarding the effects of the project's actions on the listed species in question, their anticipated response to these actions, and the environmental consequences of the actions as a whole was formulated from the aforementioned resources, the biological assessment for this project, and project meeting notes if applicable. For information that has been taken directly from published, citable documents, those citations have been referenced in the text and listed at the end of this document.

IV. STATUS OF THE SPECIES/CRITICAL HABITAT

This BO analyzes the effects of the proposed action on the salmon ESU and steelhead DPS listed below:

- CC Chinook salmon ESU, listed as threatened under the ESA (70 FR 37160)
- NC steelhead DPS, listed as threatened under the ESA (71 FR 834)

The action area is within the designated critical habitat listed below:

- SONCC coho salmon critical habitat (64 FR 24049)
- CC Chinook salmon critical habitat (70 FR 52488)

Although CC Chinook salmon, SONCC coho salmon, and NC steelhead historically have utilized the Rattlesnake Creek Watershed for spawning and rearing habitat, coho salmon have not been observed in the drainage for many decades (Scott Harris, CDFG, personal communication, 2002, CDFG 1995). Coho salmon were not observed during dewatering and fish capture and relocation efforts in 2004 and 2005, which resulted in the relocation of nearly 800 juvenile steelhead (Caltrans 2011). Based on the typical summer habitat conditions presently in the action area (low riparian canopy cover and warm daytime temperatures), NMFS does not expect juvenile coho salmon to be present during project implementation, and therefore effects to SONCC coho salmon are not assessed further in this BO. This BO will analyze affects to juvenile CC Chinook salmon (rare, but possibly present in early to mid-June) and NC steelhead (abundant at the project site). Rattlesnake Creek is not designated as critical habitat for NC steelhead.

A. Species Description, Life History, and Status

In this opinion, NMFS assesses four population viability parameters to help us understand the status of CC Chinook salmon and NC steelhead and their populations' ability to survive and recover. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000). While there is insufficient information to evaluate these population viability parameters in a thorough quantitative sense, NMFS has used existing information to determine the general condition of each population and factors responsible for the current status of the ESU and DPS.

We use these population viability parameters as surrogates for numbers, reproduction, and distribution, the criteria found within the regulatory definition of jeopardy (50 CFR 402.20). For example, the first three parameters are used as surrogates for numbers, reproduction, and distribution. We relate the fourth parameter, diversity, to all three regulatory criteria. Numbers, reproduction, and distribution are all affected when genetic or life history variability is lost or constrained resulting in reduced population resilience to environmental variation at local or landscape-level scales.

1. Chinook Salmon

a. General Life History

Chinook salmon return to freshwater to spawn when they are three to eight years old (Healey 1991). Chinook salmon runs are designated on the basis of adult migration timing; however, distinct runs also differ in the degree of maturation at the time of river entry, thermal regime and flow characteristics of their spawning site, and actual time of spawning (Myers *et al.* 1998). Both winter-run and spring-run Chinook salmon tend to enter freshwater as immature fish, migrate far upriver, and delay spawning for weeks or months. For comparison, fall-run Chinook

salmon enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of rivers, and spawn within a few days or weeks of freshwater entry (Healey 1991).

Fall-run CC Chinook salmon migrate upstream during August through December, with peak migration periods occurring in October and November (Chase *et al.* 2007). Spawning occurs from late September through December.

Regardless of run-time, Chinook salmon generally spawn in gravel beds that are located at the tails of holding pools (Myers *et al.* 1998). Adult female Chinook salmon prepare redds in stream areas with suitable gravel composition, water depth, and velocity. Optimal spawning temperatures range between 6.0 degrees (°) to 14.0° Celsius (C). Preferred spawning substrate is clean, loose gravel, mostly sized between 1 and 10 cm, with no more than 5 percent fine sediment. Chinook salmon require a strong, constant level of subsurface flow, and therefore suitable spawning habitat is more limited in most rivers. After depositing eggs in redds, most adult Chinook salmon guard the redd from 4 to 25 days before dying. Chinook salmon eggs incubate for 90 to 150 days, depending on water temperature. Successful incubation depends on several factors including dissolved oxygen levels, temperature, substrate size, amount of fine sediment, and water velocity. Maximum survival of incubating eggs and pre-emergent fry occurs at water temperatures between 6.0° and 13.0° C with a preferred temperature of 11.0° C. CC Chinook salmon fry emerge from the redd during December through mid-April (Leidy and Leidy 1984).

After emergence, Chinook salmon fry seek out areas behind fallen trees, back eddies, undercut banks, and other areas of bank cover (Everest and Chapman 1972). As they grow larger, their habitat preferences change. Juveniles move away from stream margins and begin to use deeper water areas with slightly faster water velocities, but continue to use available cover to minimize the risk of predation and reduce energy expenditure. Fish size appears to be positively correlated with water velocity and depth (Chapman and Bjornn 1969, Everest and Chapman 1972). Optimal temperatures for both Chinook salmon fry and fingerlings range from 12.0° to 14.0° C, with maximum growth rates at 13.0° C (Boles 1988). Chinook salmon feed on small terrestrial and aquatic insects and aquatic crustaceans. Cover, in the form of rocks, submerged aquatic vegetation, logs, riparian vegetation, and undercut banks provide food, shade, and protect juveniles from predation.

CC Chinook salmon will rear in freshwater for a few months and out-migrate between February and early July (Myers *et al.* 1998, Chase *et al.* 2007). CC Chinook tend to use estuaries and coastal areas for rearing more extensively than Central Valley winter-run or spring-run Chinook salmon. The brackish water areas in estuaries moderate the physiological stress that occurs during parr to smolt transitions.

b. Status of CC Chinook Salmon ESU

The CC Chinook salmon ESU was historically comprised of approximately 38 Chinook salmon populations (Bjorkstedt *et al.* 2005, Spence *et al.* 2008). Many of these populations (about 21) were independent, or potentially independent, meaning they had a high likelihood of surviving for 100 years absent anthropogenic impacts. The remaining populations were likely more dependent upon immigration from nearby independent populations than dependent populations of other salmonids (Bjorkstedt *et al.* 2005, Spence *et al.* 2008).

Data on CC Chinook abundance, both historical and current, are sparse and of varying quality (Bjorkstedt *et al.* 2005, Spence *et al.* 2008). Estimates of absolute abundance are not available for populations in this ESU (Myers *et al.* 1998). In 1965, CDFG estimated escapement for this ESU at over 76,000 (CDFG 1965). Most were in the Eel River (55,500), with smaller populations in Redwood Creek (5,000), Mad River (5,000), Mattole River (5,000), Russian River (500) and several smaller streams in Humboldt County (Myers *et al.* 1998). Currently available data indicate abundance is far lower, suggesting an inability to sustain production adequate to maintain the ESU's populations. Recent growth rates are negative for Chinook salmon coast-wide in California. For example, in 2007, 2008, and 2009, dramatic declines in Chinook salmon returns occurred throughout California (SWFSC 2008, Lindley *et al.* 2009).

CC Chinook salmon populations remain widely distributed throughout much of the ESU. Notable exceptions include the area between the Navarro River and Russian River and the area between the Mattole and Ten Mile River populations (Lost Coast area). The lack of Chinook salmon populations both north and south of the Russian River (the Russian River is at the southern end of the species' range) makes it one of the most isolated populations in the ESU. Myers *et al.* (1998) reports no viable populations of Chinook salmon south of San Francisco, California.

Because of their prized status in the sport and commercial fishing industries, CC Chinook salmon have been the subject of many artificial production efforts, including out-of-basin and out-of-ESU stock transfers (Bjorkstedt *et al.* 2005). It is therefore likely CC Chinook salmon genetic diversity has been significantly adversely affected despite the relatively wide distribution of populations within the ESU. An apparent loss of the spring-run Chinook life history in the Eel River Basin and elsewhere in the ESU also indicates risks to the diversity of the ESU.

Data from the 2009 adult CC Chinook salmon return counts and estimates indicated a further decline in returning adults across the range of CC Chinook salmon on the coast of California (Jeffrey Jahn, NMFS, personal communication 2010). Ocean conditions are suspected as the principal short term cause because of the wide geographic range of declines (SWFSC 2008, Lindley *et al.* 2009). However, the number of adult CC Chinook salmon returns in the Russian River Watershed increased substantially in 2010/2011 compared to 2008/09 and 2009/10

returns[2]. In addition, the number of CC Chinook salmon returns to the Van Arsdale Fisheries Station located on the Upper Eel River also increased substantially in the fall of 2010, exceeding the number of adult Chinook salmon counted in this system since counts began in 1933 (Jeffrey Jahn, personal communication 2011).

2. Steelhead

a. General Life History

Steelhead are anadromous forms of *O. mykiss*, spending some time in both freshwater and saltwater. Steelhead young usually rear in freshwater for one to three years before migrating to the ocean as smolts. Migration to the ocean usually occurs in late winter and spring. Steelhead may remain in the ocean for one to five years (two to three years is most common) before returning to their natal streams to spawn (Shapovalov and Taft 1954, Busby *et al.* 1996, Moyle 2002). The distribution of steelhead in the ocean is not well known. Coded wire tag recoveries indicate most steelhead tend to migrate north and south along the continental shelf (Barnhart 1986). The timing of upstream migration steelhead adults is correlated with higher flow events, in winter or spring. In contrast to other species of *Oncorhynchus*, steelhead may spawn more than one season before dying (iteroparity); although one-time spawners represent the majority (Shapovalov and Taft 1954).

Out-migration appears to be more closely associated with size than age. In Waddell Creek, Shapovalov and Taft (1954) found steelhead juveniles migrating downstream at all times of the year, with the largest numbers of young-of-year (YOY, or Age 0+) and yearlings (Age 1+) steelhead moving downstream during spring and summer. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Meehan and Bjornn 1991). Juvenile steelhead tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids (Everest and Chapman 1972, Smith and Li 1983). Young steelhead feed on a wide variety of drifting aquatic and terrestrial insects (Everest and Chapman 1972, Moyle 2002). In winter, juvenile steelhead become less active and hide in available cover, including gravel or woody debris (Moyle 2002).

Juvenile steelhead typically reside in freshwater habitats during their first summer (or more), and therefore adequate stream flow and water temperature are critical for their survival. Water temperature can influence the metabolic rate, distribution, abundance, and swimming ability of rearing juvenile steelhead (Barnhart 1986, Myrick and Cech 2005). Optimal temperatures for steelhead growth range between 10 and 20° C (Hokanson *et al.* 1977, Wurtsbaugh and Davis 1977, Myrick and Cech 2005). Fluctuating diurnal water temperatures are also important for the survival and growth of salmonids (Busby *et al.* 1996). Suspended sediment concentrations, or turbidity, also can influence the distribution and growth of steelhead (Bell 1973, Sigler *et al.*

[2] http://www.scwa.ca.gov/chinook/

1984, Newcombe and Jensen 1996). Bell (1973) found suspended sediment loads of less than 25 milligrams per liter (mg/L) were typically suitable for rearing juvenile steelhead.

b. Status of NC Steelhead DPS

Overall, population numbers for NC steelhead are severely reduced from pre-1960s levels, when approximately 198,000 adult NC steelhead migrated upstream to spawn in the major rivers of this DPS (65 FR 36074, Busby *et al.* 1996). Adult return data from dams on the upper Eel River and Mad River between the 1930's and 1980's indicate the populations of NC steelhead in these watersheds have declined substantially since the 1930's and 40's (Good *et al.* 2005) and data from the Cape Horn Dam on the Eel River show strong declines prior to 1970 (63 FR 13347). The upper reaches, in particular, have suffered drastic declines since 1988 (CDFG 1997). Current comprehensive geographic distribution information is not available for this DPS, but NC steelhead are considered to remain widely distributed (NMFS 1997). Good *et al.* (2005) identified barriers to migration, poor forest and other land use practices that cause sedimentation and loss of spawning gravels, and invasive species (*e.g.,* Sacramento pikeminnow, *Ptychocheilus grandis*) as major risks and limiting factors affecting populations of NC steelhead. Two populations, the Mad River and Upper Eel River, have lost considerable amounts of historic habitat due to dams (Spence *et al.* 2008). Hatchery practices in this DPS have exposed the wild population to genetic introgression and the potential for deleterious interactions between native stock and introduced steelhead (65 FR 36074). As with previous reviews, the biological review team concluded the NC steelhead DPS is likely to become endangered (Good *et al.* 2005).

Adult returns of NC steelhead during 2007/08 were considered average, data from the 2008/09 adult NC steelhead were lower and indicate populations remained suppressed across much of their range compared to historic amounts. However, returns during the 2009/10 and preliminary data on the 2010/11 returns indicate increases in many populations of NC steelhead compared to the previous two years (Jeffrey Jahn, personal communication, 2011).

4. Status of Critical Habitat for SONCC coho salmon and CC Chinook salmon

The condition of critical habitat for SONCC coho salmon and CC Chinook salmon, specifically its ability to provide for their conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined the present depressed population conditions are, in part, the result of the following human-induced factors affecting critical habitat: logging, agriculture, and mining activities, urbanization, stream channelization, dams, wetland loss, and water withdrawals, including unscreened diversions for irrigation. Migration, rearing and spawning PCEs have been lost.

Numerous studies have demonstrated that land use activities associated with logging, road construction, urban development, mining, agriculture, and recreation have significantly degraded critical habitat quantity and quality in the ESUs. Impacts of concern include alteration of stream

bank and channel morphology, alteration of water temperatures, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, removal of riparian vegetation resulting in increased stream bank erosion, increases in erosion entry to streams from upland areas, loss of shade (higher water temperatures) and loss of nutrient inputs (Busby *et al.* 1996, Myers *et al.* 1998, 70 FR 52488). Depletion and storage of natural river and stream flows have drastically altered natural hydrologic cycles in many of the streams in the ESUs. Alteration of flows results in migration delays, loss of suitable habitat due to dewatering and blockage; stranding of fish from rapid flow fluctuations; entrainment of juveniles into poorly screened or unscreened diversions, and increased water temperatures harmful to salmonids.

B. Factors Responsible for Salmonid Stock Declines

NMFS cites many reasons (primarily anthropogenic) for the decline of salmonids (Busby *et al.* 1996, Myers *et al.* 1998, Adams 2000, Good *et al.* 2005). The foremost reason for the decline in these anadromous populations is the degradation and/or destruction of freshwater and estuarine habitat caused by anthropogenic disturbances such as urban development, agriculture, logging, water resource development, and dams. Additional factors contributing to the decline of these populations include: poor estuary/lagoon management (Smith 1990, Bond 2006), commercial and recreational harvest, artificial propagation (Waples 1991), natural stochastic events, marine mammal predation (NMFS 1999, Hanson 1993), reduced marine-derived nutrient transport (Bilby *et al.* 1996, Bilby *et al.* 1998, and Gresh *et al.* 2000), and most recently poor ocean conditions (Lindley *et al.* 2009).

C. Global Climate Change

Modeling of climate change impacts in California suggests average summer air temperatures are expected to increase (Lindley *et al.* 2007). Heat waves are expected to occur more often, and heat wave temperatures are likely to be higher (Hayhoe *et al.* 2004). Total precipitation in California may decline; critically dry years may increase (Lindley *et al.* 2007, Schneider 2007). The Sierra Nevada snow pack is likely to decrease by as much as 70 to 90 percent by the end of this century under the highest emission scenarios modeled (Luers *et al.* 2006). Wildfires are expected to increase in frequency and magnitude, by as much as 55 percent under the medium emissions scenarios modeled (Luers *et al.* 2006). Vegetative cover may also change, with decreases in evergreen conifer forest and increases in grasslands and mixed evergreen forests. The likely change in amount of rainfall in northern and central coastal streams under various warming scenarios is less certain, although as noted above, total rainfall across the state is expected to decline. For the California North Coast, some models show large increases (75 to 200 percent) while other models show decreases of 15 to 30 percent (Hayhoe *et al.* 2004). Many of these changes are likely to further degrade salmonid habitat by, for example, reducing stream flows during the summer and raising summer water temperatures. Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts

(Scavia *et al.* 2002). In marine environments, ecosystems and habitats important to sub adult and adult salmonids are likely to experience changes in temperatures, circulation and chemistry, and food supplies (Feely *et al.* 2004, Brewer 2008, Osgood 2008, Turley 2008). The projections described above are for the mid to late 21st Century. In shorter time frames natural climate conditions are more likely to predominate (Cox and Stephenson 2007, Smith *et al.* 2007).

V. ENVIRONMENTAL BASELINE

The environmental baseline is the current status of the species and critical habitat in the action area based on analysis of the effects of past and ongoing human and natural factors. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impacts of State or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

The action area is located on Rattlesnake Creek, a large tributary to the South Fork Eel River. Rattlesnake Creek is a perennial stream that drains approximately 37.5 square miles and has 11 miles of blue line stream (Caltrans 2011). Rattlesnake Creek flows west and joins the South Fork Eel River at river mile 74.3, approximately 7 miles southeast of the town of Leggett in northern Mendocino County. Elevations in the South Fork Eel River watershed range from 100 to 4,500 feet. According to Bureau of Land Management (BLM) *et al.* (1996), the South Fork Eel watershed contains 713 miles of United States Geologic Survey (USGS) identified streams. Approximately 20 percent of the watershed is publically owned by California State Parks and BLM (U.S. EPA 1999). Rattlesnake Creek and other eastside tributaries of the South Fork Eel River have relatively high summer water temperatures because of low canopy cover (less than 30 percent) and warm inland air temperatures.

By the early 20th century the South Fork Eel River watershed experienced rapid growth with the development of tanbark harvesting for tannin. After World War II, timber harvesting increased dramatically and continued for about 20 years until all of the Douglas fir on private lands had been harvested (BLM *et al.* 1996). The most recent economic trend in the watershed is illegal marijuana cultivation, which started in the 1970's (BLM *et al.* 1996). Severe floods in 1955, 1964, and 1986, exacerbated by land use practices, were major factors contributing to the population declines and habitat degradation of CC Chinook salmon and steelhead in the Eel River Watershed (Yoshiyama and Moyle 2010). Elevated culverts and dysfunctional fish ladders have reduced fish passage in many tributaries throughout the drainage (Lang 2005, Yoshiyama and Moyle 2010).

A. Status of Critical Habitat in the Action Area

Rattlesnake Creek is considered an eastside basin within the South Fork Eel River watershed, which generally experiences greater daytime air temperatures and has more limited forest cover. CDFG conducted a stream habitat survey of Rattlesnake Creek in 1993, which extended from the confluence with the South Fork Eel River upstream approximately 8.6 miles (CDFG 1995). CDFG ended their survey due to landowner access problems; however they noted un-surveyed anadromous habitat existed beyond this point. Stream flows at the mouth of Rattlesnake Creek were measured at approximately 6-7 cubic feet per second (cfs), with upstream areas measuring about 3-4 cfs at the time of the survey in August.

The channel of Rattlesnake Creek in the project area is dominated by bedrock and patchy willows and alders above the high water mark. The surrounding hill slopes are steep and vegetated with species common to the coastal mountains, including Douglas fir, tanoak, California buckeye, poison oak, and *Ceanothus*. Stream flow is typically less than 5 cubic feet per second (cfs) during the summer months. Pool habitat comprises about 20 percent of the stream length in the project area and many of these pools are greater than 3 feet deep. The pools provide rearing habitat for larger yearlings and older salmonid age classes and some may provide refuge from high water temperatures. Stream temperatures ranged from 13.0 to 23.0°C during June and July of 1993 (CDFG 1995). Typically, these water temperatures are suitable for summer rearing by juvenile steelhead, but may reach levels that cause temporary stress to rearing steelhead during the warmest days of the summer if food is insufficient (Smith and Li 1983, Bjornn and Reiser 1991). Elevated summer water temperatures in Rattlesnake Creek are a result of both natural (*e.g.*, geographic location) and anthropogenic (*e.g.*, historic logging) conditions. Riparian canopy cover over Rattlesnake Creek averaged approximately 29 percent throughout. Summer water temperatures are generally not suitable for coho salmon rearing, but are adequate for steelhead. Habitat conditions in the action area are suitable for salmon and steelhead spawning.

In the action area, the banks upstream of the culvert consist largely of bedrock, which naturally precludes the development of riparian vegetation. Downstream of the culvert, the banks consist of gravel and cobble, however due to the steep nature of the canyon, riparian vegetation along these banks, particularly along the low flow channel, are scoured during winter high flows. By summer, willow saplings are present with some larger (but still young) willows further from the water's edge. Overall, these trees provide little shade. Shade is provided more by the steep canyon walls than by a riparian tree canopy.

Based on the above information, NMFS believes the overall PCEs for rearing are somewhat degraded because some essential elements (*e.g.*, appropriate water temperatures) may have been adversely impacted by past logging related activities (as described above and below). The PCEs for migration through the action area are considered good, although several natural bedrock falls may cause temporary delays in adult upstream migration and some prevent juvenile passage during low flow conditions (Becker and Reining 2009). Overall, the PCEs for spawning appear to be in good condition throughout Rattlesnake Creek based on availability and quality of spawning gravels in the creek (CDFG 1995, Joel Casagrande, NMFS, personal observation,

August 25, 2010).

B. Status of Listed Salmonids within the Action Area

The Rattlesnake Creek Watershed supports a natural run of steelhead, which has been classified as a functionally independent population within the North Coastal Diversity Stratum, and a natural run of Chinook salmon, which was also classified as a functionally independent population within the North Coastal Diversity Stratum (Bjorkstedt *et al.* 2005, Spence *et al.* 2008). Both species currently use Rattlesnake Creek as migration, spawning, and rearing habitat. Habitat conditions in the project action area appear to be suitable for salmon and steelhead spawning (NMFS 2003, CDFG 1995). Biological surveys conducted in 1993 and recent observations in 2001 and 2002 indicate Rattlesnake Creek supports relatively high densities of juvenile steelhead representing multiple age classes both upstream and downstream of the project culvert (CDFG 1995). In 2005, 738 juvenile steelhead, consisting of multiple age classes, were relocated from the project action area as part of the original dewatering attempts for this project (Caltrans 2011). During a site visit in August 2010, juvenile steelhead of multiple age classes were abundant throughout the project action area (Joel Casagrande, NMFS, personal observation, August 25, 2010).

CDFG conducted carcass surveys in 1987, and found 20 Chinook salmon carcasses and 6 redds, indicating use of Rattlesnake Creek by Chinook salmon for spawning is likely to still occur. Juvenile Chinook salmon were not found during the dewatering attempts in 2004 or 2005. Chinook salmon juveniles typically emigrate from their natal streams by late spring and therefore are not expected to be present during summer and fall surveys.

Summer surveys between 1997 and 2003 failed to detect juvenile coho salmon or Chinook salmon (NMFS 2003). However, CDFG biologists have noted the presence coho salmon in Rattlesnake Creek is possible if suitable habitat conditions (*i.e.,* cool summer water temperatures) were to be present (S. Harris, CDFG, personal communication 2002). CDFG recovery planning recommendations state most tributaries on the east side of the South Fork Eel River Watershed (including Rattlesnake Creek) have little potential for coho salmon recovery (CDFG 2002). No juvenile coho salmon were observed during the fish relocation attempts in 2004 or 2005.

Since the early 1990's, juvenile steelhead in Rattlesnake Creek (including the action area), have been abundant during various surveys and observations. Although the current populations of steelhead and Chinook salmon are thought to be well below historic levels in the South Fork Eel River (Yoshiyama and Moyle 2010), there is no data to suggest the number of returning adults of either species is increasing or decreasing in Rattlesnake Creek. During the winter of 2010/2011, the number of returning adult Chinook salmon to the Eel River drainage (based on counts at the Van Arsdale Fisheries Station on the upper Eel River mainstem) were the highest observed since counts began in 1933. However, one year of high returns to the mainstem of the Eel River

following decades of low returns does not confirm an improved population trend in the South Fork Eel River, or its tributary Rattlesnake Creek.

C. Factors Affecting Species Environment within the Action Area

Most of the factors affecting ESA-listed fish species and their environment in the action area are related to fish passage (both natural and anthropogenic causes). Bedrock falls are common along lower Rattlesnake Creek and many form natural barriers to juvenile salmonids during low flow conditions (Becker and Reining 2009). During a survey in 1939, CDFG noted Rattlesnake Creek downstream of its confluence with Mad Creek (located approximately 0.75 miles upstream of the action area), had a number of steep natural falls and cascades that were suspected of limiting juvenile passage during low flow conditions (Becker and Reining 2009). The bedrock fall located at the debris rack is an example of one of these areas that likely restricts juvenile upstream passage during the dry season. Although the debris rack is checked and cleared, adult salmonids migrating upstream during winter may be temporarily blocked if the rack becomes clogged with a significant amount of debris (*e.g.,* woody material). The two barrels of the culvert currently dry during most summers with the north barrel drying first. If and when the south barrel dries, the stream becomes disconnected and therefore juvenile passage is restricted. As described above, the proposed project seeks to repair the culvert bottom (lower the culvert bottom elevation) and repair the small weir immediately downstream of the culvert outlet which will maintain surface flows through at least the south barrel year round. Other factors include elevated water temperatures during summer that are the result of both natural and past anthropogenic influences at a watershed scale (*i.e.,* historic logging, discussed above).

D. Previous Section 7 Consultations and Section 10 permits in the Action Area

In 2003, NMFS issued its biological opinion (NMFS 2003) for the Rattlesnake Creek Culvert Repair and Improvement Project. Construction was authorized to start in the summer of 2004 and was to be completed by October 15 of the same year. Construction began late due to a delay in awarding of the contract to the contractor. The contractor, Sonoma Engineering Inc. (SEI), had trouble successfully dewatering the project area, yet in the process relocated 63 young-of-the-year (YOY) steelhead with one mortality (64 total fish captured). Following this activity, the project was shut down by the Occupational Safety Health Administration (OSHA). After all OSHA requirements were fulfilled, SEI again attempted to dewater the project area and 30 juvenile steelhead were removed and relocated. However, dewatering was again unsuccessful and the project could not be completed in 2004 (Caltrans 2011). In early 2005, NMFS and Caltrans agreed on a second year of dewatering and fish relocation (Jacqueline Pearson-Meyer, NMFS, personal communication, September 2011). That summer, SEI attempted to dewater the project site again, which was a much larger operation than the attempts in 2004. A total of 675 YOY steelhead, 53 Age 1+ steelhead, and 10 Age 2+ steelhead were removed with three total mortalities (738 total steelhead). Again, the entire project was not completed due to difficulties with dewatering.

The work completed in 2004 and 2005 included repairing the north barrel and construction of the access road. Large storms during the winter of 2005-2006 further damaged the south barrel of the culvert, exposing rebar reinforcement. The weir at the outlet was also further damaged, creating pools that presented a stranding risk to juvenile salmonids.

Aside from the original consultation for this project (described above), no other section 7 consultations have occurred in the action area.

Section 10(a)(1)(A) research and enhancement permits and research under exemptions granted under section 4(d) of the ESA could potentially occur in the Rattlesnake Creek Watershed in the future. Based on NOAA's Authorizations and Permits for Protected Species (APPS) website[3], there are currently five active section 10(a)(1)(A) research and enhancement permits have been issued that authorize research on salmonids in the South Fork Eel River Watershed, of which only Permits 10093 issued to CDFG Region 1, and 1044 issued to NMFS's Southwest Fisheries Science Center specifies and authorizes sampling throughout the South Fork Eel River Watershed (including Rattlesnake Creek). There are no authorized research projects under the 2011 4(d) research program, and NMFS is unaware of any potential activities that may request coverage under the 4(d) research program in future years. In general, all research activities are closely monitored and require measures to minimize take during the research activities. As of August 2011, no take of salmonids has occurred in the action area related to research permits and NMFS is unaware of any proposed sampling in the immediate future.

VI. EFFECTS OF THE ACTION

A. Fish Capture and Relocation and Dewatering the Project Area

The repair of the debris rack, culvert inlet, culvert bottom, and the outlet weir will require dewatering of portions of the action area and therefore fish capture and relocation will be necessary. As described above, prior to construction of the dewatering facilities, block nets will be placed at the upstream and downstream end of each dewatered area. Once the nets are in place, a NMFS approved fisheries biologist will capture and relocate salmonids from the dewatered areas until they are confident few or no fish remain. Fish capture and relocation will continue once the dewatering process begins in order to ensure fish are not stranded during the drawdown of the dewatered areas. At the debris rack, captured juvenile steelhead will be relocated upstream of the debris rack, and at the culvert/outlet weir dewatered area, juvenile steelhead will be relocated downstream. All juvenile CC Chinook will be relocated downstream of the outlet weir so they may continue on their out-migration.

[3] https://apps.nmfs.noaa.gov/search/search.cfm

Based on the number of fish observed during recent surveys and relocation efforts for this project (738 steelhead relocated in 2005) described above, and the reduced size of the dewatered area, NMFS estimates up to 500 juvenile steelhead may be present within the dewatered areas. The likelihood of juvenile Chinook salmon is very low, but does exist. Juvenile Chinook salmon normally migrate out of their natal stream between 60 and 150 days post-hatching (*i.e.*, by early summer), but under some conditions may remain in freshwater their first year (Myers *et al.* 1998). Although juvenile Chinook salmon were not found during relocation efforts in 2004 and 2005, adult Chinook salmon carcasses have been observed in Rattlesnake Creek in the past, and in wetter years the out-migration period for juvenile Chinook salmon may extend into late June or even early July. Late emigration has been observed in other nearby watersheds within the CC Chinook salmon ESU (Chase *et al.* 2007). Based on this information, NMFS anticipates a small number of CC Chinook salmon (up to 50 individuals) may be present during fish capture and relocation activities.

Caltrans proposes to use seines and backpack electrofishing to capture and relocate salmonids. Fish capture and relocation activities pose a risk of injury or mortality to fish species. Fish collecting gear, whether passive (Hubert 1996) or active (Hayes *et al.* 1996) has some associated risk to fish, including stress, disease transmission, injury, or death. The amount of unintentional injury and mortality attributable to fish capture varies widely depending on the method used, the ambient conditions, and the expertise and experience of the field crew. Since fish relocation activities will be conducted by qualified fisheries biologists following both the CDFG and NMFS guidelines, direct effects to and mortality of steelhead and Chinook salmon during capture will be minimized. Data from years of similar salmonid relocation activities indicate average mortality rate is below one percent (Collins 2004; CDFG 2005, 2006, 2007, 2008, 2009, 2010). Based on this information, NMFS will use 2 percent as the maximum amount of mortality likely from fish relocation for the project; or no more than ten juvenile steelhead and one juvenile Chinook salmon.

Although sites selected for relocating fish should have ample habitat, in some instances relocated fish may endure short-term stress from crowding at the relocation sites. Relocated fish may also have to compete with other fish causing increased competition for available resources such as food and habitat (Keeley 2003). Stress from crowding, including increased competition for food among juvenile steelhead in the relocation areas will be minimal and temporary, because when the project is finished steelhead will be able to redistribute in the creek unimpeded. NMFS cannot estimate the number of fish affected by competition, but does not believe this impact will be large enough to affect the survival chances of individual fish. For example, the use of multiple release sites will help facilitate fish dispersion, limiting competition. Once the project is complete and following the first precipitation event, juvenile Chinook salmon and steelhead rearing space will return to the dewatered area. Despite these impacts, fish relocation operations, if necessary, are expected to significantly minimize project impacts to juvenile steelhead and Chinook salmon by removing them from areas where they would have experienced high rates of injury and mortality.

B. Dewatering

Direct effects from dewatering will occur to juvenile salmonids within this reach, and most likely to juvenile steelhead only. Caltrans has worked with NMFS to minimize the area that will be subject to dewatering. As described above, two separate areas will be dewatered: 1) the area immediately around the debris rack and 2) the area encompassing the culvert and outlet weir. Stream flow in the large pool between the debris rack and the culvert inlet will be maintained (river flow will be diverted around debris rack area into the large pool). This will substantially minimize relocation of juvenile salmonids and maintain the maximum amount of rearing habitat within the project area.

Caltrans has proposed to construct cofferdams from a suite of different materials and would like to maintain the flexibility to use clean imported gravel, impermeable liners (*e.g.*, plastic), water bladders, and/or sand bags to accomplish cofferdam construction. Low levels of turbidity are expected to occur as a result of the cofferdam construction. Caltrans will construct the cofferdams without the use of heavy equipment in the live stream. Fish capture and relocation will occur prior to (and after) the construction of the cofferdams. This will remove most, if not all, fish from the areas where the cofferdams will be constructed. Juvenile salmonids that avoid capture prior to the implementation of site dewatering will die if not captured while the dewatering is underway. Caltrans or its contractors will continue fish capture and relocation during the dewatering process. NMFS expects the number of juvenile salmonids that will be killed as a result of stranding during dewatering activities will be one percent or less of the fish within the action area prior to dewatering, or no more than five steelhead and one Chinook salmon. During the dewatering process, the biologist on site will make every effort to collect and relocate fish that avoided capture prior to the beginning of the dewatering process.

Another manner by which juvenile salmonids may be harmed or killed during dewatering activities is to be entrained into the pumps or discharge line. To eliminate this risk, the applicant will screen all pumps according to NMFS criteria, to ensure juvenile steelhead or Chinook salmon will not be harmed by the pumps during dewatering events.

Juvenile salmonids rearing downstream of the action area may be inadvertently affected by the loss of benthic (*i.e.*, bottom dwelling) aquatic macroinvertebrate production within the dewatered area (Cushman 1985). However, effects to aquatic macroinvertebrates resulting from dewatering will be temporary because construction activities will be relatively short-lived, drift from upstream will continue through the pipe, and rapid re-colonization (about two to three months) of disturbed areas by macroinvertebrates is expected following construction (Cushman 1985, Thomas 1985, Harvey 1986).

C. Effects of Access Road Construction

At the end of the permanent access road some additional disturbance is expected when contractors gain access to the stream channel to conduct work on the weir and both culvert bottom. This area is approximately 80 feet long and 10 feet wide and has a relatively gentle slope, which should reduce the need for major ground disturbance for access. Increases in turbidity caused by the construction of the access road are discussed below and the effects of vegetation removal are discussed below in the *Habitat Loss* section.

D. Turbidity

NMFS anticipates only short-term increases in turbidity will occur during the construction and removal of cofferdams. Suspended sediment may affect salmonid feeding behavior and efficiency, resulting in reduced growth rates (Sigler *et al.* 1984, Newcomb and Jensen 1996). Also, because of turbidity, salmonids disperse from established territories, which can temporarily displace fish into less suitable habitats and which can lead to reduced growth rates (Sigler *et al.* 1984).

Much of the research discussed in the paragraph above focused on turbidity levels higher than those expected to occur during implementation of the proposed activities. As described above in the Environmental Baseline, substrate throughout the action area consists of course material (cobbles, boulders and bedrock) with very low abundance of fine sediment (Joel Casagrande, NMFS, personal observation, August 25, 2010), and because of these conditions, NMFS expects the increase in turbidity to be minor during the proposed activities. Still, the effects of elevated turbidity may extend downstream approximately 1,000 feet, beyond which, much if not all of the suspended material would settle in the stream channel. Observations of turbidity response during removal of dewatering facilities in a Central California Coast watershed where substrate quality was considerably worse and stream flows were higher indicated a majority of the suspended sediment dropped out in the first 300 to 400 feet from the source (Joel Casagrande, NMFS, personal observation).

Monitoring of newly replaced culverts within Humboldt County indicated temporary increases in turbidity following winter storm events in which the measured turbidity was generally less than the turbidity threshold commonly cited as beginning to cause minor behavioral changes (Humboldt County 2002, 2003, and 2004), and always less than turbidity levels necessary to injure or kill salmonids. Impacts associated with degraded water quality will likely be limited to behavioral effects, such as temporarily vacating preferred habitat or temporarily reduced feeding efficiency. These temporary changes in behavior, may slightly reduce growth rates, but are not likely to reduce the survival chances of individual juvenile salmonids. Caltrans has included BMPs to reduce the likelihood of sediments from entering the stream. NMFS assumes these actions will be effective at reducing sedimentation rates. Any increases in turbidity due to the construction of coffer dams and during the initial re-wetting of the reconfigured channel will

likely be minimal due to the minimal amount of fine sediment available for suspension in the action area and the incorporation of BMP's and adherence to the listed terms and conditions in this biological opinion. Therefore, any short-term impact associated with turbidity during implementation of this project is expected to be insignificant.

E. Debris Rack Repair

Reinforced concrete will be used to re-bolster the eroded center debris rack support. This will include filling small portions of the two pools immediately downstream of the rack. NMFS expects the minor reduction in pool volume as a result of filling small portions of these two pools with concrete will not result in substantial impacts to the availability or quality of habitat for rearing steelhead. The filling will not result in a reduction in pool depth and will only marginally impact the width of the pools. The pool on the left bank side of the support often becomes disconnected during low flow conditions. The repaired footing will be constructed with a tunnel-like opening (at the request of CDFG) in order to connect the two pools. This will provide improved habitat connectivity and will prevent the potential stranding of rearing steelhead in the left bank pool during low flow conditions.

F. Habitat Loss

Impacts on riparian and aquatic habitat will occur as a result of the temporary loss of vegetation within the footprint of the proposed temporary access road and during the repairs to the outlet weir. Riparian zones serve important functions in stream ecosystems by providing shade, sediment storage, nutrient inputs, channel and stream bank stability, habitat diversity, and cover and shelter for fish (Murphy and Meehan 1991). Small streams are especially sensitive to loss of riparian habitat and shade, which moderates stream temperatures by insulating the stream from solar radiation and reducing heat exchange with the surrounding air. This function is particularly important for Rattlesnake Creek, where summer water temperatures frequently exceed optimum levels for rearing salmon and steelhead.

To minimize the temporal loss of riparian vegetation and the potential for incremental effects on stream temperatures, Caltrans proposes to limit the amount of vegetation removed to the least amount possible. Overall, riparian vegetation is sparse throughout the action area. Existing vegetation will be preserved to the extent possible by pruning or, if necessary, cutting individual plants to within a few inches of the ground to allow natural regeneration to occur following construction (*i.e.,* grubbing will not be conducted). Construction of the temporary access road extension will likely require the removal of riparian vegetation from approximately 24 square feet of creek bank. Meanwhile the repair of the outlet weir may require the removal of vegetation from approximately 26 square feet of creek bank. Most of the vegetation to be removed is consists of young willow saplings. Following repairs to the culvert and weir, all of the disturbed areas will be planted with native vegetation in accordance with an approved re-vegetation and monitoring plan. Because of the small areas affected, the rapid re-growth of

willows, and the implementation of a re-vegetation and monitoring plan, NMFS does not believe the effects of the small amount of vegetation removal along the bank of Rattlesnake Creek will result in appreciable impacts to listed critical habitat or species.

H. Beneficial Effects

The Rattlesnake Creek Culvert Repair and Improvement Project is expected to have some beneficial effects for ESA-listed salmonids. As discussed above, lowering of the bottom of the south barrel and modifying the existing outlet weir will reduce flow velocities through the culvert during winter and help to maintain summer flow through the culvert which will improve fish passage conditions for adults and juveniles throughout the year.

VII. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Caltrans is not aware of any additional actions that would cause cumulative effects beyond those that are ongoing and have been analyzed in the environmental baseline of this biological opinion (Caltrans 2011). In the long term, global climate change may produce temperature and precipitation changes that may adversely affect listed salmonids in the action area. Because this project improves habitat, it may help to provide some resilience to climate change.

VIII. INTEGRATION AND SYNTHESIS

Both the NC steelhead and CC Chinook salmon populations are listed as threatened. Throughout the NC steelhead DPS and CC Chinook salmon ESU and their respective Diversity Strata, stream habitat has been significantly impacted by multiple anthropogenic activities (*i.e.,* logging, agriculture, dams, and stream channelization), which, in turn, have been exacerbated by periodic weather events (*e.g.,* severe floods). Cumulatively, these impacts have contributed to substantial declines in the abundance of both species in many of the watersheds in this region (Good *et al.* 2005, Spence *et al.* 2008). Habitat conditions in the action area are not suitable for coho salmon summer rearing, but are for steelhead, and sufficient for Chinook salmon rearing during spring and early summer emigration. Based on recent observations and sampling, the juvenile steelhead population in Rattlesnake Creek appears to be stable and relatively abundant. Because Chinook salmon juveniles emigrate as YOY in the spring and early summer, they are seldom observed in summer and fall surveys. Monitoring of returning adults in Rattlesnake Creek or the South Fork Eel River has not been conducted in many years, and therefore the population size of CC Chinook salmon in this watershed is not known with precision, but is expected to be relatively

small based on the size of the watershed and condition of CC Chinook salmon in other areas of their range.

Past impacts related to timber harvest, rural development, and the construction of migration impediments throughout the DPS/ESU, have slowed or are improving through habitat and passage enhancement projects. For example, in 2009, Caltrans improved fish passage conditions at an upstream location on Rattlesnake Creek (PM 81.4 on Highway 101) by installing a rock weir and improving an existing fish ladder. This has improved migration access for adult salmonids to additional spawning and rearing habitat upstream in the watershed.

Short term impacts from turbidity and vegetation removal during construction are not likely to adversely affect listed salmonids in the action area. During dewatering of the work site, fish rescue and relocation efforts will take place. Juvenile steelhead are likely to be present and juvenile Chinook salmon may be present at the time of construction, but in lower abundance than steelhead. NMFS anticipates up to 500 juvenile steelhead and up to 50 juvenile Chinook salmon may be affected by the project, and no more than 15 juvenile steelhead and 2 Chinook salmon will die as a result of the proposed activities. The number of juvenile steelhead and Chinook salmon captured and relocated during the proposed project will make up a small proportion of the overall Rattlesnake Creek population (which has over 10 miles of anadromous habitat) and the NC steelhead DPS and CC Chinook salmon ESU. It is unlikely the small potential loss of 15 juvenile steelhead or 2 juvenile Chinook salmon as a result of the project will impact future adult returns, due to the relatively large number of juveniles produced by each spawning pair of both species. Therefore, NMFS does not believe the project will appreciably diminish the abundance, productivity, diversity, or spatial structure of the Rattlesnake Creek population of NC steelhead or CC Chinook salmon.

Short term effects related to turbidity and vegetation removal during the construction and removal of stream flow diversion facilities are expected to be minor and temporary, and NMFS anticipates proposed BMPs will control sediment/turbidity sufficiently to avoid significant adverse effects to listed fish species. No permanent adverse changes in stream flow are anticipated. Therefore, NMFS believes the effects of turbidity increases and flow conditions from the project activities will not have any long-term impacts to the PCEs of SONCC coho salmon and CC Chinook salmon critical habitat. The value of critical habitat in the action area for species conservation is not likely to be appreciably reduced by the activities proposed in this project.

The long term effects to NC steelhead and CC Chinook salmon, and designated SONCC coho salmon and CC Chinook salmon critical habitat, from the proposed project will be beneficial. The project is expected to improve juvenile fish passage opportunities during the summer months by maintaining flow through the culvert and improve the passage conditions for adult salmon and steelhead by reducing velocities in the culvert during periods of high flows.

IX. CONCLUSION

After reviewing the best available scientific and commercial information, the current status of the species and critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion the issuance of the Corps permits for the completion of Caltrans's proposed Rattlesnake Creek Culvert Repair and Improvement Project, in Mendocino County, California is not likely to jeopardize the continued existence of CC Chinook salmon, or NC steelhead.

After reviewing the best available scientific and commercial information, the current status of the species and critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion the issuance of the Corps permits for the completion of Caltrans's proposed Rattlesnake Creek Culvert Repair and Improvement Project, in Mendocino County, California is not likely result in the destruction or adversely modification of designated critical habitat designated for SONCC coho salmon and CC Chinook salmon.

X. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by NMFS as an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by the Corps so that they become binding conditions of the permits issued to Caltrans, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require Caltrans to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Caltrans

must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement (50 CFR §402.14(i)(3)).

A. Amount or Extent of Take

As described above in the accompanying biological opinion, the number of threatened NC steelhead that may be incidentally taken by capture and relocation during project activities is expected to be no more than 500 individuals and the number of threatened CC Chinook salmon is expected to be low (no more than 50 individuals). NMFS anticipates no more than two percent (15 juvenile steelhead and 2 juvenile Chinook salmon) of either species present in the area will be killed during relocation.

The anticipated take will have been exceeded if more than 500 juvenile steelhead or 50 juvenile Chinook salmon are captured or if more than 15 steelhead or 2 Chinook salmon are killed during relocation efforts.

B. Effect of the Take

In the accompanying opinion, NMFS determined this level of anticipated take is not likely to result in jeopardy to either species.

C. Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take of NC steelhead and CC Chinook salmon:

1. Undertake measures to ensure harm and mortality to NC steelhead and CC Chinook salmon resulting from fish relocation is low;

2. Undertake measures to maintain water quality and riparian habitat conditions at pre-construction levels to avoid or minimize harm to NC steelhead and CC Chinook salmon;

3. Prepare and submit reports that document the effects and final outcomes of construction, fish relocation activities, and re-vegetation performance.

D. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Corps, its permittee (Caltrans), and their designees/contractors must comply with the following terms and conditions, which implement the reasonable and prudent measures described above, and outline required reporting/monitoring requirements. These terms and conditions are nondiscretionary.

The following terms and conditions implement Reasonable and Prudent Measure 1, to minimize harm or mortality to listed steelhead and Chinook salmon from fish relocation activities.

1. The applicant (Caltrans) shall provide a list of all BMPs and the Terms and Conditions of this biological opinion to their contractors and ensure they are followed for the length of the project.

2. The applicant, or its contractor, shall provide NMFS with a final Fish Capture and Relocation Plan for review prior to the start of fish collection and relocation activities. The plan must be submitted no less than 30 days prior to the beginning of fish capture and relocation activities (*i.e.*, on or before May 15 of the year to be implemented if beginning on June 15). The plan shall outline all confirmed fish relocation methods, including the location and a description of the habitat where steelhead and Chinook salmon are to be relocated. The plan shall be submitted to NMFS' North Central Coast Office (see address below).

3. The project biologist shall notify NMFS biologist Joel Casagrande at (707) 575-6016 or Joel.Casagrande@noaa.gov no later than one week prior to relocation activities in order to provide an opportunity for NMFS staff to observe the activities.

4. The applicant and its contractors will follow NMFS Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act (NMFS 2000). All live steelhead and Chinook salmon shall be handled with extreme care and kept in water to the maximum extent possible during relocation activities. All captured fish shall be kept in cool, shaded, and aerated water that is protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish shall not be removed from this water except when released. If necessary, the biologist shall have at least two containers and segregate young-of-year salmonids from older salmonids and other potential aquatic predators in order to avoid predation affects. Captured salmonids shall be relocated as soon as possible and will be given highest priority over other non-listed fish species. Both juvenile steelhead and Chinook salmon will be released downstream of the project construction area.

5. The biologist will note the number of each species collected/observed in the affected area, the number of fish relocated, and the date and time of collection and relocation. If any dead or fatally wounded fish are observed, they will be collected and placed in an appropriately sized whirl-pack or zip-lock bag, labeled with the date and time of collection, fork length, and location of capture, and frozen as soon as possible. If any fish are fatally wounded, the applicant, or the Corps, will then notify the NMFS biologist, listed above, no later than 2 days from the occurrence.

The following terms and conditions implement Reasonable and Prudent Measure 2, undertake measures to maintain water quality and riparian habitat conditions at pre-construction levels to avoid or minimize harm to NC steelhead and CC Chinook salmon.

6. The applicant, or its contractors, shall monitor in-channel activities and performance of sediment control or detention devices for the purpose of identifying and reconciling any condition that could result in take of listed salmonids. This would include monitoring of turbidity throughout the construction and removal of creek diversion facilities and for one day following the both the construction and removal of the diversion facilities. The results of this monitoring will be used to confirm NMFS's assumption that increases in turbidity levels within and downstream of the action area will be temporary (*i.e.*, increases in turbidity from the construction and removal of the flow diversion facilities will be limited to one day or less).

7. The applicant (Caltrans), or its contractor, shall submit its final re-vegetation plan for review no less than 30 days prior to implementation of the re-vegetation activities. The plan will include a list of species, estimated number and size of each species to be planted, the number and size of each species removed during construction, and any post implementation monitoring plans.

The following terms and conditions implement Reasonable and Prudent Measure 3, prepare and submit a report to document the effects of construction, fish collection and relocation activities, and re-vegetation activities and performance.

8. The applicant (Caltrans) shall provide NMFS with a summary report by January 15 of the year following the completion of fish relocation and monitoring activities. The report shall include the methods used during the fish relocation and monitoring efforts, location, number and species captured, number of mortalities by species, and other pertinent information related to the monitoring and fish relocation activities. Reports shall be submitted to NMFS North Central Coast Office (see address below).

9. The applicant (Caltrans) shall provide NMFS with a summary turbidity monitoring report by January 15 of the year following the completion of the project (removal of dewatering facilities). The report will include turbidity monitoring data collected throughout the construction and removal of the dewatering facilities as described above. The report shall be submitted to NMFS North Central Coast Office (see address below).

10. The applicant (Caltrans), or its contractor, shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to access the work area during the construction period for the purpose of observing monitoring activities, evaluating fish and stream conditions, monitoring performance of BMPs, monitoring water quality, collecting fish samples, or perform other monitoring/studies. NMFS will notify the Caltrans Resident Engineer 48

hours prior to planning a site visit and will contact Caltrans personnel prior to entering the construction site.

11. A final report describing the re-vegetation activities and monitoring shall be submitted to NMFS on January 15th of the year following the end of the post monitoring period. The report shall document the success of the re-vegetation efforts and include photo documentation of the project.

12. All reports required for the above terms and conditions shall be sent to:

NMFS North Central Coast Office
Central Coast Branch Supervisor, Protected Resources Division
Southwest Region
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

XI. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, or to develop information.

1. The Corps and Caltrans, in coordination with NMFS, should identify and prioritize any maintenance and construction projects which, if implemented, can improve ESA-listed salmonid migration or in-stream environmental conditions throughout the North-Central California Coast Recovery Domain.

XII. REINITIATION NOTICE

This concludes formal consultation on Corps issuance of permits for the proposed Rattlesnake Creek Culvert Repair and Improvement Project, Mendocino County, California. As provided in 50 CFR §402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

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XV. PERSONAL COMMUNICATIONS AND OBSERVATIONS

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Jacqueline Pearson-Meyer. 2011. Personal communication. NMFS, Santa Rosa, CA.

Jeffrey Jahn. 2011. Personal Communication. NMFS, Santa Rosa, CA.

CALIFORNIA DEPARTMENT OF FISH AND GAME
NORTHERN REGION
601 LOCUST STREET
REDDING, CALIFORNIA 96001

LAKE OR STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2012-0116-R1
Rattlesnake Creek

1 Encroachment

Mr. Steven Blair representing the Dept. of Transportation (Caltrans)
CULVERT REPAIR AND IMPROVEMENT PROJECT, HIGHWAY 101 AT PM 84.0
RATTLESNAKE CREEK, MENDOCINO COUNTY

This Lake or Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and Mr. Steven Blair (Permittee), representing the California Department of Transportation (Caltrans).

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on May 14, 2012 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1602, DFG has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

The project location is approximately seven miles south of the town of Leggett at Post Mile 84.0 MEN on the State Route 101 crossing of Rattlesnake Creek, thence the South Fork Eel River in the County of Mendocino, State of California; Section 22, Township 23N, Range 16W; Mount Diablo Base and Meridian, in the Tan Oak Park 7.5-minute quadrangle, U.S. Geological Survey (USGS) map, 39° 45' 00"N/123° 30' 00W (NAD 27).

PROJECT DESCRIPTION

The project involves one encroachment: complete remaining work that was previously authorized under Agreement #1600-2003-512-3 at the south barrel of the culvert. Work

will include repaving culvert bottom, repair outlet apron, repair elevated weir, reinforce culvert entrance, de-water area, conduct a fish rescue/relocation and re-vegetate area with prescribed native species. Some vegetation will be removed as a result of this project. Previous plans to reinforce footings of the existing upstream trash rack are no longer planned and are thus not authorized under this Agreement.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: steelhead (*Oncorhynchus mykiss*), coho salmon (*O. kisutch*), foothill yellow-legged frog (*Rana boylii*), and other aquatic and riparian species

The adverse effects the project could have on the fish or wildlife resources identified above include: direct and/or incidental take, impede up- and/or down-stream migration, damage to spawning and/or rearing habitat and potential cumulative impacts.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to DFG personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

1.3 Notification of Conflicting Provisions. Permittee shall notify DFG if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, DFG shall contact Permittee to resolve any conflict.

1.4 Project Site Entry. Permittee agrees that DFG personnel may enter the project site at any time to verify compliance with the Agreement.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

2.1 Except where otherwise stipulated in this Agreement, all work shall be in accordance with the forms, work plans, drawings, biological reports and maps submitted with Notification No. 1600-2012-0116, as modified or amended on May 14, 2012.

2.2 All work within the bed, bank and channel shall be confined to the period June 15 through October 15 of each year.

2.3 No fill material shall be placed within a stream except as specified in this Agreement.

2.4 All heavy equipment (including parts e.g., buckets) that will be entering the stream channel shall be free of materials deleterious to aquatic life including oil, grease, hydraulic fluid, soil and other debris. Cleaning of equipment shall take place outside of the channel and prior to entering the water.

2.5 Any equipment or vehicles driven and/or operated within or adjacent to the stream channel shall be checked and maintained in a manner which prevents materials that, if introduced to water, could be deleterious to aquatic life, wildlife, or riparian habitat.

2.6 Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. The disturbed portions of any stream channel or lake margin within the high water mark of the stream or lake shall be restored to as near their original condition as possible. Restoration shall include re-vegetation of areas stripped or exposed by project activities. Slash pack, rock, or other erosion protection suitable to DFG shall be placed in areas where vegetation cannot reasonably be expected to become reestablished.

2.7 Adequate and effective erosion and siltation control measures shall be used to prevent sediment or turbid or silt-laden water from entering streams. Where needed, the Permittee shall use native vegetation or other treatments including native slash, jute netting, straw wattles, and geotextiles to protect and stabilize soils. Geotextiles, fiber rolls, and other erosion control treatments shall not contain plastic mesh netting.

2.8 All bare mineral soil exposed in conjunction with crossing construction, deconstruction, maintenance or repair, shall be treated for erosion prior to the onset of precipitation capable of generating run-off or the end of the yearly work period, whichever comes first. Restoration shall include using native slash or

seeding and mulching of all bare mineral soil exposed in conjunction with encroachment work. No annual (Italian) ryegrass (*Lolium multiflorum*) shall be used.

2.9 Encroachments and associated structures, fills, and other exposed soils shall be armored as needed to protect fill, abutments, and the stream channel and banks from erosion.

2.10 The Permittee shall provide site maintenance including, but not limited to, re-applying erosion control to minimize surface erosion and ensuring drainage structures, streambeds and banks remain sufficiently armored and/or stable.

2.11 Structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the ordinary high water mark before such flows occur or the end of the yearly work period, whichever comes first.

2.12 Refueling of equipment and vehicles and storing, adding or draining lubricants, coolants or hydraulic fluids shall not take place within or adjacent to any stream. All such fluids and containers shall be disposed of properly. Heavy equipment parked within or adjacent to the stream shall use drip pans or other devices (e.g., absorbent blankets, sheet barriers or other materials) as needed to prevent soil and water contamination.

2.13 All activities performed in the field which involve the use of petroleum or oil based substances shall employ absorbent material designated for spill containment and clean up activity on site for use in case of accidental spill. Clean-up of all spills shall begin immediately. The Permittee shall immediately notify the State Office of Emergency Services at 1-800-852-7550. DFG shall be notified by the Permittee and consulted regarding clean-up procedures.

2.14 No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete washings, oil or petroleum products, or other organic or earthen material from construction work, or associated activity of whatever nature shall be allowed to enter into, or be placed where it may be washed by rainfall or runoff into Waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. (Not applicable to material installed pernanently or temporarily as part of the project activities).

2.15 Upon DFG determination that turbidity/siltation levels resulting from project related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation, shall be halted until effective Department approved control devices are installed, or abatement procedures are initiated.

2.16 Installation or modification of culverts shall be such that water flow is not impaired and upstream or downstream passage of all aquatic life-forms is assured at all times.

2.17 Equipment shall not operate in a live (flowing) stream or wetted channel except as may be necessary to construct and remove in-stream structures to catch and contain water (i.e., cofferdams) to divert stream flow and isolate the work site, or as otherwise specifically provided for in this Agreement.

2.18 Where flowing water is present during operations:

a) Biologist shall be on-site to identify and, if necessary, remove and relocate amphibians, reptiles or other aquatic species.

b) Cofferdams shall be installed to divert stream flow and isolate and dewater the work site, and to catch any sediment-laden water and minimize sediment transport downstream. Cofferdams shall be constructed of non-polluting materials including sand bags, rock, and/or plastic tarps. Mineral soil shall not be used in the construction of cofferdams.

c) Flowing water shall be cleanly bypassed and/or prevented from entering the work area through pumping or gravity flow, and cleanly returned to the stream below the work area. Flow diversions shall be done in a manner that shall prevent pollution and/or siltation and provides flows to downstream reaches.

d) The Responsible Party shall remove any turbid water and sediment present in the work area prior to restoring water flow through the project site, and place them in a location where they cannot enter the Waters of the State.

SITE-SPECIFIC MEASURES:

2.19 Work involving fish passage components of this project shall adhere to previous agreements and consultations between Caltrans and DFG hydraulic engineers and environmental scientists that were assigned to review this project.

2.20 To prevent the release of materials that may be toxic to fish and other aquatic species, poured concrete shall be isolated from stream flow and allowed to dry/cure for a minimum of 30 days. As an alternative, the Responsible Party shall monitor the pH of water that has come into contact with the poured concrete. If this water has a pH of 9.0 or greater, the water shall be pumped to tanker truck or to a lined off-channel basin and allowed to evaporate or be transported to an appropriate facility for disposal. During the pH monitoring period, all water that has come in contact with poured concrete shall be isolated and not allowed to flow downstream or otherwise come in contact with fish and other aquatic resources. The water shall be retested until pH values become less than 9.0. Once this has

been determined, the area no longer needs to be isolated and water may be allowed to flow downstream. Results of pH monitoring shall be made available to DFG upon request.

3. Reporting Measures

Permittee shall meet each reporting requirement described below.

3.1 Permittee shall notify the Department, in writing, at least five (5) days prior to initiation of construction (project) activities and at least five (5) days prior to completion of construction (project) activities. Notification shall be faxed to the Department at (707) 441-2021, Attn: Rick Macedo, Staff Environmental Scientist, or via e-mail at rmacedo@dfg.ca.gov.

CONTACT INFORMATION

Any communication that Permittee or DFG submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or DFG specifies by written notice to the other.

To Permittee:

Mr. Steven Blair
Caltrans
1656 Union Street
Eureka, California 95501
Office Phone: 707-441-5899
E-Mail: Steven_Blair@dot.ca.gov

To DFG:

Department of Fish and Game
Region 1
619 Second Street
Eureka, California 95501
Attn: Lake and Streambed Alteration Program – Laurie Harnsberger
Notification #1600-2012-0116-R1
Fax: 441-2021
Email: lharnsberger@dfg.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute DFG's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

DFG may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before DFG suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before DFG suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused DFG to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes DFG from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects DFG's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503

(bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

DFG may amend the Agreement at any time during its term if DFG determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by DFG and Permittee. To request an amendment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter DFG approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to DFG a completed DFG "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). DFG shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code, § 1605, subd. (f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of DFG's signature, which shall be: 1) after Permittee's signature; 2) after DFG complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.dfg.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire five years after the date the Agreement is fully executed, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

EXHIBITS

None

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify DFG in accordance with FGC section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR STEVEN BLAIR

Steven Blair — 9-19-12

Name — Date

Title PROJECT MANAGER

FOR DEPARTMENT OF FISH AND GAME

T. USBANCA — 9/20/12

For Name Curt Babcock — Date

Environmental Program Manager

Prepared by: Rick Macedo
Staff Environmental Scientist
8-27-12

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

October 25, 2011

In response refer to:
2010/06445

Lieutenant Colonel Torrey A. DiCiro
U.S. Department of the Army
San Francisco District Corps of Engineers
1455 Market Street, 16th Floor
San Francisco, California 94103-1398

Dear Colonel DiCiro:

Thank you for your letter of August 11, 2011, requesting re-initiation of formal consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*) for the California Department of Transportation's (Caltrans) proposed Rattlesnake Creek Culvert Repair and Improvement Project in Mendocino County, California (Corps File No. 2011-00279S). The U.S. Army Corps of Engineers (Corps) proposes to authorize this project under Nationwide Permit 3 ("Maintenance") and Nationwide Permit 33 ("Temporary Construction, Access, and Dewatering") pursuant to section 404 of the Clean Water Act for Caltrans to repair to an existing double arch culvert, upstream debris rack, and an existing weir at the outlet of the culvert on Rattlesnake Creek at Highway 101.

The enclosed biological opinion is based on our review of Caltrans' proposed project and describes NMFS' analysis of potential effects on the threatened California Coastal (CC) Chinook salmon (*Oncorhynchus tshawytscha*) Evolutionary Significant Unit (ESU) and the threatened Northern California (NC) steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS), and critical habitat for Southern Oregon Northern California Coast (SONCC) coho salmon and CC Chinook salmon, in accordance with the ESA.

In the enclosed biological opinion, NMFS concludes the Rattlesnake Creek Culvert Repair and Improvement Project is not likely to jeopardize the continued existence of the CC Chinook salmon ESU, or the NC steelhead DPS. NMFS has also concluded the project is not likely to result in the destruction or adverse modification of critical habitat for SONCC coho salmon or CC Chinook salmon. However, NMFS anticipates take of listed CC Chinook salmon and NC steelhead may occur as a result of project construction. An incidental take statement with non-discretionary terms and conditions is included with the enclosed biological opinion. In addition, conservation recommendations have been included in the enclosed biological opinion.

This letter also transmits NMFS' Essential Fish Habitat (EFH) conclusions pursuant to section 305(b) of the Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA). Rattlesnake Creek at the Highway 101 crossing includes areas identified as EFH for SONCC coho salmon and CC Chinook salmon, which are managed under the Pacific Coast Salmon Fishery Management Plan (FMP). The proposed action has the potential to adversely affect EFH. However, the proposed action contains adequate measures to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH. With the terms and conditions set forth in the biological opinion, NMFS has no additional EFH Conservation Recommendations to provide.

If you have any questions regarding the enclosed biological opinion, please contact Mr. Joel Casagrande at (707) 575-6016, or joel.casagrande@noaa.gov.

Sincerely,

for Rodney R. McInnis
Regional Administrator

cc: Chris Yates, NMFS Long Beach
Paula C. Gill, Corps, San Francisco
Dana York, Caltrans Eureka
Lisa Embree, Caltrans Eureka
Richard Macedo, CDFG
Copy to file 151422SWR2002SR8263

BIOLOGICAL OPINION

ACTION AGENCY: U.S. Army Corps of Engineers, San Francisco District

ACTION: Rattlesnake Creek Culvert Repair and Improvement Project, Mendocino County, California

CONSULTATION CONDUCTED BY: National Marine Fisheries Service, Southwest Region

TRACKING NUMBER: 2010/06445

DATE ISSUED: **October 25, 2011**

I. CONSULTATION HISTORY

On June 4, 2002, the U.S. Army Corps of Engineers (Corps) requested formal consultation with NMFS pursuant to section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*) on the effects of the proposed Rattlesnake Creek Culvert Repair and Improvement Project on the threatened Southern Oregon/Northern California Coast (SONCC) coho salmon (*Oncorhynchus kisutch*) Evolutionarily Significant Unit (ESU), the threatened California Coastal (CC) Chinook salmon (*O. tshawytscha*) ESU, and the threatened Northern California (NC) steelhead (*O. mykiss*) ESU and critical habitat designated for SONCC coho salmon. On May 16, 2003, NMFS issued a biological opinion for the Rattlesnake Creek Culvert Repair and Improvement Project which included an incidental take statement for each of the three salmonid species (NMFS 2003). Activities originally proposed included resurfacing of a double-barrel culvert under Highway 101, bolstering the center support for an upstream debris rack, repairing a small concrete weir downstream of the culvert outlet, and construction of a permanent access road from the highway to the creek.

Work completed by the applicant (Caltrans) during 2004 and 2005 included resurfacing the north barrel of the culvert and the construction of the permanent access road. Multiple attempts to dewater the action area were unsuccessful and most of the proposed tasks were not completed. Prior to dewatering, over 800 steelhead (consisting of multiple age classes) were relocated. The project was put on hold by Caltrans due to funding issues and because incidental take had been exceeded.

On December 22, 2008, NMFS was contacted by the applicant (Caltrans) with questions regarding the possible need to re-initiate consultation for the Rattlesnake Creek Culvert Repair and Improvement Project. Caltrans met with the California Department of Fish and Game

(CDFG) and NMFS to discuss the remaining work on the debris rack, south barrel of the culvert, and the outlet weir repairs. NMFS requested additional hydraulic data as well as stream flow and fish passage information.

In 2005, NMFS revised the designated critical habitat for ESA-listed salmonid species (70 FR 52488, September 5, 2005) and as a result, Rattlesnake Creek was designated as critical habitat for CC Chinook salmon. The effects analysis included in the original 2003 biological opinion for the dewatering and fish relocation activities was for one year, however following discussions with NMFS, a second year of dewatering and fish relocation was allowed which again failed and the activities were not completed. In May 2009, NMFS determined re-initiation of consultation was necessary due to the revised critical habitat designation for CC Chinook salmon and the exceedance of take during the initial dewatering attempts. As requested, Caltrans submitted additional hydraulic data and flow and fish passage information to NMFS in August and December 2009. Caltrans put the project on hold in February 2010 because of state budget issues, but resumed work in July 2010. In August 2010, NMFS conducted a site visit and determined additional modifications to the design were not warranted and in January 2011, CDFG also determined the project designs were suitable and additional modifications were not warranted.

On August 15, 2011, NMFS received a letter, dated August 11, 2011, from the Corps requesting re-initiation of formal consultation for the Rattlesnake Creek Culvert Repair and Improvement Project. The letter requested re-initiation of consultation because the Corps determined the project is likely to adversely the following species and critical habitats: the SONCC coho salmon ESU, the CC Chinook salmon ESU, and the NC steelhead DPS, and critical habitat for SONCC coho salmon and CC Chinook salmon. At this time, NMFS determined the information provided was sufficient to initiate consultation.

II. DESCRIPTION OF THE PROPOSED ACTION

The Corps proposes to issue a Clean Water Act permit to Caltrans for the remaining repairs and improvements to a double arch culvert crossing on Rattlesnake Creek (a tributary to the South Fork Eel River) at post mile 84.0 on Highway 101 in Mendocino County, California. Caltrans will repair the bottom of the south barrel of the culvert, repair and elevate the outlet weir, reinforce the culvert entrance, and repair the footing at the upstream debris rack. The repairs and improvements to the culvert and weir include design elements to improve fish passage conditions at the site for adult and juvenile salmonids. All in-water work will be conducted during the dry season (between June 15 and October 15) in 2013 or 2014 to avoid potential impacts on migrating and spawning adult salmon and steelhead. Dewatering will be required at two locations, around the upstream debris rack, and from the culvert inlet downstream through the culvert and past the outlet weir. Caltrans will incorporate several measures to minimize the magnitude, extent, and duration of potential impacts, including limiting in-water construction

activities to the summer low flow period, prohibiting heavy equipment in the live stream, using cofferdams to isolate the construction areas from the flowing stream, restricting access to the stream to a single access road, and implementing a re-vegetation and monitoring plan. There are no interrelated or interdependent actions associated with this project.

A. Description of Project Activities

1. Debris Rack

The debris rack, located upstream of the culvert, consists of four pier-like structures (also called standards) cemented into the creek bed. These structures prevent large debris such as boulders and trees from impinging on the culvert and potentially destroying the structure during storm events. The debris rack is functional but sections of the base have begun to erode. Only one standard needs to be repaired to maintain the function of the debris rack. Repairs will reduce the risk of failure of the debris rack, damage to the culvert, and potential damage to the creek downstream of the culvert.

Repair of the debris rack will require dewatering of approximately 2,500 square feet to allow installation of a reinforced concrete bolster. Caltrans proposes to limit dewatering to the channel area immediately surrounding the debris rack, avoiding the need to dewater the large pool immediately downstream of the debris rack where relatively large numbers of fish typically reside. Prior to construction of the water diversion facilities, block nets will be placed at the upstream and downstream end of the area to be dewatered. Once the nets are in place, a NMFS approved fisheries biologist will capture and relocate salmonids from the isolated area until they are confident few or no fish remain. Fish will be captured using authorized methods and relocated to suitable pool habitat downstream of the construction area.

Cofferdams constructed of clean imported gravel, impermeable liners (*e.g.*, plastic), water bladders, and/or sand bags will be used in conjunction with a pipe (large enough to accommodate the entire stream flow) to isolate the construction area and bypass the flow of the creek around the construction area to the large pool immediately downstream of the debris rack. Cofferdams will be placed within the netted isolated area once fish have been removed.

Water will be pumped out of the isolated construction area to water storage containers or a temporary detention or filtration basin away from the stream channel to prevent direct discharge of this water to the creek. Pump intakes will be screened in accordance with NMFS criteria to prevent accidental entrainment of juvenile salmonids. Fish relocation efforts will continue as needed during pumping activities until all salmonids have been removed.

The isolated construction area around the debris rack standard will be cleared of any loose debris and then refilled with a reinforced concrete bolster. Steel rebar will be drilled and grouted into existing bedrock to hold the concrete bolster in place. The work method will avoid the

deposition of concrete into flowing water. Following installation, the concrete will be washed and the wash water removed from the channel before stream flow is restored to the work areas. All wash water will be pumped to storage containers or a temporary detention or filtration basin. No equipment will be allowed in the flowing water of Rattlesnake Creek. All gravel, sand bags, liners, pipes, concrete debris, and other materials will be removed from the channel before stream flow is restored to the dewatered area.

2. Culvert and Outlet Weir

The culvert is a double arch structure consisting of two barrels (north and south). Each barrel is approximately 18 feet wide, 17.5 feet in height, and 245 feet long. The arch (ceiling) and side walls of the structure are intact. The bottom of each barrel is a concrete slab that is not structurally connected to the arch and side walls. The south barrel is lower in elevation than the north barrel. Consequently, the south barrel maintains flow for longer periods of time; however, the south barrel may be impassable to salmonids at very low flows. The existing concrete slab of the south barrel will be replaced with a new reinforced concrete slab approximately 1 foot thick. To improve fish passage through the culvert, the inlet of the new slab will be lowered 1 foot and the outlet lowered 0.5 foot from the existing elevations. The slope of the south barrel will be reduced from 0.4 percent to 0.2 percent. Lowering the culvert bottom in combination with raising the outlet weir (discussed below) will raise the water surface elevation and depth in the south barrel and create year-round fish passage conditions. The bottom of the north barrel was repaired in 2005. No changes in elevation of the north barrel are required because fish passage at lower flows will be provided by the south barrel. A ¼-inch thick galvanized metal plate will be installed to the concrete face of the inlet of the culvert to protect the face of the inlet and the concrete slabs from debris. The metal plate will not impede flow or fish migration at any flow level.

An existing weir located downstream of the culvert outlet (outlet weir) will be replaced with a larger concrete structure conforming to NMFS fish passage guidelines. The new weir will have a wider crest that will be covered with a ¼-inch thick galvanized metal plate. The weir includes a central notch that will be 0.5 feet above the existing slab. This will create a backwater into the culvert and provide fish passage through the culvert during low flows.

Dewatering will also be necessary to repair the south barrel of the culvert and the downstream (outlet) weir. Prior to construction of the water diversion facilities, block nets will be placed at the upstream and downstream end of the area to be dewatered. Once the nets are in place, a NMFS approved fisheries biologist will capture and relocate salmonids from this section of the creek until they are confident few or no fish remain. Fish will be captured using authorized methods and relocated to suitable habitat downstream of the construction area. Following fish removal, a temporary cofferdam will be constructed immediately upstream of the inlet of the culvert to isolate the construction area and bypass the flow of the creek through a pipe (large enough to accommodate the entire stream flow) that will extend through the culvert to the

channel downstream of the weir. Another cofferdam may be needed downstream of the weir to prevent water from entering the work area. Once the cofferdam(s) are in place, fish relocation efforts and pumping activities will proceed as described above for the debris rack. Overall this will dewater approximately 7,500 square feet of live stream.

Cast-in-place methods will be used to repair the debris rack, replace the concrete bottom of the south culvert, and reconstruct the outlet weir. These areas will be completely isolated from the stream by cofferdams and dewatered before any concrete is poured. Preventative measures will be taken to ensure no uncured concrete contacts the flowing water of the creek. All cured concrete will be washed and the wash water pumped to water storage containers or a temporary detention or filtration basin. All gravel, sand bags, liners, pipes, concrete debris, and other materials will be removed from the channel before stream flow is restored to the dewatered areas.

3. Access Road

A permanent access road was constructed in 2004 to provide construction and maintenance access to the culvert and outlet weir. The road is paved and extends from a gravel turnout west of the stream crossing, down the embankment where it stops approximately 80 feet short of the active creek channel downstream of the outlet weir. In order to access the outlet weir and culvert during construction, a temporary access road approximately 80 feet long and 10 feet wide will need to be constructed between the end of the permanent access road and the creek.

Following construction, Caltrans proposes to apply appropriate erosion control treatments to all disturbed areas and implement a re-vegetation and monitoring plan to replace the losses of native trees and shrubs and restore riparian habitat values to pre-construction levels.

B. Description of the Action Area

The action area includes "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR § 402.02). The action area for the proposed project includes the in-channel construction area (up to the elevation of ordinary high water), which is approximately 426 feet in length and includes the debris rack, culvert, and downstream weir. NMFS expects there will be temporary increases in turbidity related to the construction and removal of dewatering facilities. Adverse effects related to increased turbidity are not expected to extend beyond approximately 1,000 feet, at which point, much of the suspended material will have settled and the effects related to the turbidity will have become negligible. The 1,000 foot extended impact area is based on observations of the downstream extent of turbidity during similar activities at other where substrate quality was worse (*i.e.,* finer) and summer stream flows were greater (discussed in greater detail in the *Effects of the Action* section).

III. ANALYTICAL FRAMEWORK

A. Jeopardy Analysis

In accordance with policy and regulation, the jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which evaluates the CC Chinook salmon ESU's and NC steelhead DPS's range-wide conditions, the factors responsible for that condition, and the species' likelihood of both survival and recovery; (2) the Environmental Baseline, which evaluates the condition of this listed species in the action area, the factors responsible for that condition, and the relationship of the action area to the likelihood of both survival and recovery of this listed species; (3) the Effects of the Action, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on this species in the action area; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on this species.

The jeopardy determination is made by adding the effects of the proposed Federal action and any Cumulative Effects to the Environmental Baseline and then determining if the resulting changes in species status in the action area are likely to cause an appreciable reduction in the likelihood of both the survival and recovery of this listed species in the wild.

The jeopardy analysis in this biological opinion places an emphasis on the range-wide likelihood of both survival and recovery of this listed species and the role of the action area in the survival and recovery of the listed species. The significance of the effects of the proposed Federal action is considered in this context, taken together with cumulative effects, for purposes of making the jeopardy determination. We use a hierarchical approach that focuses first on whether or not the effects on salmonids in the action area will impact their respective population. If the population will be impacted, we assess whether this impact is likely to affect the ability of the population to support the survival and recovery of the ESU and DPS.

B. Adverse Modification Determination

This biological opinion does not rely on the regulatory definition of destruction or adverse modification of critical habitat at 50 CPR 402.02[1]. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

The adverse modification analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which evaluates the range-wide condition of critical habitat for the SONCC coho salmon and CC Chinook salmon ESU's in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended conservation value of the critical habitat overall; (2) the Environmental Baseline, which evaluates the condition of critical

[1] This regulatory definition has been invalidated by Federal Courts.

habitat in the action area, the factors responsible for that condition, and the conservation value of the critical habitat in the action area; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the PCEs in the action area and how that will influence the conservation value of affected critical habitat units; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the PCEs and how that will influence the conservation value of affected critical habitat units.

For purposes of the adverse modification determination, we add the effects of the proposed Federal action on CCC steelhead critical habitat in the action area, and any Cumulative Effects, to the Environmental Baseline and then determine if the resulting changes to the conservation value of critical habitat in the action area are likely to cause an appreciable reduction in the conservation value of critical habitat range-wide. If the proposed action will negatively affect PCEs of critical habitat in the action area we then assess whether or not this reduction will impact the value of the DPS or ESU critical habitat designation as a whole.

C. Use of Best Available Scientific and Commercial Information

To conduct the assessment, NMFS examined an extensive amount of information from a variety of sources. Detailed background information on the biology and status of the listed species and critical habitat has been published in a number of documents including peer reviewed scientific journals, primary reference materials, and governmental and non-governmental reports. Additional information regarding the effects of the project's actions on the listed species in question, their anticipated response to these actions, and the environmental consequences of the actions as a whole was formulated from the aforementioned resources, the biological assessment for this project, and project meeting notes if applicable. For information that has been taken directly from published, citable documents, those citations have been referenced in the text and listed at the end of this document.

IV. STATUS OF THE SPECIES/CRITICAL HABITAT

This BO analyzes the effects of the proposed action on the salmon ESU and steelhead DPS listed below:

- CC Chinook salmon ESU, listed as threatened under the ESA (70 FR 37160)
- NC steelhead DPS, listed as threatened under the ESA (71 FR 834)

The action area is within the designated critical habitat listed below:

- SONCC coho salmon critical habitat (64 FR 24049)
- CC Chinook salmon critical habitat (70 FR 52488)

Although CC Chinook salmon, SONCC coho salmon, and NC steelhead historically have utilized the Rattlesnake Creek Watershed for spawning and rearing habitat, coho salmon have not been observed in the drainage for many decades (Scott Harris, CDFG, personal communication, 2002, CDFG 1995). Coho salmon were not observed during dewatering and fish capture and relocation efforts in 2004 and 2005, which resulted in the relocation of nearly 800 juvenile steelhead (Caltrans 2011). Based on the typical summer habitat conditions presently in the action area (low riparian canopy cover and warm daytime temperatures), NMFS does not expect juvenile coho salmon to be present during project implementation, and therefore effects to SONCC coho salmon are not assessed further in this BO. This BO will analyze affects to juvenile CC Chinook salmon (rare, but possibly present in early to mid-June) and NC steelhead (abundant at the project site). Rattlesnake Creek is not designated as critical habitat for NC steelhead.

A. Species Description, Life History, and Status

In this opinion, NMFS assesses four population viability parameters to help us understand the status of CC Chinook salmon and NC steelhead and their populations' ability to survive and recover. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000). While there is insufficient information to evaluate these population viability parameters in a thorough quantitative sense, NMFS has used existing information to determine the general condition of each population and factors responsible for the current status of the ESU and DPS.

We use these population viability parameters as surrogates for numbers, reproduction, and distribution, the criteria found within the regulatory definition of jeopardy (50 CFR 402.20). For example, the first three parameters are used as surrogates for numbers, reproduction, and distribution. We relate the fourth parameter, diversity, to all three regulatory criteria. Numbers, reproduction, and distribution are all affected when genetic or life history variability is lost or constrained resulting in reduced population resilience to environmental variation at local or landscape-level scales.

1. Chinook Salmon

a. General Life History

Chinook salmon return to freshwater to spawn when they are three to eight years old (Healey 1991). Chinook salmon runs are designated on the basis of adult migration timing; however, distinct runs also differ in the degree of maturation at the time of river entry, thermal regime and flow characteristics of their spawning site, and actual time of spawning (Myers *et al.* 1998). Both winter-run and spring-run Chinook salmon tend to enter freshwater as immature fish, migrate far upriver, and delay spawning for weeks or months. For comparison, fall-run Chinook

salmon enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of rivers, and spawn within a few days or weeks of freshwater entry (Healey 1991).

Fall-run CC Chinook salmon migrate upstream during August through December, with peak migration periods occurring in October and November (Chase *et al.* 2007). Spawning occurs from late September through December.

Regardless of run-time, Chinook salmon generally spawn in gravel beds that are located at the tails of holding pools (Myers *et al.* 1998). Adult female Chinook salmon prepare redds in stream areas with suitable gravel composition, water depth, and velocity. Optimal spawning temperatures range between 6.0 degrees (°) to 14.0° Celsius (C). Preferred spawning substrate is clean, loose gravel, mostly sized between 1 and 10 cm, with no more than 5 percent fine sediment. Chinook salmon require a strong, constant level of subsurface flow, and therefore suitable spawning habitat is more limited in most rivers. After depositing eggs in redds, most adult Chinook salmon guard the redd from 4 to 25 days before dying. Chinook salmon eggs incubate for 90 to 150 days, depending on water temperature. Successful incubation depends on several factors including dissolved oxygen levels, temperature, substrate size, amount of fine sediment, and water velocity. Maximum survival of incubating eggs and pre-emergent fry occurs at water temperatures between 6.0° and 13.0° C with a preferred temperature of 11.0° C. CC Chinook salmon fry emerge from the redd during December through mid-April (Leidy and Leidy 1984).

After emergence, Chinook salmon fry seek out areas behind fallen trees, back eddies, undercut banks, and other areas of bank cover (Everest and Chapman 1972). As they grow larger, their habitat preferences change. Juveniles move away from stream margins and begin to use deeper water areas with slightly faster water velocities, but continue to use available cover to minimize the risk of predation and reduce energy expenditure. Fish size appears to be positively correlated with water velocity and depth (Chapman and Bjornn 1969, Everest and Chapman 1972). Optimal temperatures for both Chinook salmon fry and fingerlings range from 12.0° to 14.0° C, with maximum growth rates at 13.0° C (Boles 1988). Chinook salmon feed on small terrestrial and aquatic insects and aquatic crustaceans. Cover, in the form of rocks, submerged aquatic vegetation, logs, riparian vegetation, and undercut banks provide food, shade, and protect juveniles from predation.

CC Chinook salmon will rear in freshwater for a few months and out-migrate between February and early July (Myers *et al.* 1998, Chase *et al.* 2007). CC Chinook tend to use estuaries and coastal areas for rearing more extensively than Central Valley winter-run or spring-run Chinook salmon. The brackish water areas in estuaries moderate the physiological stress that occurs during parr to smolt transitions.

b. Status of CC Chinook Salmon ESU

The CC Chinook salmon ESU was historically comprised of approximately 38 Chinook salmon populations (Bjorkstedt *et al.* 2005, Spence *et al.* 2008). Many of these populations (about 21) were independent, or potentially independent, meaning they had a high likelihood of surviving for 100 years absent anthropogenic impacts. The remaining populations were likely more dependent upon immigration from nearby independent populations than dependent populations of other salmonids (Bjorkstedt *et al.* 2005, Spence *et al.* 2008).

Data on CC Chinook abundance, both historical and current, are sparse and of varying quality (Bjorkstedt *et al.* 2005, Spence *et al.* 2008). Estimates of absolute abundance are not available for populations in this ESU (Myers *et al.* 1998). In 1965, CDFG estimated escapement for this ESU at over 76,000 (CDFG 1965). Most were in the Eel River (55,500), with smaller populations in Redwood Creek (5,000), Mad River (5,000), Mattole River (5,000), Russian River (500) and several smaller streams in Humboldt County (Myers *et al.* 1998). Currently available data indicate abundance is far lower, suggesting an inability to sustain production adequate to maintain the ESU's populations. Recent growth rates are negative for Chinook salmon coast-wide in California. For example, in 2007, 2008, and 2009, dramatic declines in Chinook salmon returns occurred throughout California (SWFSC 2008, Lindley *et al.* 2009).

CC Chinook salmon populations remain widely distributed throughout much of the ESU. Notable exceptions include the area between the Navarro River and Russian River and the area between the Mattole and Ten Mile River populations (Lost Coast area). The lack of Chinook salmon populations both north and south of the Russian River (the Russian River is at the southern end of the species' range) makes it one of the most isolated populations in the ESU. Myers *et al.* (1998) reports no viable populations of Chinook salmon south of San Francisco, California.

Because of their prized status in the sport and commercial fishing industries, CC Chinook salmon have been the subject of many artificial production efforts, including out-of-basin and out-of-ESU stock transfers (Bjorkstedt *et al.* 2005). It is therefore likely CC Chinook salmon genetic diversity has been significantly adversely affected despite the relatively wide distribution of populations within the ESU. An apparent loss of the spring-run Chinook life history in the Eel River Basin and elsewhere in the ESU also indicates risks to the diversity of the ESU.

Data from the 2009 adult CC Chinook salmon return counts and estimates indicated a further decline in returning adults across the range of CC Chinook salmon on the coast of California (Jeffrey Jahn, NMFS, personal communication 2010). Ocean conditions are suspected as the principal short term cause because of the wide geographic range of declines (SWFSC 2008, Lindley *et al.* 2009). However, the number of adult CC Chinook salmon returns in the Russian River Watershed increased substantially in 2010/2011 compared to 2008/09 and 2009/10

returns[2]. In addition, the number of CC Chinook salmon returns to the Van Arsdale Fisheries Station located on the Upper Eel River also increased substantially in the fall of 2010, exceeding the number of adult Chinook salmon counted in this system since counts began in 1933 (Jeffrey Jahn, personal communication 2011).

2. Steelhead

a. General Life History

Steelhead are anadromous forms of *O. mykiss*, spending some time in both freshwater and saltwater. Steelhead young usually rear in freshwater for one to three years before migrating to the ocean as smolts. Migration to the ocean usually occurs in late winter and spring. Steelhead may remain in the ocean for one to five years (two to three years is most common) before returning to their natal streams to spawn (Shapovalov and Taft 1954, Busby *et al.* 1996, Moyle 2002). The distribution of steelhead in the ocean is not well known. Coded wire tag recoveries indicate most steelhead tend to migrate north and south along the continental shelf (Barnhart 1986). The timing of upstream migration steelhead adults is correlated with higher flow events, in winter or spring. In contrast to other species of *Oncorhynchus*, steelhead may spawn more than one season before dying (iteroparity); although one-time spawners represent the majority (Shapovalov and Taft 1954).

Out-migration appears to be more closely associated with size than age. In Waddell Creek, Shapovalov and Taft (1954) found steelhead juveniles migrating downstream at all times of the year, with the largest numbers of young-of-year (YOY, or Age 0+) and yearlings (Age 1+) steelhead moving downstream during spring and summer. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Meehan and Bjornn 1991). Juvenile steelhead tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids (Everest and Chapman 1972, Smith and Li 1983). Young steelhead feed on a wide variety of drifting aquatic and terrestrial insects (Everest and Chapman 1972, Moyle 2002). In winter, juvenile steelhead become less active and hide in available cover, including gravel or woody debris (Moyle 2002).

Juvenile steelhead typically reside in freshwater habitats during their first summer (or more), and therefore adequate stream flow and water temperature are critical for their survival. Water temperature can influence the metabolic rate, distribution, abundance, and swimming ability of rearing juvenile steelhead (Barnhart 1986, Myrick and Cech 2005). Optimal temperatures for steelhead growth range between 10 and 20° C (Hokanson *et al.* 1977, Wurtsbaugh and Davis 1977, Myrick and Cech 2005). Fluctuating diurnal water temperatures are also important for the survival and growth of salmonids (Busby *et al.* 1996). Suspended sediment concentrations, or turbidity, also can influence the distribution and growth of steelhead (Bell 1973, Sigler *et al.*

[2] http://www.scwa.ca.gov/chinook/

1984, Newcombe and Jensen 1996). Bell (1973) found suspended sediment loads of less than 25 milligrams per liter (mg/L) were typically suitable for rearing juvenile steelhead.

b. Status of NC Steelhead DPS

Overall, population numbers for NC steelhead are severely reduced from pre-1960s levels, when approximately 198,000 adult NC steelhead migrated upstream to spawn in the major rivers of this DPS (65 FR 36074, Busby *et al.* 1996). Adult return data from dams on the upper Eel River and Mad River between the 1930's and 1980's indicate the populations of NC steelhead in these watersheds have declined substantially since the 1930's and 40's (Good *et al.* 2005) and data from the Cape Horn Dam on the Eel River show strong declines prior to 1970 (63 FR 13347). The upper reaches, in particular, have suffered drastic declines since 1988 (CDFG 1997). Current comprehensive geographic distribution information is not available for this DPS, but NC steelhead are considered to remain widely distributed (NMFS 1997). Good *et al.* (2005) identified barriers to migration, poor forest and other land use practices that cause sedimentation and loss of spawning gravels, and invasive species (*e.g.,* Sacramento pikeminnow, *Ptychocheilus grandis*) as major risks and limiting factors affecting populations of NC steelhead. Two populations, the Mad River and Upper Eel River, have lost considerable amounts of historic habitat due to dams (Spence *et al.* 2008). Hatchery practices in this DPS have exposed the wild population to genetic introgression and the potential for deleterious interactions between native stock and introduced steelhead (65 FR 36074). As with previous reviews, the biological review team concluded the NC steelhead DPS is likely to become endangered (Good *et al.* 2005).

Adult returns of NC steelhead during 2007/08 were considered average, data from the 2008/09 adult NC steelhead were lower and indicate populations remained suppressed across much of their range compared to historic amounts. However, returns during the 2009/10 and preliminary data on the 2010/11 returns indicate increases in many populations of NC steelhead compared to the previous two years (Jeffrey Jahn, personal communication, 2011).

4. Status of Critical Habitat for SONCC coho salmon and CC Chinook salmon

The condition of critical habitat for SONCC coho salmon and CC Chinook salmon, specifically its ability to provide for their conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined the present depressed population conditions are, in part, the result of the following human-induced factors affecting critical habitat: logging, agriculture, and mining activities, urbanization, stream channelization, dams, wetland loss, and water withdrawals, including unscreened diversions for irrigation. Migration, rearing and spawning PCEs have been lost.

Numerous studies have demonstrated that land use activities associated with logging, road construction, urban development, mining, agriculture, and recreation have significantly degraded critical habitat quantity and quality in the ESUs. Impacts of concern include alteration of stream

bank and channel morphology, alteration of water temperatures, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, removal of riparian vegetation resulting in increased stream bank erosion, increases in erosion entry to streams from upland areas, loss of shade (higher water temperatures) and loss of nutrient inputs (Busby *et al.* 1996, Myers *et al.* 1998, 70 FR 52488). Depletion and storage of natural river and stream flows have drastically altered natural hydrologic cycles in many of the streams in the ESUs. Alteration of flows results in migration delays, loss of suitable habitat due to dewatering and blockage; stranding of fish from rapid flow fluctuations; entrainment of juveniles into poorly screened or unscreened diversions, and increased water temperatures harmful to salmonids.

B. Factors Responsible for Salmonid Stock Declines

NMFS cites many reasons (primarily anthropogenic) for the decline of salmonids (Busby *et al.* 1996, Myers *et al.* 1998, Adams 2000, Good *et al.* 2005). The foremost reason for the decline in these anadromous populations is the degradation and/or destruction of freshwater and estuarine habitat caused by anthropogenic disturbances such as urban development, agriculture, logging, water resource development, and dams. Additional factors contributing to the decline of these populations include: poor estuary/lagoon management (Smith 1990, Bond 2006), commercial and recreational harvest, artificial propagation (Waples 1991), natural stochastic events, marine mammal predation (NMFS 1999, Hanson 1993), reduced marine-derived nutrient transport (Bilby *et al.* 1996, Bilby *et al.* 1998, and Gresh *et al.* 2000), and most recently poor ocean conditions (Lindley *et al.* 2009).

C. Global Climate Change

Modeling of climate change impacts in California suggests average summer air temperatures are expected to increase (Lindley *et al.* 2007). Heat waves are expected to occur more often, and heat wave temperatures are likely to be higher (Hayhoe *et al.* 2004). Total precipitation in California may decline; critically dry years may increase (Lindley *et al.* 2007, Schneider 2007). The Sierra Nevada snow pack is likely to decrease by as much as 70 to 90 percent by the end of this century under the highest emission scenarios modeled (Luers *et al.* 2006). Wildfires are expected to increase in frequency and magnitude, by as much as 55 percent under the medium emissions scenarios modeled (Luers *et al.* 2006). Vegetative cover may also change, with decreases in evergreen conifer forest and increases in grasslands and mixed evergreen forests. The likely change in amount of rainfall in northern and central coastal streams under various warming scenarios is less certain, although as noted above, total rainfall across the state is expected to decline. For the California North Coast, some models show large increases (75 to 200 percent) while other models show decreases of 15 to 30 percent (Hayhoe *et al.* 2004). Many of these changes are likely to further degrade salmonid habitat by, for example, reducing stream flows during the summer and raising summer water temperatures. Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts

(Scavia *et al.* 2002). In marine environments, ecosystems and habitats important to sub adult and adult salmonids are likely to experience changes in temperatures, circulation and chemistry, and food supplies (Feely *et al.* 2004, Brewer 2008, Osgood 2008, Turley 2008). The projections described above are for the mid to late 21st Century. In shorter time frames natural climate conditions are more likely to predominate (Cox and Stephenson 2007, Smith *et al.* 2007).

V. ENVIRONMENTAL BASELINE

The environmental baseline is the current status of the species and critical habitat in the action area based on analysis of the effects of past and ongoing human and natural factors. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impacts of State or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

The action area is located on Rattlesnake Creek, a large tributary to the South Fork Eel River. Rattlesnake Creek is a perennial stream that drains approximately 37.5 square miles and has 11 miles of blue line stream (Caltrans 2011). Rattlesnake Creek flows west and joins the South Fork Eel River at river mile 74.3, approximately 7 miles southeast of the town of Leggett in northern Mendocino County. Elevations in the South Fork Eel River watershed range from 100 to 4,500 feet. According to Bureau of Land Management (BLM) *et al.* (1996), the South Fork Eel watershed contains 713 miles of United States Geologic Survey (USGS) identified streams. Approximately 20 percent of the watershed is publically owned by California State Parks and BLM (U.S. EPA 1999). Rattlesnake Creek and other eastside tributaries of the South Fork Eel River have relatively high summer water temperatures because of low canopy cover (less than 30 percent) and warm inland air temperatures.

By the early 20th century the South Fork Eel River watershed experienced rapid growth with the development of tanbark harvesting for tannin. After World War II, timber harvesting increased dramatically and continued for about 20 years until all of the Douglas fir on private lands had been harvested (BLM *et al.* 1996). The most recent economic trend in the watershed is illegal marijuana cultivation, which started in the 1970's (BLM *et al.* 1996). Severe floods in 1955, 1964, and 1986, exacerbated by land use practices, were major factors contributing to the population declines and habitat degradation of CC Chinook salmon and steelhead in the Eel River Watershed (Yoshiyama and Moyle 2010). Elevated culverts and dysfunctional fish ladders have reduced fish passage in many tributaries throughout the drainage (Lang 2005, Yoshiyama and Moyle 2010).

A. Status of Critical Habitat in the Action Area

Rattlesnake Creek is considered an eastside basin within the South Fork Eel River watershed, which generally experiences greater daytime air temperatures and has more limited forest cover. CDFG conducted a stream habitat survey of Rattlesnake Creek in 1993, which extended from the confluence with the South Fork Eel River upstream approximately 8.6 miles (CDFG 1995). CDFG ended their survey due to landowner access problems; however they noted un-surveyed anadromous habitat existed beyond this point. Stream flows at the mouth of Rattlesnake Creek were measured at approximately 6-7 cubic feet per second (cfs), with upstream areas measuring about 3-4 cfs at the time of the survey in August.

The channel of Rattlesnake Creek in the project area is dominated by bedrock and patchy willows and alders above the high water mark. The surrounding hill slopes are steep and vegetated with species common to the coastal mountains, including Douglas fir, tanoak, California buckeye, poison oak, and *Ceanothus*. Stream flow is typically less than 5 cubic feet per second (cfs) during the summer months. Pool habitat comprises about 20 percent of the stream length in the project area and many of these pools are greater than 3 feet deep. The pools provide rearing habitat for larger yearlings and older salmonid age classes and some may provide refuge from high water temperatures. Stream temperatures ranged from 13.0 to 23.0°C during June and July of 1993 (CDFG 1995). Typically, these water temperatures are suitable for summer rearing by juvenile steelhead, but may reach levels that cause temporary stress to rearing steelhead during the warmest days of the summer if food is insufficient (Smith and Li 1983, Bjornn and Reiser 1991). Elevated summer water temperatures in Rattlesnake Creek are a result of both natural (*e.g.*, geographic location) and anthropogenic (*e.g.*, historic logging) conditions. Riparian canopy cover over Rattlesnake Creek averaged approximately 29 percent throughout. Summer water temperatures are generally not suitable for coho salmon rearing, but are adequate for steelhead. Habitat conditions in the action area are suitable for salmon and steelhead spawning.

In the action area, the banks upstream of the culvert consist largely of bedrock, which naturally precludes the development of riparian vegetation. Downstream of the culvert, the banks consist of gravel and cobble, however due to the steep nature of the canyon, riparian vegetation along these banks, particularly along the low flow channel, are scoured during winter high flows. By summer, willow saplings are present with some larger (but still young) willows further from the water's edge. Overall, these trees provide little shade. Shade is provided more by the steep canyon walls than by a riparian tree canopy.

Based on the above information, NMFS believes the overall PCEs for rearing are somewhat degraded because some essential elements (*e.g.*, appropriate water temperatures) may have been adversely impacted by past logging related activities (as described above and below). The PCEs for migration through the action area are considered good, although several natural bedrock falls may cause temporary delays in adult upstream migration and some prevent juvenile passage during low flow conditions (Becker and Reining 2009). Overall, the PCEs for spawning appear to be in good condition throughout Rattlesnake Creek based on availability and quality of spawning gravels in the creek (CDFG 1995, Joel Casagrande, NMFS, personal observation,

August 25, 2010).

B. Status of Listed Salmonids within the Action Area

The Rattlesnake Creek Watershed supports a natural run of steelhead, which has been classified as a functionally independent population within the North Coastal Diversity Stratum, and a natural run of Chinook salmon, which was also classified as a functionally independent population within the North Coastal Diversity Stratum (Bjorkstedt *et al.* 2005, Spence *et al.* 2008). Both species currently use Rattlesnake Creek as migration, spawning, and rearing habitat. Habitat conditions in the project action area appear to be suitable for salmon and steelhead spawning (NMFS 2003, CDFG 1995). Biological surveys conducted in 1993 and recent observations in 2001 and 2002 indicate Rattlesnake Creek supports relatively high densities of juvenile steelhead representing multiple age classes both upstream and downstream of the project culvert (CDFG 1995). In 2005, 738 juvenile steelhead, consisting of multiple age classes, were relocated from the project action area as part of the original dewatering attempts for this project (Caltrans 2011). During a site visit in August 2010, juvenile steelhead of multiple age classes were abundant throughout the project action area (Joel Casagrande, NMFS, personal observation, August 25, 2010).

CDFG conducted carcass surveys in 1987, and found 20 Chinook salmon carcasses and 6 redds, indicating use of Rattlesnake Creek by Chinook salmon for spawning is likely to still occur. Juvenile Chinook salmon were not found during the dewatering attempts in 2004 or 2005. Chinook salmon juveniles typically emigrate from their natal streams by late spring and therefore are not expected to be present during summer and fall surveys.

Summer surveys between 1997 and 2003 failed to detect juvenile coho salmon or Chinook salmon (NMFS 2003). However, CDFG biologists have noted the presence coho salmon in Rattlesnake Creek is possible if suitable habitat conditions (*i.e.,* cool summer water temperatures) were to be present (S. Harris, CDFG, personal communication 2002). CDFG recovery planning recommendations state most tributaries on the east side of the South Fork Eel River Watershed (including Rattlesnake Creek) have little potential for coho salmon recovery (CDFG 2002). No juvenile coho salmon were observed during the fish relocation attempts in 2004 or 2005.

Since the early 1990's, juvenile steelhead in Rattlesnake Creek (including the action area), have been abundant during various surveys and observations. Although the current populations of steelhead and Chinook salmon are thought to be well below historic levels in the South Fork Eel River (Yoshiyama and Moyle 2010), there is no data to suggest the number of returning adults of either species is increasing or decreasing in Rattlesnake Creek. During the winter of 2010/2011, the number of returning adult Chinook salmon to the Eel River drainage (based on counts at the Van Arsdale Fisheries Station on the upper Eel River mainstem) were the highest observed since counts began in 1933. However, one year of high returns to the mainstem of the Eel River

following decades of low returns does not confirm an improved population trend in the South Fork Eel River, or its tributary Rattlesnake Creek.

C. Factors Affecting Species Environment within the Action Area

Most of the factors affecting ESA-listed fish species and their environment in the action area are related to fish passage (both natural and anthropogenic causes). Bedrock falls are common along lower Rattlesnake Creek and many form natural barriers to juvenile salmonids during low flow conditions (Becker and Reining 2009). During a survey in 1939, CDFG noted Rattlesnake Creek downstream of its confluence with Mad Creek (located approximately 0.75 miles upstream of the action area), had a number of steep natural falls and cascades that were suspected of limiting juvenile passage during low flow conditions (Becker and Reining 2009). The bedrock fall located at the debris rack is an example of one of these areas that likely restricts juvenile upstream passage during the dry season. Although the debris rack is checked and cleared, adult salmonids migrating upstream during winter may be temporarily blocked if the rack becomes clogged with a significant amount of debris (*e.g.,* woody material). The two barrels of the culvert currently dry during most summers with the north barrel drying first. If and when the south barrel dries, the stream becomes disconnected and therefore juvenile passage is restricted. As described above, the proposed project seeks to repair the culvert bottom (lower the culvert bottom elevation) and repair the small weir immediately downstream of the culvert outlet which will maintain surface flows through at least the south barrel year round. Other factors include elevated water temperatures during summer that are the result of both natural and past anthropogenic influences at a watershed scale (*i.e.,* historic logging, discussed above).

D. Previous Section 7 Consultations and Section 10 permits in the Action Area

In 2003, NMFS issued its biological opinion (NMFS 2003) for the Rattlesnake Creek Culvert Repair and Improvement Project. Construction was authorized to start in the summer of 2004 and was to be completed by October 15 of the same year. Construction began late due to a delay in awarding of the contract to the contractor. The contractor, Sonoma Engineering Inc. (SEI), had trouble successfully dewatering the project area, yet in the process relocated 63 young-of-the-year (YOY) steelhead with one mortality (64 total fish captured). Following this activity, the project was shut down by the Occupational Safety Health Administration (OSHA). After all OSHA requirements were fulfilled, SEI again attempted to dewater the project area and 30 juvenile steelhead were removed and relocated. However, dewatering was again unsuccessful and the project could not be completed in 2004 (Caltrans 2011). In early 2005, NMFS and Caltrans agreed on a second year of dewatering and fish relocation (Jacqueline Pearson-Meyer, NMFS, personal communication, September 2011). That summer, SEI attempted to dewater the project site again, which was a much larger operation than the attempts in 2004. A total of 675 YOY steelhead, 53 Age 1+ steelhead, and 10 Age 2+ steelhead were removed with three total mortalities (738 total steelhead). Again, the entire project was not completed due to difficulties with dewatering.

The work completed in 2004 and 2005 included repairing the north barrel and construction of the access road. Large storms during the winter of 2005-2006 further damaged the south barrel of the culvert, exposing rebar reinforcement. The weir at the outlet was also further damaged, creating pools that presented a stranding risk to juvenile salmonids.

Aside from the original consultation for this project (described above), no other section 7 consultations have occurred in the action area.

Section 10(a)(1)(A) research and enhancement permits and research under exemptions granted under section 4(d) of the ESA could potentially occur in the Rattlesnake Creek Watershed in the future. Based on NOAA's Authorizations and Permits for Protected Species (APPS) website[3], there are currently five active section 10(a)(1)(A) research and enhancement permits have been issued that authorize research on salmonids in the South Fork Eel River Watershed, of which only Permits 10093 issued to CDFG Region 1, and 1044 issued to NMFS's Southwest Fisheries Science Center specifies and authorizes sampling throughout the South Fork Eel River Watershed (including Rattlesnake Creek). There are no authorized research projects under the 2011 4(d) research program, and NMFS is unaware of any potential activities that may request coverage under the 4(d) research program in future years. In general, all research activities are closely monitored and require measures to minimize take during the research activities. As of August 2011, no take of salmonids has occurred in the action area related to research permits and NMFS is unaware of any proposed sampling in the immediate future.

VI. EFFECTS OF THE ACTION

A. Fish Capture and Relocation and Dewatering the Project Area

The repair of the debris rack, culvert inlet, culvert bottom, and the outlet weir will require dewatering of portions of the action area and therefore fish capture and relocation will be necessary. As described above, prior to construction of the dewatering facilities, block nets will be placed at the upstream and downstream end of each dewatered area. Once the nets are in place, a NMFS approved fisheries biologist will capture and relocate salmonids from the dewatered areas until they are confident few or no fish remain. Fish capture and relocation will continue once the dewatering process begins in order to ensure fish are not stranded during the drawdown of the dewatered areas. At the debris rack, captured juvenile steelhead will be relocated upstream of the debris rack, and at the culvert/outlet weir dewatered area, juvenile steelhead will be relocated downstream. All juvenile CC Chinook will be relocated downstream of the outlet weir so they may continue on their out-migration.

[3] https://apps.nmfs.noaa.gov/search/search.cfm

Based on the number of fish observed during recent surveys and relocation efforts for this project (738 steelhead relocated in 2005) described above, and the reduced size of the dewatered area, NMFS estimates up to 500 juvenile steelhead may be present within the dewatered areas. The likelihood of juvenile Chinook salmon is very low, but does exist. Juvenile Chinook salmon normally migrate out of their natal stream between 60 and 150 days post-hatching (*i.e.*, by early summer), but under some conditions may remain in freshwater their first year (Myers *et al.* 1998). Although juvenile Chinook salmon were not found during relocation efforts in 2004 and 2005, adult Chinook salmon carcasses have been observed in Rattlesnake Creek in the past, and in wetter years the out-migration period for juvenile Chinook salmon may extend into late June or even early July. Late emigration has been observed in other nearby watersheds within the CC Chinook salmon ESU (Chase *et al.* 2007). Based on this information, NMFS anticipates a small number of CC Chinook salmon (up to 50 individuals) may be present during fish capture and relocation activities.

Caltrans proposes to use seines and backpack electrofishing to capture and relocate salmonids. Fish capture and relocation activities pose a risk of injury or mortality to fish species. Fish collecting gear, whether passive (Hubert 1996) or active (Hayes *et al.* 1996) has some associated risk to fish, including stress, disease transmission, injury, or death. The amount of unintentional injury and mortality attributable to fish capture varies widely depending on the method used, the ambient conditions, and the expertise and experience of the field crew. Since fish relocation activities will be conducted by qualified fisheries biologists following both the CDFG and NMFS guidelines, direct effects to and mortality of steelhead and Chinook salmon during capture will be minimized. Data from years of similar salmonid relocation activities indicate average mortality rate is below one percent (Collins 2004; CDFG 2005, 2006, 2007, 2008, 2009, 2010). Based on this information, NMFS will use 2 percent as the maximum amount of mortality likely from fish relocation for the project; or no more than ten juvenile steelhead and one juvenile Chinook salmon.

Although sites selected for relocating fish should have ample habitat, in some instances relocated fish may endure short-term stress from crowding at the relocation sites. Relocated fish may also have to compete with other fish causing increased competition for available resources such as food and habitat (Keeley 2003). Stress from crowding, including increased competition for food among juvenile steelhead in the relocation areas will be minimal and temporary, because when the project is finished steelhead will be able to redistribute in the creek unimpeded. NMFS cannot estimate the number of fish affected by competition, but does not believe this impact will be large enough to affect the survival chances of individual fish. For example, the use of multiple release sites will help facilitate fish dispersion, limiting competition. Once the project is complete and following the first precipitation event, juvenile Chinook salmon and steelhead rearing space will return to the dewatered area. Despite these impacts, fish relocation operations, if necessary, are expected to significantly minimize project impacts to juvenile steelhead and Chinook salmon by removing them from areas where they would have experienced high rates of injury and mortality.

B. Dewatering

Direct effects from dewatering will occur to juvenile salmonids within this reach, and most likely to juvenile steelhead only. Caltrans has worked with NMFS to minimize the area that will be subject to dewatering. As described above, two separate areas will be dewatered: 1) the area immediately around the debris rack and 2) the area encompassing the culvert and outlet weir. Stream flow in the large pool between the debris rack and the culvert inlet will be maintained (river flow will be diverted around debris rack area into the large pool). This will substantially minimize relocation of juvenile salmonids and maintain the maximum amount of rearing habitat within the project area.

Caltrans has proposed to construct cofferdams from a suite of different materials and would like to maintain the flexibility to use clean imported gravel, impermeable liners (*e.g.*, plastic), water bladders, and/or sand bags to accomplish cofferdam construction. Low levels of turbidity are expected to occur as a result of the cofferdam construction. Caltrans will construct the cofferdams without the use of heavy equipment in the live stream. Fish capture and relocation will occur prior to (and after) the construction of the cofferdams. This will remove most, if not all, fish from the areas where the cofferdams will be constructed. Juvenile salmonids that avoid capture prior to the implementation of site dewatering will die if not captured while the dewatering is underway. Caltrans or its contractors will continue fish capture and relocation during the dewatering process. NMFS expects the number of juvenile salmonids that will be killed as a result of stranding during dewatering activities will be one percent or less of the fish within the action area prior to dewatering, or no more than five steelhead and one Chinook salmon. During the dewatering process, the biologist on site will make every effort to collect and relocate fish that avoided capture prior to the beginning of the dewatering process.

Another manner by which juvenile salmonids may be harmed or killed during dewatering activities is to be entrained into the pumps or discharge line. To eliminate this risk, the applicant will screen all pumps according to NMFS criteria, to ensure juvenile steelhead or Chinook salmon will not be harmed by the pumps during dewatering events.

Juvenile salmonids rearing downstream of the action area may be inadvertently affected by the loss of benthic (*i.e.*, bottom dwelling) aquatic macroinvertebrate production within the dewatered area (Cushman 1985). However, effects to aquatic macroinvertebrates resulting from dewatering will be temporary because construction activities will be relatively short-lived, drift from upstream will continue through the pipe, and rapid re-colonization (about two to three months) of disturbed areas by macroinvertebrates is expected following construction (Cushman 1985, Thomas 1985, Harvey 1986).

C. Effects of Access Road Construction

At the end of the permanent access road some additional disturbance is expected when contractors gain access to the stream channel to conduct work on the weir and both culvert bottom. This area is approximately 80 feet long and 10 feet wide and has a relatively gentle slope, which should reduce the need for major ground disturbance for access. Increases in turbidity caused by the construction of the access road are discussed below and the effects of vegetation removal are discussed below in the *Habitat Loss* section.

D. Turbidity

NMFS anticipates only short-term increases in turbidity will occur during the construction and removal of cofferdams. Suspended sediment may affect salmonid feeding behavior and efficiency, resulting in reduced growth rates (Sigler *et al.* 1984, Newcomb and Jensen 1996). Also, because of turbidity, salmonids disperse from established territories, which can temporarily displace fish into less suitable habitats and which can lead to reduced growth rates (Sigler *et al.* 1984).

Much of the research discussed in the paragraph above focused on turbidity levels higher than those expected to occur during implementation of the proposed activities. As described above in the Environmental Baseline, substrate throughout the action area consists of course material (cobbles, boulders and bedrock) with very low abundance of fine sediment (Joel Casagrande, NMFS, personal observation, August 25, 2010), and because of these conditions, NMFS expects the increase in turbidity to be minor during the proposed activities. Still, the effects of elevated turbidity may extend downstream approximately 1,000 feet, beyond which, much if not all of the suspended material would settle in the stream channel. Observations of turbidity response during removal of dewatering facilities in a Central California Coast watershed where substrate quality was considerably worse and stream flows were higher indicated a majority of the suspended sediment dropped out in the first 300 to 400 feet from the source (Joel Casagrande, NMFS, personal observation).

Monitoring of newly replaced culverts within Humboldt County indicated temporary increases in turbidity following winter storm events in which the measured turbidity was generally less than the turbidity threshold commonly cited as beginning to cause minor behavioral changes (Humboldt County 2002, 2003, and 2004), and always less than turbidity levels necessary to injure or kill salmonids. Impacts associated with degraded water quality will likely be limited to behavioral effects, such as temporarily vacating preferred habitat or temporarily reduced feeding efficiency. These temporary changes in behavior, may slightly reduce growth rates, but are not likely to reduce the survival chances of individual juvenile salmonids. Caltrans has included BMPs to reduce the likelihood of sediments from entering the stream. NMFS assumes these actions will be effective at reducing sedimentation rates. Any increases in turbidity due to the construction of coffer dams and during the initial re-wetting of the reconfigured channel will

likely be minimal due to the minimal amount of fine sediment available for suspension in the action area and the incorporation of BMP's and adherence to the listed terms and conditions in this biological opinion. Therefore, any short-term impact associated with turbidity during implementation of this project is expected to be insignificant.

E. Debris Rack Repair

Reinforced concrete will be used to re-bolster the eroded center debris rack support. This will include filling small portions of the two pools immediately downstream of the rack. NMFS expects the minor reduction in pool volume as a result of filling small portions of these two pools with concrete will not result in substantial impacts to the availability or quality of habitat for rearing steelhead. The filling will not result in a reduction in pool depth and will only marginally impact the width of the pools. The pool on the left bank side of the support often becomes disconnected during low flow conditions. The repaired footing will be constructed with a tunnel-like opening (at the request of CDFG) in order to connect the two pools. This will provide improved habitat connectivity and will prevent the potential stranding of rearing steelhead in the left bank pool during low flow conditions.

F. Habitat Loss

Impacts on riparian and aquatic habitat will occur as a result of the temporary loss of vegetation within the footprint of the proposed temporary access road and during the repairs to the outlet weir. Riparian zones serve important functions in stream ecosystems by providing shade, sediment storage, nutrient inputs, channel and stream bank stability, habitat diversity, and cover and shelter for fish (Murphy and Meehan 1991). Small streams are especially sensitive to loss of riparian habitat and shade, which moderates stream temperatures by insulating the stream from solar radiation and reducing heat exchange with the surrounding air. This function is particularly important for Rattlesnake Creek, where summer water temperatures frequently exceed optimum levels for rearing salmon and steelhead.

To minimize the temporal loss of riparian vegetation and the potential for incremental effects on stream temperatures, Caltrans proposes to limit the amount of vegetation removed to the least amount possible. Overall, riparian vegetation is sparse throughout the action area. Existing vegetation will be preserved to the extent possible by pruning or, if necessary, cutting individual plants to within a few inches of the ground to allow natural regeneration to occur following construction (*i.e.,* grubbing will not be conducted). Construction of the temporary access road extension will likely require the removal of riparian vegetation from approximately 24 square feet of creek bank. Meanwhile the repair of the outlet weir may require the removal of vegetation from approximately 26 square feet of creek bank. Most of the vegetation to be removed is consists of young willow saplings. Following repairs to the culvert and weir, all of the disturbed areas will be planted with native vegetation in accordance with an approved re-vegetation and monitoring plan. Because of the small areas affected, the rapid re-growth of

willows, and the implementation of a re-vegetation and monitoring plan, NMFS does not believe the effects of the small amount of vegetation removal along the bank of Rattlesnake Creek will result in appreciable impacts to listed critical habitat or species.

H. Beneficial Effects

The Rattlesnake Creek Culvert Repair and Improvement Project is expected to have some beneficial effects for ESA-listed salmonids. As discussed above, lowering of the bottom of the south barrel and modifying the existing outlet weir will reduce flow velocities through the culvert during winter and help to maintain summer flow through the culvert which will improve fish passage conditions for adults and juveniles throughout the year.

VII. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Caltrans is not aware of any additional actions that would cause cumulative effects beyond those that are ongoing and have been analyzed in the environmental baseline of this biological opinion (Caltrans 2011). In the long term, global climate change may produce temperature and precipitation changes that may adversely affect listed salmonids in the action area. Because this project improves habitat, it may help to provide some resilience to climate change.

VIII. INTEGRATION AND SYNTHESIS

Both the NC steelhead and CC Chinook salmon populations are listed as threatened. Throughout the NC steelhead DPS and CC Chinook salmon ESU and their respective Diversity Strata, stream habitat has been significantly impacted by multiple anthropogenic activities (*i.e.,* logging, agriculture, dams, and stream channelization), which, in turn, have been exacerbated by periodic weather events (*e.g.,* severe floods). Cumulatively, these impacts have contributed to substantial declines in the abundance of both species in many of the watersheds in this region (Good *et al.* 2005, Spence *et al.* 2008). Habitat conditions in the action area are not suitable for coho salmon summer rearing, but are for steelhead, and sufficient for Chinook salmon rearing during spring and early summer emigration. Based on recent observations and sampling, the juvenile steelhead population in Rattlesnake Creek appears to be stable and relatively abundant. Because Chinook salmon juveniles emigrate as YOY in the spring and early summer, they are seldom observed in summer and fall surveys. Monitoring of returning adults in Rattlesnake Creek or the South Fork Eel River has not been conducted in many years, and therefore the population size of CC Chinook salmon in this watershed is not known with precision, but is expected to be relatively

small based on the size of the watershed and condition of CC Chinook salmon in other areas of their range.

Past impacts related to timber harvest, rural development, and the construction of migration impediments throughout the DPS/ESU, have slowed or are improving through habitat and passage enhancement projects. For example, in 2009, Caltrans improved fish passage conditions at an upstream location on Rattlesnake Creek (PM 81.4 on Highway 101) by installing a rock weir and improving an existing fish ladder. This has improved migration access for adult salmonids to additional spawning and rearing habitat upstream in the watershed.

Short term impacts from turbidity and vegetation removal during construction are not likely to adversely affect listed salmonids in the action area. During dewatering of the work site, fish rescue and relocation efforts will take place. Juvenile steelhead are likely to be present and juvenile Chinook salmon may be present at the time of construction, but in lower abundance than steelhead. NMFS anticipates up to 500 juvenile steelhead and up to 50 juvenile Chinook salmon may be affected by the project, and no more than 15 juvenile steelhead and 2 Chinook salmon will die as a result of the proposed activities. The number of juvenile steelhead and Chinook salmon captured and relocated during the proposed project will make up a small proportion of the overall Rattlesnake Creek population (which has over 10 miles of anadromous habitat) and the NC steelhead DPS and CC Chinook salmon ESU. It is unlikely the small potential loss of 15 juvenile steelhead or 2 juvenile Chinook salmon as a result of the project will impact future adult returns, due to the relatively large number of juveniles produced by each spawning pair of both species. Therefore, NMFS does not believe the project will appreciably diminish the abundance, productivity, diversity, or spatial structure of the Rattlesnake Creek population of NC steelhead or CC Chinook salmon.

Short term effects related to turbidity and vegetation removal during the construction and removal of stream flow diversion facilities are expected to be minor and temporary, and NMFS anticipates proposed BMPs will control sediment/turbidity sufficiently to avoid significant adverse effects to listed fish species. No permanent adverse changes in stream flow are anticipated. Therefore, NMFS believes the effects of turbidity increases and flow conditions from the project activities will not have any long-term impacts to the PCEs of SONCC coho salmon and CC Chinook salmon critical habitat. The value of critical habitat in the action area for species conservation is not likely to be appreciably reduced by the activities proposed in this project.

The long term effects to NC steelhead and CC Chinook salmon, and designated SONCC coho salmon and CC Chinook salmon critical habitat, from the proposed project will be beneficial. The project is expected to improve juvenile fish passage opportunities during the summer months by maintaining flow through the culvert and improve the passage conditions for adult salmon and steelhead by reducing velocities in the culvert during periods of high flows.

IX. CONCLUSION

After reviewing the best available scientific and commercial information, the current status of the species and critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion the issuance of the Corps permits for the completion of Caltrans's proposed Rattlesnake Creek Culvert Repair and Improvement Project, in Mendocino County, California is not likely to jeopardize the continued existence of CC Chinook salmon, or NC steelhead.

After reviewing the best available scientific and commercial information, the current status of the species and critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion the issuance of the Corps permits for the completion of Caltrans's proposed Rattlesnake Creek Culvert Repair and Improvement Project, in Mendocino County, California is not likely result in the destruction or adversely modification of designated critical habitat designated for SONCC coho salmon and CC Chinook salmon.

X. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by NMFS as an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by the Corps so that they become binding conditions of the permits issued to Caltrans, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require Caltrans to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Caltrans

must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement (50 CFR §402.14(i)(3)).

A. Amount or Extent of Take

As described above in the accompanying biological opinion, the number of threatened NC steelhead that may be incidentally taken by capture and relocation during project activities is expected to be no more than 500 individuals and the number of threatened CC Chinook salmon is expected to be low (no more than 50 individuals). NMFS anticipates no more than two percent (15 juvenile steelhead and 2 juvenile Chinook salmon) of either species present in the area will be killed during relocation.

The anticipated take will have been exceeded if more than 500 juvenile steelhead or 50 juvenile Chinook salmon are captured or if more than 15 steelhead or 2 Chinook salmon are killed during relocation efforts.

B. Effect of the Take

In the accompanying opinion, NMFS determined this level of anticipated take is not likely to result in jeopardy to either species.

C. Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take of NC steelhead and CC Chinook salmon:

1. Undertake measures to ensure harm and mortality to NC steelhead and CC Chinook salmon resulting from fish relocation is low;

2. Undertake measures to maintain water quality and riparian habitat conditions at pre-construction levels to avoid or minimize harm to NC steelhead and CC Chinook salmon;

3. Prepare and submit reports that document the effects and final outcomes of construction, fish relocation activities, and re-vegetation performance.

D. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Corps, its permittee (Caltrans), and their designees/contractors must comply with the following terms and conditions, which implement the reasonable and prudent measures described above, and outline required reporting/monitoring requirements. These terms and conditions are nondiscretionary.

The following terms and conditions implement Reasonable and Prudent Measure 1, to minimize harm or mortality to listed steelhead and Chinook salmon from fish relocation activities.

1. The applicant (Caltrans) shall provide a list of all BMPs and the Terms and Conditions of this biological opinion to their contractors and ensure they are followed for the length of the project.

2. The applicant, or its contractor, shall provide NMFS with a final Fish Capture and Relocation Plan for review prior to the start of fish collection and relocation activities. The plan must be submitted no less than 30 days prior to the beginning of fish capture and relocation activities (*i.e.*, on or before May 15 of the year to be implemented if beginning on June 15). The plan shall outline all confirmed fish relocation methods, including the location and a description of the habitat where steelhead and Chinook salmon are to be relocated. The plan shall be submitted to NMFS' North Central Coast Office (see address below).

3. The project biologist shall notify NMFS biologist Joel Casagrande at (707) 575-6016 or Joel.Casagrande@noaa.gov no later than one week prior to relocation activities in order to provide an opportunity for NMFS staff to observe the activities.

4. The applicant and its contractors will follow NMFS Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act (NMFS 2000). All live steelhead and Chinook salmon shall be handled with extreme care and kept in water to the maximum extent possible during relocation activities. All captured fish shall be kept in cool, shaded, and aerated water that is protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish shall not be removed from this water except when released. If necessary, the biologist shall have at least two containers and segregate young-of-year salmonids from older salmonids and other potential aquatic predators in order to avoid predation affects. Captured salmonids shall be relocated as soon as possible and will be given highest priority over other non-listed fish species. Both juvenile steelhead and Chinook salmon will be released downstream of the project construction area.

5. The biologist will note the number of each species collected/observed in the affected area, the number of fish relocated, and the date and time of collection and relocation. If any dead or fatally wounded fish are observed, they will be collected and placed in an appropriately sized whirl-pack or zip-lock bag, labeled with the date and time of collection, fork length, and location of capture, and frozen as soon as possible. If any fish are fatally wounded, the applicant, or the Corps, will then notify the NMFS biologist, listed above, no later than 2 days from the occurrence.

The following terms and conditions implement Reasonable and Prudent Measure 2, undertake measures to maintain water quality and riparian habitat conditions at pre-construction levels to avoid or minimize harm to NC steelhead and CC Chinook salmon.

6. The applicant, or its contractors, shall monitor in-channel activities and performance of sediment control or detention devices for the purpose of identifying and reconciling any condition that could result in take of listed salmonids. This would include monitoring of turbidity throughout the construction and removal of creek diversion facilities and for one day following the both the construction and removal of the diversion facilities. The results of this monitoring will be used to confirm NMFS's assumption that increases in turbidity levels within and downstream of the action area will be temporary (*i.e.*, increases in turbidity from the construction and removal of the flow diversion facilities will be limited to one day or less).

7. The applicant (Caltrans), or its contractor, shall submit its final re-vegetation plan for review no less than 30 days prior to implementation of the re-vegetation activities. The plan will include a list of species, estimated number and size of each species to be planted, the number and size of each species removed during construction, and any post implementation monitoring plans.

The following terms and conditions implement Reasonable and Prudent Measure 3, prepare and submit a report to document the effects of construction, fish collection and relocation activities, and re-vegetation activities and performance.

8. The applicant (Caltrans) shall provide NMFS with a summary report by January 15 of the year following the completion of fish relocation and monitoring activities. The report shall include the methods used during the fish relocation and monitoring efforts, location, number and species captured, number of mortalities by species, and other pertinent information related to the monitoring and fish relocation activities. Reports shall be submitted to NMFS North Central Coast Office (see address below).

9. The applicant (Caltrans) shall provide NMFS with a summary turbidity monitoring report by January 15 of the year following the completion of the project (removal of dewatering facilities). The report will include turbidity monitoring data collected throughout the construction and removal of the dewatering facilities as described above. The report shall be submitted to NMFS North Central Coast Office (see address below).

10. The applicant (Caltrans), or its contractor, shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to access the work area during the construction period for the purpose of observing monitoring activities, evaluating fish and stream conditions, monitoring performance of BMPs, monitoring water quality, collecting fish samples, or perform other monitoring/studies. NMFS will notify the Caltrans Resident Engineer 48

hours prior to planning a site visit and will contact Caltrans personnel prior to entering the construction site.

11. A final report describing the re-vegetation activities and monitoring shall be submitted to NMFS on January 15th of the year following the end of the post monitoring period. The report shall document the success of the re-vegetation efforts and include photo documentation of the project.

12. All reports required for the above terms and conditions shall be sent to:

NMFS North Central Coast Office
Central Coast Branch Supervisor, Protected Resources Division
Southwest Region
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

XI. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, or to develop information.

1. The Corps and Caltrans, in coordination with NMFS, should identify and prioritize any maintenance and construction projects which, if implemented, can improve ESA-listed salmonid migration or in-stream environmental conditions throughout the North-Central California Coast Recovery Domain.

XII. REINITIATION NOTICE

This concludes formal consultation on Corps issuance of permits for the proposed Rattlesnake Creek Culvert Repair and Improvement Project, Mendocino County, California. As provided in 50 CFR §402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

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