

INFORMATION HANDOUT

For Contract No. 02-4E6304

At 02-Sis-96-56.0

Identified by

Project ID 0212000010

PLAC SUMMARY

PLAC Condition Responsibility Summary

PERMITS

United States Army Corps of Engineers

Regional General Permit No. 12

WATER QUALITY

State Water Resources Control Board

File No. SB13002IN

AGREEMENTS

California Department of Fish and Wildlife

Notification No. 1600-2013-0248-R1

MATERIALS INFORMATION

Final Hydraulic Report

Revised Foundation Report

INFORMATION HANDOUT

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PLAC SUMMARY

PLAC Condition Responsibility Summary

PLAC CONDITION RESPONSIBILITY (PCR) SUMMARY

General:

This PCR Summary clarifies various PLAC requirements. Perform all work described in the PLACs on behalf of the Department unless otherwise stated below in Table 2. If a discrepancy exists between the PCR Summary and the PLAC, the PCR Summary governs.

Definitions:

Agency: A board, agency, or other entity that issues a PLAC

Activity: A task, event or other project element

PLAC Condition: a work activity and/or submittal required by a PLAC

Table 1 - Clarification of PLAC Requirements		
PLAC Name	Section of the PLAC	PLAC Requirement
All PLACs	Applicable PLAC sections	<p>Submittals: Submit to the Engineer when PLAC conditions require:</p> <ol style="list-style-type: none"> 1. Communications. The Engineer will contact the agencies. 2. Records to be maintained, within 5 working days after the activity. 3. Submittals 5 days before the agencies require them. The Engineer will review and submit to the agencies.
Action on Request for Clean Water Act Section 401 Water Quality Certification for the California Department of Fish and Wildlife 2013 Fisheries Restoration Grant Program, File No. SB13002IN	Administrative Conditions	Condition 3 Both the Contractor and the Department must allow Water Board staff to enter the project as described, after notifying the Engineer.
	Attachments	Attachment E All Mitigation Measures have been incorporated into the CDFW Streambed Alteration Agreement and the Contract documents.
Department of the Army Regional General Permit for the California Department of Fish and Game's Fisheries Restoration Grant Program (RGP 12, Corps File No. 2003-279220N)	General Conditions	Condition 4 The "August 5, 2009, Clean Water Act 401 Water Quality Certification" does not apply to this project. The June 20, 2013, Clean Water Act 401 Water Quality Certification, File No. SB13002IN, included in this Information Handout, is applicable to this project.

PLAC CONDITION RESPONSIBILITY (PCR) SUMMARY

<p align="center">Department of the Army Regional General Permit for the California Department of Fish and Game's Fisheries Restoration Grant Program (RGP 12, Corps File No. 2003-279220N)</p>	<p>General Conditions</p>	<p align="center">Condition 5 Both the Contractor and the Department must allow Army Corps staff to enter the project as described, after notifying the Engineer.</p>
	<p align="center">Special Conditions</p>	<p align="center">Condition 1 and 3 Not applicable. Project specific requirements are covered by the CDFW Streambed Alteration Agreement and the Contract documents.</p>
		<p align="center">Condition 10 These species are not anticipated to be present at the project site.</p>
		<p align="center">Condition 11 Apply hydroseed to areas shown on the plans.</p>
		<p align="center">Condition 12 Not applicable.</p>
<p align="center">California Department of Fish and Wildlife Streambed Alteration Agreement, Notification No: 1600-2013- 0248-R1</p>	<p align="center">Section 1 - Administrative Measures</p>	<p align="center">Measure 1.1 The CEQA document is titled "Fort Goff Creek Fish Passage Project, Initial Study with Mitigated Negative Declaration", and is included as an exhibit with the Streambed Alteration Agreement.</p>
		<p align="center">Measure 1.4 Both the Contractor and Caltrans agree "that CDFW personnel may enter the project site after notifying" the Engineer.</p>
	<p align="center">Section 2 - Avoidance and Minimization Measures</p>	<p align="center">Measure 2.15 These species are not anticipated to be present at the project site.</p>
		<p align="center">Measure 2.16 Construct the project according to the plans and specifications.</p>
		<p align="center">Measure 2.19(B)(o) Construct the project according to the plans and specifications.</p>
		<p align="center">Measure 2.20(B), 2.20(C), 2.20(F), and 2.20(J) Apply hydroseed to areas shown on the plans.</p>

PLAC CONDITION RESPONSIBILITY (PCR) SUMMARY

<p align="center">California Department of Fish and Wildlife Streambed Alteration Agreement, Notification No: 1600-2013- 0248-R1</p>	<p align="center">Section 2 - Avoidance and Minimization Measures</p>	<p align="center">Measure 2.21(A) Install temporary fence (Type ESA) as shown on the plans.</p>
		<p align="center">Measure 2.22(A) Construct the project according to the plans and specifications.</p>
		<p align="center">Measure 2.22(L) Construct streambed restoration RSP according to the plans and specifications.</p>
		<p align="center">Measure 2.22(N) Apply hydroseed to areas shown on the plans.</p>
		<p align="center">Measure 2.23(L) There are no additional rules for fire prevention.</p>
		<p align="center">Measure 2.24(A) Instream work shall be conducted between June 15 and November 1.</p>
		<p align="center">Measure 2.24(E) Install BMPs as shown in the plans and specifications.</p>

PLAC CONDITION RESPONSIBILITY (PCR) SUMMARY

Table 2 - Work to be Performed by the Department

PLAC Name	Section of the PLAC	PLAC Requirement
Action on Request for Clean Water Act Section 401 Water Quality Certification for the California Department of Fish and Wildlife 2013 Fisheries Restoration Grant Program, File No. SB13002IN	Additional Conditions	Condition 1, 2, 4, 5, and 6
	Violations	Condition 4
Department of the Army Regional General Permit for the California Department of Fish and Game's Fisheries Restoration Grant Program (RGP 12, Corps File No. 2003-279220N)	General Conditions	Condition 2 and 6
	Special Conditions	Condition 4 The Contractor and the Department share responsibility for this condition. The Department is responsible for installing, maintaining, and removing fish exclusion screens, performing electrofishing, and relocating fish. The contractor is responsible for installing diversions, dewatering, pumping, providing fish screens on pumps, and other requirements.
		Condition 13
California Department of Fish and Wildlife Streambed Alteration Agreement, Notification No: 1600-2013-0248-R1	Section 2 - Avoidance and Minimization Measures	Measure 2.8
		Measure 2.11(E) The Department will provide a qualified fisheries biologist and perform fish and amphibian relocation activities.
		Measure 2.11(I) The Department is responsible for installing, maintaining, and removing fish exclusion screens, performing electrofishing, and relocating fish.
		Measure 2.15
		Measure 2.19(B)(a through m) The Department is responsible for electrofishing and relocating fish.
		Measure 2.20(A)
		Measure 2.20(D)
Measure 2.20(E) 2nd Sentence		

PLAC CONDITION RESPONSIBILITY (PCR) SUMMARY

California Department of Fish and Wildlife Streambed Alteration Agreement, Notification No: 1600-2013- 0248-R1	Section 2 - Avoidance and Minimization Measures	Measure 2.21(A) The Department provides the archaeological monitor.
		Measure 2.21(B) and 2.21(C)
	Section 3 - Reporting Measures	Measure 3.1

INFORMATION HANDOUT

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Project ID 0212000010

PERMITS

United States Army Corps of Engineers

Regional General Permit No. 12



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

**DEPARTMENT OF THE ARMY REGIONAL GENERAL PERMIT
FOR THE CALIFORNIA DEPARTMENT OF FISH AND GAME'S
FISHERIES RESTORATION GRANT PROGRAM**

PERMITTEE: California Department of Fish and Game

REGIONAL GENERAL PERMIT NO. 12 (RGP 12) (Corps File No.: 2003-279220N)

ISSUING OFFICE: San Francisco District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate District or Division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below:

PROJECT DESCRIPTION: This Regional General Permit authorizes minor fill discharges of clean earth, gravel, rock, and wood associated with anadromous salmonid habitat restoration projects implemented under the **California Department of Fish and Game's Fisheries Restoration Grant Program** strictly for the purpose of restoring salmonid fisheries habitat in non-tidal reaches of rivers and streams, improving watershed conditions impacting salmonid streams, and improving the survival, growth, migration, and reproduction of native salmonids. All authorized salmonid habitat restoration projects must conform to State law and be implemented consistent with the *California Salmonid Stream Habitat Restoration Manual*, (¹Flosi et al., 1998 and revisions). (**Note: This Regional General Permit applies only to salmonid habitat restoration projects that are specifically funded and/or authorized under the California Department of Fish and Game's Fisheries Restoration Grant Program.**) The following is a descriptive list of the activities authorized under this Regional General Permit.

a. Instream habitat improvements: These may include cover structures (divide logs; digger logs; spider logs; and log, root wad and boulder combinations), boulder structures (boulder weirs; vortex boulder weirs; boulder clusters; and single and opposing boulder wing-deflectors), and log structures (log weirs; upsurge weirs; single and opposing log wing-deflectors; and Hewitt ramps). Techniques and practices are identified in Part VII of the *California Salmonid*

¹ Gary Flosi, Scott Downie, James Hopelain, Michael Bird, Robert Coey, Barry Collins, California Salmonid Stream Habitat Restoration Manual, Third Edition, Volume I, January 1998, and Volume II, February 2002 (State of California Resources Agency, Department of Fish and Game, Inland Fisheries Division). Latest revisions are available online: <http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp>

Stream Habitat Restoration Manual. Techniques for placement of imported spawning gravel are identified on page VII-46 of the *California Salmonid Stream Habitat Restoration Manual*.

b. Unanchored large woody debris: Woody debris may be used to enhance pool formation and improve stream reaches. First through third order streams are generally best suited. Logs selected for placement should have a minimum diameter of 12 inches and a minimum length 1.5 times the mean bankfull width of the stream channel type reach and the deployment site. Root wads would be selected with care and have a minimum root bole diameter of five feet and a minimum length of fifteen feet and at least half the channel type bankfull width. More information can be found on page VII-23 of the *California Salmonid Stream Habitat Restoration Manual*.

c. Fish screens: Screens would be used to prevent entrainment of juvenile salmonids in water diverted for agriculture, power generation, or domestic use, and are needed on both gravity flow and pump diversion systems. Guidelines for functional designs of downstream migrant fish passage facilities at water withdrawal projects are found in Appendix S of the *California Salmonid Stream Habitat Restoration Manual*. The appendix of the manual covers structure placement, approach velocity, sweeping velocity, screen openings, and screen construction.

d. Fish passage at stream crossings: Stream crossing projects include activities that provide fish friendly crossings where the crossing width is at least as wide as the active channel, culvert passes are designed to withstand a 100 year storm flow, and crossing bottoms are buried below the streambed. Examples include replacement of barrier stream crossings with bridges, bottomless arch culverts, embedded culverts, or fords. Guidelines for fish passage practices are covered in Part IX and XII of the *California Salmonid Stream Habitat Restoration Manual*. Baffled culvert (Washington baffles and steel ramp baffles), fishways (step and pool, Denil fishway, Alaskan steep pass and back-flooding weirs), and fish ladders are described in Part VII.

e. Fish passage improvements: These activities would include removal of obstructions (log jams, beaver dams, waterfalls and chutes and landslides. Suitable large woody debris removed from fish passage barriers that are not used by the project for habitat enhancement shall be left within the riparian zone so as to provide a source for future recruitment of wood into the stream. Log jam barriers are typically less than 10 cubic yards. Guidelines for fish passage improvements are covered in Part VII and XII of the *California Salmonid Stream Habitat Restoration Manual*.

f. Upslope restoration: These activities reduce sediment delivery to anadromous streams including road decommissioning, road upgrading, and storm proofing roads (replacing high risk culverts with bridges, installing culverts to withstand the 100 year flood flow, installing critical dips, installing armored crossings, and removing unstable sidecast and fill materials from steep slopes.). Guidelines for upslope restoration practices are covered in Part X of the *California Salmonid Stream Habitat Restoration Manual*.

g. Watershed and stream bank stability activities: These activities would reduce sediment

from watershed and stream bank erosion. Examples include slide stabilization, stream bank stabilization, boulder stream bank stabilization structures, log stream bank stabilization structures, tree revetment, native material revetment, mulching, revegetation, willow wall revetment, brush mattress, checkdams, brush checkdams, waterbars, exclusionary fencing. Guidelines for watershed and streambank stability are covered in Part VII of the *California Salmonid Stream Habitat Restoration Manual*.

h. Riparian habitat restoration: These activities would increase the biological integrity of native plant communities in riparian zones along rivers and streams. These activities would include natural regeneration or riparian vegetation, livestock exclusionary fencing, bioengineering, and active riparian revegetation projects carried out in accordance with the guidelines described in Part XI of the *California Salmonid Stream Habitat Restoration Manual*.

All authorized habitat improvement projects shall be carried out in accordance with techniques in the *California Salmonid Stream Habitat Restoration Manual* as depicted in the enclosed Attachment C project drawings, labeled Figure VII-17 through Figure X-21, found in the corresponding sections of the manual's Third Edition, dated January 1998.

PROJECT LOCATION: This Regional General Permit applies to Fisheries Restoration Grant Program sponsored and approved salmonid habitat enhancement projects in various streams and rivers, including all designated National Wild and Scenic Rivers and their tributaries, in the following coastal California Counties which are within the Regulatory jurisdictional boundaries of the San Francisco District Office: Alameda, Contra Costa, Del Norte, Humboldt, Marin, Mendocino, Monterey, Napa, San Benito, San Francisco, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, Siskiyou, Solano, Sonoma, and Trinity.

PERMIT CONDITIONS:

GENERAL CONDITIONS:

1. The time limit for completing the work authorized ends on **December 1, 2015**.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity. Should you wish to cease to maintain the authorized activity or should you desire to abandon it, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached. The August 5, 2009, Clean Water Act Section 401 Water Quality Certification for specific projects includes several which will conduct work in 2010. Additional projects will require a new Water Quality Certification in order for this permit to be valid.
5. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.
6. You understand and agree that, if future operations by the United States require the removal, relocation or other alteration of the structure or work authorized herein, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, you will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

SPECIAL CONDITIONS:

1. 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 U.S. Fish and Wildlife Service (FWS) BOs/concurrences dated May 18, September 3, 2009, and May 25, 2010, and National Marine Fisheries Service (NMFS) BO dated June 9, 2010, contain mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take," also specified in the BOs. 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 BOs, 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 BOs, 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 FWS and NMFS are the appropriate authorities to determine compliance with the terms and conditions of their BOs and with the ESA.
 - a. The Sacramento FWS Office states that California freshwater shrimp (*Syncaris pacifica*) and red-legged frog (*Rana aurora draytonii*) are not covered by the September 3, 2009, concurrence letter but instead references the existing, August 17, 2004, Programmatic BO (Service File Number 1-1-03-F-273).
 - b. The Arcata FWS Office BO states that any projects within the area of likely frog presence (according to the AFWO 2009 Range Definition map) **must be**

consulted on individually prior to the completion of the CDFG Negative Declaration for that year. Similarly, projects located within the area with likely tidewater goby (*Eucyclogobius newberryi*) presence must be consulted on individually.

- c. Dam removal projects (excluding flashboard dams), fish ladder projects, fish hatchery/stocking projects, watershed stewardship training, salmon in the classroom, obstruction blasting with explosives or pile driving, and projects that would dewater or disturb more than 500 feet of contiguous stream reach were not analyzed in the NMFS BO and will **require separate Section 7 consultations** to determine impacts to listed salmonids.
2. To avoid impacts to aquatic habitat the activities undertaken in the restoration program shall typically occur during the summer dry season. This is between June 15 and November 1.
 3. Additional mitigation/minimization measures agreed upon through interagency meetings, referred to as sideboards, shall be followed in addition to those in the NMFS BO (pp. 9-19), monitored and reported in the FRGP Annual Reports by the CDFG:
 - a. **Distance between projects implemented in the same year**: Instream projects implemented in the same year will be at least 1,500 linear feet apart if carried out in a fish-bearing stream. If carried out in a non-fish-bearing stream, the projects must be at least 500 linear feet apart. The required distance can be modified upon the recommendation of a NMFS/CDFG hydrologist.
 - b. **Removal of sediment associated with projects**: If instream work will liberate a sediment wedge, 80% of the wedge must be removed before the sediment is liberated. The required amount can be modified upon the recommendation of a NMFS/CDFG hydrologist.
 - c. **Limit on number of projects per HUC 10 Watershed**: Under this Program, there will be an annual limit on the number of projects that may occur in each HUC 10, as shown in the Table below.

Square Mile of HUC 10 watershed	Maximum number of instream and upslope projects per year
<50	2
51-100	3
101-150	4
151-250	5
251-350	6
351-500	9
>500	12

4. If it is necessary to divert flow around the work site, either by pumping or by gravity flow, the suction end of the intake pipe shall be fitted with fish screens meeting Department of Fish and Game and National Marine Fisheries Service criteria to prevent entrainment or impingement of small fish. The following Fish Screen Operation and Maintenance Best Management Practices shall be applied:
 - a) Fish screens shall be operated and maintained in compliance with current law, including Fish and Game Code, and Department of Fish and Game (DFG) fish screening criteria. DFG screening criteria may be referenced on the internet at: http://www.dfg.ca.gov/fish/Resources/Projects/Engin/Engin_ScreenCriteria.asp
 - b) Notwithstanding Fish and Game Code section 6027, fish screens and bypass pipes or channels shall be in-place and maintained in working order at all times water is being diverted.
 - c) If a screen site is dewatered for repairs or maintenance when targeted fish species are likely to be present, measures will be taken to minimize harm and mortality to targeted species resulting from fish relocation and dewatering activities. The responsible party shall notify DFG before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for DFG personnel to supervise the implementation of a water diversion plan and oversee the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the responsible party will implement the following measures to minimize harm and mortality to listed salmonids:
 - i. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service (NMFS), Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
 - ii. The responsible party will provide fish relocation data to DFG on a form provided by the DFG, unless the relocation work is performed by DFG personnel.
 - iii. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- d) If a fish screen is removed for cleaning or repair, a replacement screen shall be installed immediately or the diversion shut down until a screen is in place.
- e) Fish screens shall be inspected and maintained regularly (not less than two times per week) to ensure that they are functioning as designed and meeting DFG fish screening criteria.
- f) Existing roads shall be used to access screen sites with vehicles and/or equipment whenever possible. If it is necessary to create access to a screen site for repairs or maintenance, access points should be identified at stable stream bank locations which minimize riparian disturbance.
- g) Sediment and debris removal at a screen site shall take place as often as needed to ensure that screening criteria are met. Sediment and debris will be removed and disposed of where they will not re-enter the water course.
- h) Stationary equipment used in performing screen maintenance and repairs, such as motors, pumps, generators, and welders, located within or adjacent to a stream shall be positioned over drip pans.
- i) Equipment which is used to maintain and/or repair fish screens shall be in good condition and checked and maintained on a daily basis to prevent leaks of materials that could be deleterious to aquatic life, wildlife, or riparian habitat.
- j) All activities performed in or near a stream will have absorbent materials designed for spill containment and cleanup at the activity site for use in case of an accidental spill. Clean-up of spills shall begin immediately after any spill occurs. The State Office of Emergency Services (1-800-852-7550) and DFG shall be notified immediately after any spill occurs.
- k) To the extent possible, repairs to a fish screen or screen site shall be made during a period of time when the target species of fish are not likely to be present (for example, in a seasonal creek, repair work should be performed when the stream is dry).
- l) Equipment used to maintain and/or repair fish screens shall not operate in a live stream except as may be necessary to construct coffer dams to divert stream flow and isolate the work site.
- m) Turbid water which is generated by screen maintenance or repair activities shall be discharged to an area where it will not re-enter the stream. If the DFG determines that turbidity/siltation levels resulting from screen maintenance or repair activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation shall cease until effective DFG-approved sediment control devices are installed

and/or abatement procedures are implemented.

- n) No debris, soil, silt, sand, bark, slash, spoils, sawdust, rubbish, cement, or concrete or washings thereof; asphalt, paint, or other coating material; oil or petroleum products; or other organic or earthen material from any fish screen operation/maintenance/repair or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into a stream channel. When operations are completed, any excess materials or debris shall be removed from the work area and disposed of in a lawful manner.
5. Location of staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area. The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the restoration action. To avoid contamination of habitat during restoration activities, trash will be contained, removed, and disposed of throughout the project.
6. Any equipment work within the stream channel shall be performed in isolation from the flowing stream. If there is any flow when the work is done, the contractor shall construct cofferdams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to downstream of the downstream dam.
7. For minor actions, where the disturbance to construct coffer dams to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), then measures will be put in place immediately downstream of the work site to capture suspended sediment.
8. The spread or introduction of invasive exotic plants will be avoided to the maximum extent possible.
9. Wildlife encountered during the course of construction, will be allowed to leave the construction area unharmed.
10. Work sites containing western pond turtles, foothill yellow-legged frogs or tailed frogs will use exclusion measures to prevent take or injury to any individual pond turtles or frogs that occur on the site. Any red tree vole nests encountered at a work site will be flagged and avoided during construction.
11. Impacts to riparian and wetland vegetation shall be avoided to the maximum extent possible, and shall be restored and enhanced with native vegetation when adverse impacts are unavoidable.
12. For salmonid restoration projects that would be constructed within the coastal zone, the permittee shall obtain a concurrence from the California Coastal Commission that the

project is consistent with the State's certified Coastal Zone Management Program. The permittee shall contact the appropriate California Coastal Commission office to determine the need for a coastal zone permit prior to conducting any work in the coastal zone. Projects occurring in the coastal zone in the San Francisco Bay region must be permitted by the San Francisco Bay Conservation and Development Commission (BCDC).

13. The permittee shall submit to the District Engineer an annual report of the permitted salmonid restoration projects described above at least 90 days prior to the commencement of work each calendar year. The submitted report shall include the types of activities planned, anticipated dates of commencement, and completion, location, and a brief description of the proposed projects. In addition, an Annual Report on the prior year's projects shall be submitted. This report shall include project locations and implementation status, such as that included in the California Habitat Restoration Project Database (CHRPD). Copies of the annual reports shall be provided to the U. S. Fish and Wildlife Service, and the U. S. National Marine Fisheries Service in accordance with the BO requirements.

FURTHER INFORMATION:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - (X) Section 404 of the Clean Water Act (33 U.S.C. § 1344).
 - () Section 10 of the Rivers and Harbors Act (33 U.S.C. § 403)
2. Limits of this authorization:
 - a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.
3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:
 - a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future

activities undertaken by or on behalf of the United States in the public interest.

- c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.
 - e. Damage claims associated with any future modification, suspension, or revocation of this permit.
4. **Reliance on Applicant's Data:** The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
 5. **Reevaluation of Permit Decision:** This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
 - a. You fail to comply with the terms and conditions of this permit.
 - b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate. (See Item 4 above.)
 - c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.
 - d. Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.
 7. **Extensions:** General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Pursuant to 33 CFR 325.2(e)(2), no regional permit shall be issued for a period of more than five years. RGP12 renewal may be processed pending inter-agency coordination.

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Jane M. Kelly

8/11/10

Cr

Torrey A. DiCiro
Lieutenant Colonel, U.S. Army, District Engineer

(DATE)

INFORMATION HANDOUT

For Contract No. 02-4E6304

At 02-Sis-96-56.0

Identified by

Project ID 0212000010

WATER QUALITY

State Water Resources Control Board

File No. SB13002IN

State Water Resources Control Board

**ACTION ON REQUEST FOR CLEAN WATER ACT SECTION 401
WATER QUALITY CERTIFICATION FOR THE CALIFORNIA DEPARTMENT OF FISH
AND WILDLIFE 2013 FISHERIES RESTORATION GRANT PROGRAM
FILE NO. SB13002IN**

PROJECT: California Department of Fish and Wildlife (CDFW) – 2013 Fisheries Restoration Grant Program Project (Project)

APPLICANT: Ms. Patty Forbes
California Department of Fish and Wildlife
Fisheries Branch
830 S Street
Sacramento, CA 95811

This Water Quality Certification (Certification) responds to your request on behalf of CDFW for Certification for the Project. Your application was received on April 9, 2013, and was determined to be complete on April 26, 2013.

ACTION:

- | | |
|---|---|
| <input type="checkbox"/> Order for Standard Certification | <input type="checkbox"/> Order for Denial of Certification |
| <input checked="" type="checkbox"/> Order for Technically Conditioned Certification | <input type="checkbox"/> Order for Waiver of Waste Discharge Requirements |

AUTHORIZATION:

This Certification conditionally certifies restoration projects funded through the Project grant cycle as listed in Attachment C. This Certification does not apply to the placement of any new culvert or channel liner in any water body unless the restoration project has been approved in writing by the 401 Program Manager of the appropriate Regional Water Quality Control Board (Regional Water Board). Such restoration projects will be identified by CDFW in the notification submitted to the appropriate Regional Water Board, as required in Additional Condition 4 (listed below). The 401 Program Manager of the appropriate Regional Water Board has 30 days from the receipt of the notification to respond; otherwise the restoration project may proceed under this Certification.

FELICIA MARCUS, CHAIR | THOMAS HOWARD, EXECUTIVE DIRECTOR

STANDARD CONDITIONS:

1. This Certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to section 13330 of the Water Code and article 6 (commencing with section 3867) of chapter 28, title 23 of the California Code of Regulations.
2. This Certification action is not intended and shall not be construed to apply to 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 subsection 3855(b) of chapter 28, title 23 of the California Code of Regulations, and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
3. This Certification is conditioned upon total payment of any fee required under chapter 28, title 23 of the California Code of Regulations and owed by the applicant.

ADDITIONAL CONDITIONS:

1. CDFW shall require all restoration project proponents identified in Attachment C of this Certification (CDFW Grantees) to comply with all water quality objectives required by regional and statewide water quality control plans and policies.
2. CDFW shall require all CDFW Grantees to be covered under the new National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activities (Order 2009-0009-DWQ as amended by 2010-0014-DWQ and 2012-0006 DWQ)(Construction Storm Water Permit).
3. Best Management Practices (BMPs). CDFW shall ensure that all applicable BMPs are fully implemented by all CDFW Grantees, as set forth below:
 - a) Appropriate BMPs shall be implemented and maintained throughout Project activities to minimize sediment disturbance and suspension within surface waters as described in this section and in the Mitigated Negative Declaration (MND) for the Project. All BMP materials shall be on-site prior to construction activity and ready for use. BMPs shall be in full compliance with all specifications governing their proper design, installation, operation, and maintenance of such management practices throughout their useful life.
 - b) No work shall be conducted within waters of the state, including waters of United States ("waters" collectively), during the winter period (November 1 - April 15). However, work in upland areas may occur if proper control measures or BMPs are installed and maintained to prevent runoff causing erosion, turbidity, or

discharge of pollutants into waters. If upland work occurs during the winter period, a written notification (e-mail is acceptable) must be submitted to the 401 Program Manager of the appropriate Regional Water Board at least seven (7) business days prior to the start of work. The notification must specify timing, location, approximate distance to nearest water body and control measures or BMPs that will be used to contain potential runoff prior to commencement of work.

- c) Except for "minor actions" as described in the MND for the Project, all work areas shall be effectively isolated from stream flows using suitable control measures before commencement of any in-water work. The diverted stream flow shall not be contaminated by construction activities. Structures for isolating the in-water work area and/or diverting the stream flow (e.g., coffer dam, geo-textile silt curtain) shall not be removed until all disturbed areas are cleaned and stabilized.
- d) Substances resulting from restoration construction activities that could be harmful to aquatic life shall not be discharged to waters of the state, including but not limited to petroleum lubricants and fuels; cured and uncured cements; epoxies, paints and other protective coating materials; Portland cement, concrete, or asphalt concrete, and washings and cuttings thereof.
- e) Fueling, lubrication, maintenance, storage, and staging of vehicles and equipment shall be outside of waters of the state, and shall not result in a discharge or a threatened discharge to waters of the state.
- f) In the event of rain, the in-water work area shall be temporarily stabilized before streamflow exceeds the capacity of the diversion structure. The streambed shall be stabilized so that the disturbed areas will not come in contact with the streamflow.
- g) All areas disturbed by individual restoration projects shall employ appropriate washout and erosion control BMPs to protect waters of the state.
- h) For restoration projects requiring re-vegetation of disturbed areas, viable seed of native species collected within the same watershed, or the greater watershed, shall be used.
- i) When a restoration project is completed, any trash, excess material or other debris shall be removed from the work area and disposed of properly.

4. Notification

No later than 30 days prior to the start of construction, the CDFW Grantee shall submit to the 401 Program Manager of the appropriate Regional Water Board(s) a notification indicating the expected start/completion dates of restoration project activities, project ID, and water body name(s).

For restoration projects that include placement of new culvert and channel liner, the notification shall also include the following information:

- a. Describe installation activities; include any structural control details, such as structure for diverting stream flow around the in-stream excavation area, temporary rubber dam, silt curtain, and any treatment device/facility.
- b. Describe the control measures, or BMPs, during construction and post construction, to minimize impacts (e.g., habitat losses, erosion control measures, flow diversions; etc.).
- c. Any compensatory mitigation required by permitting agencies.

5. Monitoring

CDFW shall provide to the State Water Resources Control Board (State Water Board) staff, and appropriate Regional Water Board staff, copies of reports documenting the following monitoring activities described in the Project MND:

- a. Post-project monitoring immediately after a restoration project is completed to ensure that restoration projects are completed as designed.
- b. Effectiveness monitoring on a random subset of 10 percent of the restoration projects, within one to three years after restoration project completion.

6. Reporting

While this Certification is in effect, or until all restoration projects have been completed or de-funded, and for as long as required monitoring is occurring, CDFW will submit annual reports on July 1 of each year to the 401 Program Managers of the State Water Board and the appropriate Regional Water Board(s) documenting work undertaken during the preceding year and identifying for all such work:

- a. Restoration project name and grant number as listed in Attachment C.
- b. Year of notification approval.
- c. Restoration project purpose and summary work description;
- d. Name(s) of affected water body(ies).
- e. Latitude/longitude in decimal degrees to at least four decimals.
- f. For all restoration projects completed during the year:

- i. The type(s) of receiving (affected) water body(ies) (e.g., at a minimum: river/streambed, lake/reservoir, ocean/estuary/bay, riparian area, or wetland type).
 - ii. The total quantity in acres of each type of receiving water body temporarily impacted, and permanently impacted.
- g. Actual construction start and end-dates for each restoration project.
 - h. Whether each restoration project is on-going or completed.
 - i. Required monitoring reports, notifications, and annual reports shall be directed to: Program Manager, Certification and Wetlands Program at the following State and appropriate Regional Water Board office(s):

State Water Resources Control Board
Division of Water Quality
1001 I Street, 15th Floor
Sacramento, CA 95814

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403

San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Central Coast Regional Water Quality Control Board
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401

VIOLATIONS:

1. CDFW, a CDWF Grantee, or its contractor, or subcontractors shall verbally report any noncompliance to the Certification Program Manager of the State Water Board within 24 hours of the time when CDFW, a CDWF Grantee, or its contractor, or subcontractors become aware of the circumstances of noncompliance.
2. CDFW, a CDWF Grantee, or its contractor, or subcontractors shall report all violations of any terms or requirements of this Order in writing to the State Water Board and Regional Water Board within seven (7) consecutive days from the time CDFW becomes aware of the violation. The written report shall contain:
 - a) A description of the violation and its cause.

- b) The period of the violation event, including dates and times, and if the violation has not been corrected, the anticipated time the violation is expected to continue.
 - c) Steps taken or planned to reduce, eliminate, and prevent recurrence of the violation.
3. In the event of any violation or threatened violation of the requirements of this Order, the violation shall be subject to any remedies, penalties, processes, or sanctions as provided for under State law.
 4. In response to a suspected violation of any requirement of this Order, the State Water Board may require the holder of any permit or license subject to this Certification to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including the cost of the reports, shall be in reasonable relationship to the need for the reports and the benefits to be obtained from the reports.
 5. In response to any violation of the requirements of this Order, the State Water Board may add to or modify the requirements of this Order as appropriate to ensure compliance.

ADMINISTRATIVE CONDITIONS:

1. The State Water Board reserves the right to suspend, cancel, or modify and reissue this Certification, after providing notice to CDFW, a CDFW Grantee, and/or responsible contractor/sub-contractor, if the State Water Board determines that CDFW, a CDFW Grantee, or any its agents fail to comply with any of the terms or requirements of this Certification.
2. A copy of this Certification, the application, and supporting documentation must be available at all restoration project sites during construction for review by site personnel and agencies. All personnel performing work on the proposed Project shall be familiar with the content of this Certification and its posted location on the restoration project site.
3. CDFW and all CDFW Grantees shall grant State Water Board and Regional Water Board staffs, or an authorized representative, upon presentation of credentials and other documents as may be required by law, permission to enter the restoration project site at reasonable times, to ensure compliance with the terms and requirements of this Certification and/or to determine the restoration project may have on waters of the state.

STATE WATER BOARD CONTACT PERSON:

If you have any questions, please contact State Water Board Environmental Scientist Bob Solecki at (916) 341-5483, via e-mail at rsolecki@waterboards.ca.gov, or by mail at:

State Water Resources Control Board
401 Certification & Wetland Program
P.O. Box 100, Sacramento, CA 95812-2000 (by mail)
1001 I St., 15th Floor, Sacramento, CA 95814 (by hand delivery)

You may also contact Bill Orme, Chief of the Water Quality Certification Unit, at (916) 341-5464 or via e-mail at borne@waterboards.ca.gov.

CALIFORNIA ENVIRONMENTAL QUALITY ACT:

CDFW is the Lead Agency responsible for compliance with the California Environmental Quality Act (CEQA; Pub. Resources Code, § 21000 et seq.). CDFW approved the Project and certified the MND for the Project in December 2012 (State Clearinghouse Number 2012122042). In making its determinations and findings, the State Water Board must presume that the MND comports with the requirements of CEQA and is valid (Pub. Resources Code, § 21167.3, subd. (b)). As such, the State Water Board has reviewed and considered the environmental document and all proposed mitigation measures.

The State Water Board reviewed and evaluated the impacts to water quality identified in the MND for the Project. Impacts to water quality were determined to be less than significant because the mitigation measures adopted in Attachment E (Mitigation Measures, Monitoring and Reporting Program for the 2013 Fisheries Restoration Grant Program from Appendix B of the MND) will assure that Project activities will be in compliance with water quality standards. The State Water Board finds that the Mitigation Measures, Monitoring and Reporting Program in the MND for the Project, along with the conditions in the Certification, to be adequate to reduce water quality impacts to less than significant levels.

WATER QUALITY CERTIFICATION:

I hereby issue the Certification for the 2013 Fisheries Restoration Grant Program (File NO. SB13002IN) certifying that as long as all of the conditions listed in this Certification are met, any discharge from the referenced Project will comply with the applicable provisions of the Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards). This discharge is also regulated pursuant to State Water Board Water Quality Order No. 2003-0017-DWQ which authorizes this Certification to serve as Waste Discharge Requirements pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, §13000 et seq.).

Except insofar as may be modified by any preceding conditions, all Certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the conditions of this Certification and the attachments to this Certification, and (b) compliance with all applicable requirements of Statewide Water Quality Control Plans and Policies, the Regional Water Boards' Water Quality Control Plans and Policies, and the MND for the Project.



Thomas Howard
Executive Director

6/20/13

Date

Attachments (5):

- A. Signatory Requirement
- B. Project Information Sheet
- C. List of Projects
- D. Map of Project Locations
- E. Mitigation Measures, Monitoring and Reporting Program

Attachment A
Signatory Requirement

SIGNATORY REQUIREMENTS

*All Documents Submitted In Compliance With This Order
Shall Meet The Following Signatory Requirements:*

1. All applications, reports, or information submitted to the State Water Resources Control Board (State Water Board) must be signed and certified as follows:
 - (a) For a corporation, by a responsible corporate officer of at least the level of vice-president.
 - (b) For a partnership or sole proprietorship, by a general partner or proprietor, respectively.
 - (c) For a municipality, or a state, federal, or other public agency, by either a principal executive officer or ranking elected official.

2. A duly authorized representative of a person designated in Items 1.a through 1.c above may sign documents if:
 - (a) The authorization is made in writing by a person described in Items 1.a through 1.c above.
 - (b) The authorization specifies either an individual or position having responsibility for the overall operation of the regulated activity.
 - (c) The written authorization is submitted to the State Water Board Executive Director.

3. Any person signing a document under this section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

Attachment B
Project Information Sheet



Project Identifiers	
WDID No:	SB13002IN
Reg. Meas. ID:	
Place ID:	
Party ID:	
USACOE No:	
Other File No:	

PROJECT INFORMATION

Details

Application Received Date:	4/9/2013
Application Completed Date:	4/26/2013
Additional Info Completed Date:	
Applicant:	California Department of Fish and Wildlife (CDFW)
Applicant Representative(s):	Karen Carpio
Project Title:	The 2013 Fisheries Restoration Grant Program (FRGP)
Regulating Water Board:	State Water Board
Type of Project:	Habitat Restoration

Project Description:

The purpose of the project is to restore anadromous fisheries habitat in non-tidal reaches of rivers and streams, improve watershed conditions impacting salmonid streams, and improve the survival, growth, migration, and reproduction of anadromous fish. The CDFW, through FRGP, uses funds mandated to restore degraded anadromous fish habitat in coastal streams for a variety of salmonid habitat restoration projects. Restoration projects must be consistent with procedures found in CDFW's "California Salmonid Stream Habitat Restoration Manual".

Location

City:	See Attachment C - various
County:	See Attachment C - various
Cross Streets:	
Section, Township, Range:	
Zip code:	See Attachment C - various
Directions:	
Latitude(s) and Longitude(s):	

Public Notice

Water Board Public Notice: Information regarding this project was noticed on the _____ State _____ Water Board's website from _4/29/13_ to _05/20/13_

No Comments were received. _____ Comments were responded to in writing.

Fees



Application Fee Provided: A certification fee of \$944.00 was submitted on April 10, 2013 as required by 23 CCR §3833b(2)(A) and by 23 CCR § 2200(e). An additional fee of N/A (IF APPLICABLE) to offset additional design impacts was received on N/A as required by 23 CCR §3833b(2)(A) and by 23 CCR § 2200(e).

Hydrologic Information	
Receiving Water(s):	Various See Attachment C
Hydrologic Unit(s):	Various See Attachment C
Water Body Type(s):	Riparian and streambed

Designated Beneficial Use(s)													
	AGR		COMM		FRSH	X	MIGR	X	RARE		SPWN		
	AQUA		CUL		GWR		MUN		REC-1		WARM		
	ASBS		EST		IND		NAV		REC-2		WET		
X	BIOL	X	FISH		LWRM		POW		SAL		WILD		
X	COLD		FLD		MAR		PRO		SHELL		WQE		

Candidate, Sensitive, or Special Status Species

Other Permits/Licenses/Agreements/Plans
Federal (Type and Permit/License Number):
US Army Corps of Engineers Regional General Permit (RGP) No. 12 (Corps file No.: 2003-279220N) and US Army Corps of Engineers RGP No. 78 (Corps file No.: SPL-2003-01123-BAH).
State (Type and Permit/License/Agreement Number):
CDFW 1600 permits.
Other County, City, etc. (Type and Permit/License Number):
N/A
Any Required Documents or Plan Submittals (SWPPP, Mitigation & Monitoring, etc.):
Mitigation measures, monitoring, and reporting program (Appendix B of the 2013 FRGP mitigated negative declaration) and mitigation measures from the Biological Opinions (of the RGP) from NOAA and USFWS.



NEPA and/or CEQA Compliance	
Document type:	Mitigated Negative Declaration
Lead Agency:	CDFW
Date completed:	December 20, 2012
State Clearinghouse Number:	2012122042

IMPACTS
Describe Potential Water Quality Impacts:
The water quality impacts were analyzed in the 2013 FRGP MND and were determined to be less than significant. See Appendix B (Section IX. Hydrology and Water Quality) of the 2013 FRGP MND for mitigation measures implemented to ensure impacts to water quality from the 2013 FRGP are less than significant.

Final Project Impacts (Fill)*						
Water Body Type	Permanent			Temporary		
	Acres**	Linear Feet	Cubic Yards	Acres**	Linear Feet	Cubic Yards
Lake						
Ocean						
Riparian	7,850	35,006.4		327.286		
Streambed		599,364			131,345	
Vernal Pool						
Wetland						

* Include all three measurements (acres, linear feet and cubic yards) for all federal and non-federal waterbody types.
 ** Provide acres to three decimal places (e.g., 0.006).

Final Project Impacts (Dredge*/Excavation)**						
Water Body Type	Permanent			Temporary		
	Acres***	Linear Feet	Cubic Yards	Acres***	Linear Feet	Cubic Yards
Lake						
Ocean						
Riparian						
Streambed						
Vernal Pool						
Wetland						

* For projects that will occur annually please provide the total volume to be dredged for the entire certification period (typically 5 years).
 ** Include all three measurements (acres, linear feet and cubic yards) for all federal and non-federal waterbody types.
 *** Provide acres to three decimal places (e.g., 0.006).

Impact Comparison*								
	Fill				Dredge			
	Permanent		Temporary		Permanent		Temporary	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Impacts (Acres)**								

* Include impacts to both federal and non-federal waters.
** Provide acres to three decimal places (e.g., 0.006).

MITIGATION

Describe Avoidance and Minimization for Impacts to Waters:

A combination of avoidance and minimization measures is proposed to offset potential effects of project construction to wetlands and waters of the U.S. All feasible and practical measures will be undertaken to avoid and/or minimize impacts to waters during construction. All restoration projects funded by FRGP will be conducted based on CDFW's California Salmonid Stream Habitat Restoration Manuals (Flosi et al 1998, 2003, and 2006), and mitigation measures described in the MND for the 2013 FRGP.

Describe Compensatory Mitigation for Impacts to Waters (temporary and permanent):

N/A

Compensatory Mitigation (Proponent Provided)

Water Body Type	Acres Established		Acres Restored		Acres Enhanced		Acres Preserved	
	Temp.*	Perm.	Temp.*	Perm.	Temp.*	Perm.	Temp.*	Perm.
Lake								
Ocean								
Riparian								
Streambed								
Vernal Pool								
Wetland								

* Report as mitigation for temporary impacts at a 1:1 ratio any required conditions to restore the site (e.g., re-vegetating or re-contouring).

Compensatory Mitigation (Mitigation Bank)

Water Body Type	Acres Established	Acres Restored	Acres Enhanced	Acres Preserved
Lake				
Ocean				
Riparian				
Streambed				
Vernal Pool				
Wetland				

Compensatory Mitigation (In-Lieu)

Water Body Type	Acres Established	Acres Restored	Acres Enhanced	Acres Preserved
Lake				
Ocean				
Riparian				
Streambed				
Vernal Pool				
Wetland				



Proponent Provided Mitigation Information (If Applicable)*		
	Site 1	Site 2
Mitigation Site Location(s):		
Mitigation Site Lat/Long(s)		
Name of Watershed & Hydrologic Unit:		
Mitigation Site City and County:		

*If more than two sites, please provide additional information in the additional information table located at the end of this form.

Mitigation Bank Information (If Applicable)*		
	Bank 1	Bank 2
Mitigation Bank Name:		
Name of Mitigation Bank Operator:		
Address of Mitigation Bank Office:		
Mitigation Bank Location(s):		
Mitigation Bank Lat/Long(s)		
Name of Watershed & Hydrologic Unit:		
Mitigation Bank City and County:		
Mitigation purchase amount (\$):		

*If more than two sites, please provide additional information in the additional information table located at the end of this form.

In-Lieu Mitigation Information (If Applicable)*		
	Program 1	Program 2
Name of approved in-lieu fee mitigation sponsor:		
Address of In-lieu mitigation sponsor:		
Description of in-lieu mitigation arrangements:		
In-lieu mitigation location:		
In-lieu mitigation Lat/Long(s):		
In-lieu mitigation City and County:		
Name of Watershed & Hydrologic Unit:		

*If more than two sites, please provide additional information in the additional information table located at the end of this form.

Additional Mitigation Information (Proponent, Bank, or In-Lieu)		
	Site 1	Site 2
Mitigation Site Name:		
Name of Mitigation Site Operator:		
Address of Mitigation Site Office:		
Mitigation Site Location(s):		
Mitigation Site Lat/Long(s)		
Name of Watershed & Hydrologic Unit:		
Mitigation Site City and County:		
Mitigation purchase amount (\$):		

Attachment C
List of Projects

CDFW 2013 Fisheries Restoration Grant Program - Project List

Attachment C

ProjID	FRGP Grant No	Type	Prop D	FY	Grant Status	Work Status	Proposal Title	Proposed Description	Applicant	County	Region	Stream	Lat	Long	GM	HUC10	work start date	work end date
724037	P1230403	HI	54	12/13	Funded, contract pending	Not started	Gilliam Creek Instream Habitat Restoration	To increase habitat complexity in a critical coho spawning and rearing reach of Gilliam Creek by constructing 24 large wood structures to provide more instream cover and high-flow refugia, and enhance pool scour.	Sotoyome Resource Conservation District	Sonoma	R3	Gilliam Creek	38.562	-123.05	Acomb	Austin Creek	8/5/2013	10/15/2013
724038	P1230402	HI	55	12/13	Funded, contract pending	Not started	Porter Creek Instream Habitat Restoration Project	To increase habitat complexity in a critical coho spawning and rearing reach of Porter Creek by constructing 20 large wood/boulder structures to provide more instream cover and high-flow refugia, and enhance pool scour.	Sotoyome Resource Conservation District	Sonoma	R3	Porter Creek	38.537	-122.909	Acomb	Lower Russian River	7/8/2013	9/20/2013
724052	P1230401	HI	79	12/13	Funded, contract pending	Not started	Willow Creek Large Wood Recruitment Project, Phase II	To enhance rearing and spawning habitat within the anadromous reach of lower Willow Creek by placing 16 unanchored large wood structures composed of a minimum of 41 large wood pieces along 1 mile of stream.	Gold Ridge Resource Conservation District	Sonoma	R3	Willow Creek	38.429	-123.062	Acomb	Lower Russian River	9/16/2013	10/15/2013
724142	P1210503	HU	239	12/13	Funded, contract pending	Not started	Mainstem SF Elk River Sediment Reduction and Habitat Improvement Project	Reduce over 11,286 cubic yards of sediment delivery and restore salmonid habitat through implementation of 2.8 miles of site specific and prioritized road decommissioning and erosion prevention in S.F. Elk River watershed, within Headwaters Reserve.	Pacific Coast Fish Wildlife and Wetlands Restoration Association	Humboldt	R1	South Fork Elk River	40.642	-124.038	deWaard	Yager Creek	9/16/2013	10/31/2013
724149	P1210504	HI	246	12/13	Funded, contract pending	Not started	Redwood Creek LWD/Pool Improvement Project	The purpose of this project is to supplement ongoing efforts to provide short-term and long-term benefits to coho salmon through placement of LWD to enhance pools, increase gravel sorting and provide habitat complexity; addition of SWD will provide cover.	Eel River Watershed Improvement Group	Humboldt	R1	Redwood Creek	40.101	-123.903	deWaard	Lower South Fork Eel River	9/16/2013	10/31/2013
724161	P1210502	HU	258	12/13	Funded, contract pending	Not started	Ryan Creek Habitat Sediment Reduction Project	Reduce over 10,379 yd3 of sediment delivery and restore salmonid habitat through implementation of 1 mile of site specific and prioritized road decommissioning, erosion control and erosion prevention work directly above class 1 coho habitat in Ryan Creek.	Pacific Coast Fish Wildlife and Wetlands Restoration Association	Humboldt	R1	Ryan Creek	40.733	-124.13	deWaard	Humboldt Bay-Frontal Pacific Ocean	9/16/2013	10/31/2013
724008	P1210303	FP	7	12/13	Funded, contract pending	Not started	Fort Goff Creek Bridge	Remove existing 15' diameter by 65' long culvert under Route 96 and replace with a single-span bridge. Restore channel to provide fish passage. Realign roadway to new bridge location.	Caltrans	Siskiyou	R1	Fort Goff Creek	41.865	-123.258	Elfgren	Thompson Creek-Klamath River	6/15/2013	10/31/2013
724029	P1230405	HS	35	12/13	Funded, contract pending	Not started	San Geronimo Golf Course Bank Stabilization Project	The objective is to restore a bank along Larson Creek near Hole # 11 of the Golf Course, applying biotechnical techniques, large woody debris structures, and native vegetation.	Salmon Protection and Watershed Network	Marin	R3	Larson Creek	38.019	-122.67	Erickson	Lagunitas Creek	7/1/2013	10/15/2013
724066	P1230406	HI	111	12/13	Funded, contract pending	Not started	Nolan and Thurston Creeks Coho Habitat Enhancement Project	Large wood structures will be strategically placed to enhance instream habitat conditions for juvenile and adult coho salmon. It is expected that the structures will create and enhance pools, and provide refugia for adult and juvenile coho salmon.	Gold Ridge Resource Conservation District	Sonoma	R3	Nolan Creek Thurston Creek	38.358	-122.963	Erickson	San Pablo Bay	7/1/2013	10/15/2013
724136	P1230410	HI	236	12/13	Funded, contract pending	Not started	Green Gulch Habitat Enhancement	Provide summer rearing habitat for juvenile coho salmon that hatched in Green Gulch Creek as well as those rearing in the estuary area. Provide winter habitat for juveniles, enhance spawning habitat, increase diversity, density and width of riparian area	Green Gulch Farm	Marin	R3	Green Gulch Creek	37.864	-122.567	Erickson	Drakes Bay-Frontal Pacific Ocean	7/1/2013	10/15/2013
724159	P1210304	HI	256	12/13	Funded, contract pending	Not started	Using Large Wood to Increase Salmon Abundance in Pudding Creek: A BACI Experiment	Experimental evaluation of strategically placing large wood into most of Pudding Creek to increase salmonid growth, survival, and abundance by increasing the quantity of their summer and winter habitat in a BACI design with Caspar Creek as a control.	Trout Unlimited	Mendocino	R1	Pudding Creek	39.474	-123.704	Garman	Noyo River	8/1/2013	10/31/2013
724174	P1210308	HB	271	12/13	Funded, contract pending	Not started	Francis Creek Barrier Removal at Port Kenyon Road	Remove fish migration barrier and open access to over three miles of spawning habitat in the Francis Creek watershed and removing a hydraulic constriction to allow channel and estuary flushing' effects at medium to high flows.	Humboldt County Department of Public Works	Humboldt	R1	Francis Creek	40.593	-124.258	Helgoth	Salt River-Eel River	6/15/2013	10/31/2013
724103	P1210311	HU	184	12/13	Funded, contract pending	Not started	Ramon Creek Sediment Reduction and Instream Enhancement Project	Implement 59 specific treatments for road decommissioning along 6.9 miles of forest riparian roads to prevent 12,047 yd3 of sediment from entering the Ramon Creek. Install at least 94 pieces of large woody material at 46 sites along 2.5 miles of Ramon Cr	Trout Unlimited	Mendocino	R1	Ramon Creek	39.276	-123.487	Helgoth	Big River	9/16/2013	10/31/2013
724132	P1210309	HI	232	12/13	Funded, contract pending	Not started	Russell Brook Stream Habitat Enhancement Project-Phase II	A total of 29 sites containing 63 logs, including 3 log weirs, and 2 root-wads will be added to Russell Brook. Construction of these 29 sites will increase the quality and quantity of spawning and rearing habitat on a 2,410 foot reach of Russell Brook.	California Conservation Corps	Mendocino	R1	Russell Brook	39.296	-123.475	Helgoth	Big River	9/16/2013	10/31/2013

CDFW 2013 Fisheries Restoration Grant Program - Project List

Attachment C

ProjID	FRGP Grant No	Type	Prop D	FY	Grant Status	Work Status	Proposal Title	Proposed Description	Applicant	County	Region	Stream	Lat	Long	GM	HUC10	work start date	work end date
724158	P1210310	HI	255	12/13	Funded, contract pending	Not started	Big River Instream Coho Habitat Enhancement Project	Install 250 pieces of large wood along 7.5 miles of high priority core recovery coho habitat within 3 subbasins in the Big River watershed. Project will increase stream complexity, pool frequency, winter shelter and rearing habitat for coho salmon.	Trout Unlimited	Mendocino	R1	East Branch North Fork Big River Russell Brook South Daugherty Creek	39.269	-123.49	Helgoth	Big River	9/16/2013	10/31/2013
724100	P1250008	FP	180	12/13	Funded, contract pending	Not started	Rancho Tajiguas Barrrier Removal Project – Phase 2	Project would remove two low-water concrete crossing barriers to migration and replace with two open bottom aluminum arch culverts in the Tajiguas Creek watershed, Santa Barbara County restoring 1.1 miles of creek access using stream simulation methods.	Earth Island Insitute/South Coast Habitat Restoration	Santa Barbara		Tajiguas Creek	34.504	-120.093	Larson		7/1/2013	10/15/2013
724134	P1230404	HU	234	12/13	Funded, contract pending	Not started	Blackhawk Canyon Creek Watershed Sediment Reduction Project- Phase 1	This project will implement erosion control measures, upgrading 26 features and decommissioning 16, over 4.13 miles of road and trail including 1.15 miles of road-to-trail conversion for an estimated reduction of 6,745 yd ³ of road-related sediment.	Santa Clara County Parks and Recreation Department	Santa Clara	R3	Blackhawk Canyon Creek	37.008	-121.7	Leicester	Uvas Creek	7/1/2013	10/15/2013
724011	P1210314	HI	10	12/13	Funded, contract pending	Not started	Two Log Creek Large Woody Debris Project	Project will design, implement and monitor the placement of approximately 75 logs, the cutting of 30 existing log spanners and placing of up to 25 salvage pieces for a total of about 130 pieces of wood at up to 55 sites along 12,663 feet of Two Log Creek.	The Conservation Fund	Mendocino	R1	Two Log Creek	39.335	-123.603	Monday	Big River	9/16/2013	10/31/2013
724104	P1210312	FP	187	12/13	Funded, contract pending	Not started	Bridge Creek Railroad Crossing Fish Passage Implementation Project, Humboldt County	Remove the Northwestern Pacific Railroad barrier culvert crossing on Bridge Creek to allow unimpeded coho salmon and steelhead access to approximately 1.6 miles of high quality salmonid habitat in Bridge Creek and tributary Byron Creek.	California Trout	Humboldt	R1	Bridge Creek	40.425	-123.936	Monday	Price Creek-Eel River	9/16/2013	10/31/2013
724108	P1210317	HI	192	12/13	Funded, contract pending	Not started	Neefus Gulch Coho Habitat Enhancement Project	Restore 0.26 miles of coho habitat by upgrading a culvert passage barrier to a bridge. And install 15 large wood (LWD) and boulder structures along a 0.4 mile reach based on a 2011 DFG Stream Inventory and NOAA CCC Coho Recovery Plan.	Mendocino County Resource Conservation District	Mendocino	R1	Neefus Gulch	39.173	-123.567	Monday	Navarro Garcia River	8/1/2013	10/31/2013
724129	P1210313	HI	231	12/13	Funded, contract pending	Not started	Upper Noyo River Large Wood Enhancement Project-Phase II	A total of 56 sites containing structures consisting of 126 logs and 24 root wads will be constructed on the Upper Noyo River. The addition of these structures will enhance salmonid spawning and rearing habitat within the Upper Noyo River watershed.	California Conservation Corps	Mendocino	R1	Noyo River	39.43	-123.465	Monday	Noyo River	9/6/2013	10/31/2013
724152	P1210316	HI	249	12/13	Funded, contract pending	Not started	North Fork Navarro Instream Coho Habitat Enhancement Project	Install 374 pieces of large wood along 10.9 miles of high priority core recovery coho habitat within 2 subbasins in the NF Navarro watershed. Project will increase stream complexity, pool frequency, winter shelter and rearing habitat for coho salmon.	Trout Unlimited	Mendocino	R1	Cooks Creek Lower South Branch North Fork Navarro River	39.178	-123.523	Monday	Navarro Garcia River	9/16/2013	10/31/2013
724157	P1210315	HI	254	12/13	Funded, contract pending	Not started	Little North Fork Noyo River Instream Coho Habitat Enhancement Project	Install approximately 140 pieces of large wood along 3.13 miles of high priority core recovery coho habitat along Little North Fork Noyo River. Project will increase stream complexity, pool frequency, winter shelter and rearing habitat for coho salmon.	Trout Unlimited	Mendocino	R1	Little North Fork Noyo River	39.465	-123.69	Monday	Noyo River	8/1/2013	10/31/2013
724035	P1240401	HI	49	12/13	Funded, contract pending	Not started	Steelhead Spawning Gravel Enhancement - Below Los Padres Dam	Increase spawning habitat below Los Padres Dam (LPD) up to 50% by replacing gravels trapped behind LPD for the past 60 years. Enhancement will improve spawning by supporting up to 200 additional redds as well as rearing/BMI habitat in 5 miles of stream.	Monterey Peninsula Water Management District	Monterey	R4	Carmel River	36.389	-121.666	Paul	Arroyo Seco	8/1/2013	10/31/2013
724070	P1240400	FP	120	12/13	Funded, contract pending	Not started	Pismo Creek Fish Passage Improvement Project	The project entails the removal of a defective fish ladder and the construction of a series of steps and pools to provide passage for migrating steelhead trout to over 7.4 miles of critical habitat. Project design was funded under contract P0640401.	Central Coast Salmon Enhancement	San Luis Obispo		Pismo Creek	35.196	-120.612	Paul	Pismo Creek	7/1/2013	10/15/2013
724123	P1210506	HR	223	12/13	Funded, contract pending	Not started	Ten-Mile River Coho Habitat Rehabilitation Program (Phase I)	To improve the forested riparian buffer function of the South Fork of the Ten-Mile River by excluding cattle with fencing and revegetating nearly two miles of stream corridor on land permanently protected by conservation easements.	The Nature Conservancy	Mendocino	R1	South Fork Ten-Mile River	39.531	-123.745	Ramsey	Ten Mile River	9/16/2013	10/31/2013

CDFW 2013 Fisheries Restoration Grant Program - Project List

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ProjID	FRGP Grant No	Type	Prop D	FY	Grant Status	Work Status	Proposal Title	Proposed Description	Applicant	County	Region	Stream	Lat	Long	GM	HUC10	work start date	work end date
724151	P1210505	HI	248	12/13	Funded, contract pending	Not started	Cottaneva Creek Habitat Restoration Project, Phase III	Supplement ongoing efforts to provide short-term and long-term benefits to coho salmon by restoring LWD and shade through LWD placement and improvement of existing riparian zones through plantings of conifers.	Eel River Watershed Improvement Group	Mendocino	R1	Cottaneva Creek	39.766	-123.828	Ramsey	Ucal Creek-Frontal Pacific Ocean	9/16/2013	31-Oct-13
724154	P1210508	HI	251	12/13	Funded, contract pending	Not started	Middle "Clark" Fork Ten Mile Instream Coho Habitat Enhancement Project	Install approximately 100 pieces of large wood along 3.48 miles of high quality, core recovery coho habitat to increase stream complexity, pool frequency, winter shelter and rearing habitat for coho salmon.	Trout Unlimited	Mendocino	R1	Middle "Clark" Fork Ten Mile River	39.546	-123.664	Ramsey	Ten Mile River	9/16/2013	10/31/2013
724156	P1210509	HI	253	12/13	Funded, contract pending	Not started	Bald Hill Creek Instream Coho Habitat Enhancement Project	Install approximately 80 pieces of large wood along 1.7 miles of high quality coho habitat to increase stream complexity, pool frequency, winter shelter and rearing habitat for coho salmon.	Trout Unlimited	Mendocino	R1	Bald Hill Creek	39.614	-123.642	Ramsey	Ten Mile River	9/16/2013	10/31/2013
724016	P1210510	HR	16	12/13	Funded, contract pending	Not started	Bobcat Run Riparian	Prevent 69,000 yds ² from entering Howe Creek and siting in 2 miles of potentially prime Coho spawning & rearing habitat. Stabilize and vegetate the drainage to facilitate full hydrologic recovery in the property's conservation easement protected riparian	Humboldt County Resource Conservation District	Humboldt	R1	Bobcat Run Eel River Howe Creek	40.487	-124.181	Tollefson	Price Creek-Eel River	7/10/2013	9/15/2013
724105	P1210511	HR	188	12/13	Funded, contract pending	Not started	Lower Eel Riparian Planting	Restore unrecovered riparian zones of Howe Creek to their indigenous vegetation, stability and complexity. Specifically, by strengthening and stabilizing the riparian zones and streambeds by establishing 3,450 redwood seedlings on 19 acres and 23 sites.	Humboldt County Resource Conservation District	Humboldt	R1	Eel River Howe Creek	40.494	-124.169	Tollefson	Price Creek-Eel River	12/10/2013	3/15/2014
724120	P1210512	HI	218	12/13	Funded, contract pending	Not started	Lower Mattole Coho Salmon Habitat Enhancement	The proposed project will place a significant quantity of large wood (both whole trees and in structures) in the estuary and lower river in order to provide immediate suitable winter rearing habitat and refuge for coho salmon.	Mattole Salmon Group	Humboldt	R1	Mattole River	40.296	-124.327	Tollefson	Mattole River	9/16/2013	10/1/2013
724147	P1210514	HI	244	12/13	Funded, contract pending	Not started	Upper Ten Mile Creek Salmonid Habitat Restoration Project	The objective of this project is to enhance and increase large woody cover, pool frequency, and channel complexity within a halfmile of Tenmile Creek, which is native habitat to Chinook and coho salmon and Steelhead trout.	Eel River Watershed Improvement Group	Mendocino	R1	Tenmile Creek	39.694	-123.504	Tollefson	Upper South Fork Eel River	9/16/2013	10/1/2013
724164	P1210513	WC	261	12/13	Funded, contract pending	Not started	Mattole Flow Program: Institutional Water Storage and Forbearance	Restore, improve, and protect juvenile anadromous fish habitat and fish passage through installation of 200,000 gallons tank storage and restrictions on corresponding seasonal water rights to prevent summertime water diversion. Improve summer stream flows	Trout Unlimited	Humboldt	R1	Mattole River	40.022	-123.939	Tollefson	Mattole River	9/16/2013	10/15/2013
724144		FP	241	12/13	Funded, contract pending	Not started	Strawberry Creek Coho Passage Improvement Project	Remove and replace the Transfer Station Culvert, an undersized elevated box culvert, with a bridge that fully spans the natural channel bottom at grade. Reestablish salmonid access to up to 1.1 stream miles.	Pacific Coast Fish Wildlife and Wetlands Restoration Association	Humboldt	R1	Strawberry Creek	41.288	-124.081		Mad-Redwood Creek	6/15/2013	10/31/2013

Attachment D
Map of Project Locations

CDFW Fisheries Restoration Grant Program 401 Permit Application Projects 2013



Attachment E
**Mitigation Measures, Monitoring and Reporting
Program**

APPENDIX B

MITIGATION MEASURES, MONITORING AND REPORTING PROGRAM FOR THE 2013 FISHERIES RESTORATION GRANT PROGRAM

SECTION 1: MITIGATION

General mitigation measures are implemented for all action items. Specific mitigation measures are identified for the various species found at or near the project site. A DFG grant manager is assigned to each action item and is responsible for ensuring the general and specific mitigation measures are implemented.

I. AESTHETICS

No specific mitigation measures are required to protect aesthetics.

II. AGRICULTURE RESOURCES

No specific mitigation measures are required to protect agricultural resources.

III. AIR QUALITY

No specific mitigation measures are required to protect air quality.

IV. BIOLOGICAL RESOURCES

A. General Measures for Protection of Biological Resources

- 1) Timing. To avoid impacts to aquatic habitat the activities carried out in the restoration program typically occur during the summer dry season where flows are low or streams are dry.
 - a) Work around streams is restricted to the period of June 15 through November 1 or the first significant rainfall, whichever ever comes first. Actual project start and end dates, within this timeframe, are at the discretion of the Department of Fish and Game (i.e. on the Shasta River projects must be completed between July 1 and September 15 to avoid impacts to immigrating and emigrating salmonids). This is to take advantage of low stream flow and avoid the spawning and egg/alevin incubation period of salmon and steelhead.
 - b) Upslope work generally occurs during the same period as stream work. Road decommissioning and other sediment reduction activities are dependent on soil moisture content. Non jurisdictional upslope projects do not have seasonal restrictions in the Incidental Take Statement but work may be further restricted at some sites to allow soils to dry out adequately. In some areas equipment access and effectiveness is constrained by wet conditions.
 - c) The approved work window for individual work sites will be further constrained as necessary to avoid the nesting or breeding seasons of birds and terrestrial animals. At most sites with potential for raptor (including northern spotted owls) and migratory bird nesting, if work is conditioned to start after July 9, potential impacts will be avoided and no surveys will be required. For work sites that might contain nesting marbled murrelets, the starting date will be September 16 in the absence of surveys. The work

window at individual work sites could be advanced if surveys determine that nesting birds will not be impacted.

- d) For restoration work that may affect swallow nesting habitat (such as removal or modification of bridges, culverts or other structures that show evidence of past swallow nesting activities), construction shall occur after August 31 to avoid the swallow nesting period. Suitable nesting habitat shall be netted prior to the breeding season to prevent nesting. Netting shall be installed before any nesting activity begins, generally prior to March 1. Swallows shall be excluded from areas where construction activities cause nest damage or abandonment.
 - e) All project activities shall be confined to daylight hours.
- 2) Projects shall not disturb or dewater more than 500 feet of contiguous stream reach.
 - 3) During all activities at project work sites, all trash that may attract predators shall be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.
 - 4) Staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area where it cannot enter the stream channel. Stationary equipment such as motors, pumps, generators, compressors, and welders located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans. Vehicles will be moved out of the normal high water area of the stream prior to refueling and lubricating. The grantee shall ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, DFG shall ensure that the grantee has prepared a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.
 - 5) The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the restoration action while minimizing riparian disturbance without affecting less stable areas, which may increase the risk of channel instability. Existing roads shall be used to access work sites as much as practicable.
 - 6) The access and work area limits shall be identified with brightly colored flagging or fencing. Flagging and fencing shall be maintained in good repair for the duration of project activities. All areas beyond the identified work area limits shall not be disturbed.
 - 7) Any construction debris shall be prevented from falling into the stream channel. Any material that does fall into a stream during construction shall be immediately removed in a manner that has minimal impact to the streambed and water quality.
 - 8) Where feasible, the construction shall occur from the bank, or on a temporary pad underlain with filter fabric.
 - 9) Any work within the stream channel shall be performed in isolation from the flowing stream and erosion protection measures shall be in place before work begins.
 - a) Prior to dewatering, the best means to bypass flow through the work area to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic invertebrates shall be determined.

- b) If there is any flow when work will be done, the grantee shall construct coffer dams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to downstream of the downstream dam.
 - c) No heavy equipment shall operate in the live stream, except as may be necessary to construct coffer dams to divert stream flow and isolate the work site.
 - d) Coffers dams may be constructed with clean river run gravel or sand bags, and may be sealed with sheet plastic. Upon project completion, sand bags and any sheet plastic shall be removed from the stream. Clean river run gravel may be left in the stream channel, provided it does not impede stream flow or fish passage, and conforms to natural channel morphology without significant disturbance to natural substrate.
 - e) Dewatering shall be coordinated with a qualified fisheries biologist to perform fish and amphibian relocation activities.
 - f) The length of the dewatered stream channel and the duration of the dewatering shall be kept to a minimum and shall be expected to be less than 300 contiguous feet or 500 total feet per site.
 - g) When bypassing stream flow around work area, stream flow below the construction site shall be maintained similar to the unimpeded flow at all times.
 - h) The work area shall be periodically pumped dry of seepage. Pumps shall be placed in flat areas, away from the stream channel. Pumps shall be secured by tying off to a tree or staked in place to prevent movement by vibration. Pump intakes shall be covered with 0.125 inch mesh to prevent entrainment of fish or amphibians that failed to be removed. Pump intakes shall be periodically checked for impingement of fish or amphibians, and shall be relocated according to the approved measured outlined for each species bellow.
 - i) If necessary, flow shall be diverted around the work site, either by pump or by gravity flow, the suction end of the intake pipe shall be fitted with fish screens meeting DFG and NOAA criteria to prevent entrainment or impingement of small fish. Any turbid water pumped from the work site itself to maintain it in a dewatered state shall be disposed of in an upland location where it will not drain directly into any stream channel.
 - j) Fish shall be excluded from the work area by blocking the stream channel above and below the work area with fine-meshed net or screen. Mesh shall be no greater than 1/8-inch diameter. The bottom edge of the net or screen shall be completely secured to the channel bed to prevent fish from reentering the work area. Exclusion screening shall be placed in areas of low water velocity to minimize fish impingement. Screens shall be regularly checked and cleaned of debris to permit free flow of water.
- 10) Where the disturbance to construct coffer dams to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), the action shall be carried out without dewatering and fish relocation. Furthermore, measures shall be put in place immediately downstream of the work site to capture suspended sediment. This may include installation of silt catchment fences across the stream, or placement of a filter berm of clean river gravel. Silt fences and other non-native materials will be removed from the stream following completion of the activity. Gravel berms may be left in the stream channel provided it does not impede stream flow or fish passage, and conforms to natural channel morphology without significant disturbance to natural substrate.

- 11) Best management practices associated with fish screens and measures to minimize effects to salmonids associated with fish screen construction, maintenance, and repair are presented below:
- a) Screening projects shall only take place on diversions with a capacity of 60 cfs or less. Screening larger diversions shall require separate consultation. Fish screens shall be operated and maintained in compliance with current law, including Fish and Game Code, and DFG fish screening criteria. DFG screening criteria may be referenced on the Internet at:
http://www.dfg.ca.gov/fish/Resources/Projects/Engin/Engin_ScreenCriteria.asp.
 - b) Notwithstanding Fish and Game Code section 6027, fish screens and bypass pipes or channels shall be in-place and maintained in working order at all times water is being diverted.
 - c) If a screen site is dewatered for repairs or maintenance when targeted fish species are likely to be present, measures shall be taken to minimize harm and mortality to targeted species resulting from fish relocation and dewatering activities. The responsible party shall notify DFG before the project site is de-watered and streamflow diverted. The notification shall provide a reasonable time for personnel to supervise the implementation of a water diversion plan and oversee the safe removal and relocation of salmonids and other fish life from the project area. If the project requires site dewatering and fish relocation, the responsible party shall implement the dewatering and relocation measures as described in this document to minimize harm and mortality to listed species.
 - d) If a fish screen is removed for cleaning or repair, measures shall be undertaken to ensure juvenile fish are not passively entrained into the diversion canal. The area shall be isolated, cleared of fish, and dewatered prior to screen maintenance or replacement. If dewatering the work area is infeasible, then the area in front of the screen shall be cleared of fish utilizing a seine net that remains in place until the project is complete. In the case of a damaged screen, a replacement screen shall be installed immediately or the diversion shut down until a screen is in place.
 - e) Fish screens shall be inspected and maintained regularly (not less than two times per week) to ensure that they are functioning as designed and meeting DFG fish screening criteria. During the diversion season, screens shall be visually inspected while in operation to ensure they are performing properly. Outside the diversion season when the screening structure is dewatered, the screen and associated diversion structure shall be more thoroughly evaluated.
 - f) Existing roads shall be used to access screen sites with vehicles and/or equipment whenever possible. If it is necessary to create access to a screen site for repairs or maintenance, access points shall be identified at stable stream bank locations that minimize riparian disturbance.
 - g) Sediment and debris removal at a screen site shall take place as often as needed to ensure that screening criteria are met. Sediment and debris shall be removed and disposed at a location where it will not re-enter the water course.
 - h) Stationary equipment used in performing screen maintenance and repairs, such as motors, pumps, generators, and welders, located within or adjacent to a stream shall be positioned over drip pans.
 - i) Equipment which is used to maintain and/or repair fish screens shall be in good condition and checked and maintained on a daily basis to prevent leaks of materials that could be deleterious to aquatic life, wildlife, or riparian habitat.

- j) To the extent possible repairs to a fish screen or screen site shall be made during a period of time when the target species of fish are not likely to be present (for example, in a seasonal creek, repair work should be performed when the stream is dry).
 - k) Equipment used to maintain and/or repair fish screens shall not operate in a flowing stream except as may be necessary to construct coffer dams to divert stream flow and isolate the work site.
 - l) Turbid water which is generated by screen maintenance or repair activities shall be discharged to an area where it will not re-enter the stream. If the DFG determines that turbidity/siltation levels resulting from screen maintenance or repair activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation shall cease until effective DFG-approved sediment control devices are installed and/or abatement procedures are implemented.
- 12) Any equipment entering the active stream (for example, in the process of installing a coffer dam) shall be preceded by an individual on foot to displace wildlife and prevent them from being crushed.
 - 13) If any non-special status wildlife are encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed, and shall be flushed, hazed, or herded in a safe direction away from the project site. "Special status wildlife" is defined as any species that meets the definition of "endangered, rare, or threatened species" in section 15380, article 20 in Title 14 of the California Code of Regulations, also known as the "CEQA Guidelines".
 - 14) Any red tree vole nests encountered at a work site shall be flagged and avoided during construction.
 - 15) For any work sites containing western pond turtles, salamander, foothill yellow-legged frogs, or tailed frogs, the grantee shall provide to the DFG grant manager for review and approval, a list of the exclusion measures that will be used at their work site to prevent take or injury to any individual pond turtles, salamanders, or frogs that could occur on the site. The grantee shall ensure that the approved exclusion measures are in place prior to construction. Any turtles or frogs found within the exclusion zone shall be moved to a safe location upstream or downstream of the work site, prior to construction.
 - 16) All habitat improvements shall be done in accordance with techniques in the *California Salmonid Stream Habitat Restoration Manual*. The most current version of the manual is available at: <http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp>.
 - 17) The grantee shall have dependable radio or phone communication on-site to be able to report any accidents or fire that might occur.
 - 18) Installation of bridges, culverts, or other structures shall be done so that water flow is not impaired and upstream and downstream passage of fish is assured at all times. Bottoms of temporary culverts shall be placed at or below stream channel grade.
 - 19) Temporary fill shall be removed in its entirety prior to close of work-window.

B. Specific Measures for Endangered, Rare, or Threatened Species That Could Occur at Specific Work Sites

1) Rare Plants

The work sites for the 2013 grants projects are within the range of a variety of rare plant species. The plant species found on a State or Federal special status list that might be associated with the 2013 grants projects, was determined from a search of DFG's Natural Diversity Database. Because of the large number of widely scattered work sites proposed, it is not feasible to survey individual work sites in advance and still be able to implement the restoration projects, due to time limits on the availability of restoration funds. Lists of special status plant species that might occur at individual work sites are presented in Appendix A. Past experience with grants projects from previous years has shown that the potential for adverse impacts on rare plants at salmonid restoration work sites is very low. Few sites surveyed for rare plants between 1999 and 2012 were found to have rare plant colonies; disturbance of rare plants was avoided in all cases. In order to avoid impacts to rare plants during the 2013 grants projects, the following mitigation measures will be implemented:

- a) DFG or another qualified biological consultant shall survey all work sites for rare plants prior to any ground disturbing activities. Rare plant surveys will be conducted following the "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities" (DFG, 2009). These guidelines are available in Appendix C or on the web at: <http://www.dfg.ca.gov/habcon/plant/>.
- b) If any special status plant species are identified at a work site, DFG shall require one or more of the following protective measures to be implemented before work can proceed:
 - a) Fencing to prevent accidental disturbance of rare plants during construction,
 - b) On-site monitoring by a qualified biologist during construction to assure that rare plants are not disturbed, and
 - c) Redesign of proposed work to avoid disturbance of rare plants.
- c) If it becomes impossible to implement the project at a work site without potentially significant impacts to rare plants, then activity at that work site shall be discontinued.
- d) DFG shall ensure that the grantee or responsible party is aware of these site-specific conditions, and shall inspect the work site before, during, and after completion of the action item.

2) California freshwater shrimp (*Syncaris pacifica*)

Of the 47 work sites proposed as part of the 2013 grants program, eight occur within the range of California freshwater shrimp (CFS) (724018 Black Mountain Ranch Sediment Reduction, 724023 Mirabel Dam Modifications for Improved Fish Passage, 724037 Gilliam Creek Instream Habitat Restoration, 724038 Porter Creek Instream Habitat Restoration Project, 724052 Willow Creek Large Wood Recruitment Project, Phase II, 724062 Tannery Creek Upstream Wood Loading Project, 724066 Nolan and Thurston Creeks Coho Habitat Enhancement Project, and 724125 Lancel Creek Fish Passage Barrier Removal Project) (Appendix A). The range of the CFS includes Marin, Napa, and Sonoma counties, excluding the Gualala River watershed. Therefore, the potential for impacts to CFS shall be mitigated by complying with all of the mandatory terms and

conditions associated with incidental take authorized by the U. S. Fish and Wildlife Service (USFWS), Biological Opinions (file no. 1-1-03-F-273 and 81420-2009-I-0748-1). DFG proposes to implement the following measures to minimize adverse effects to the CFS and its habitat:

- a) Project activities in potential shrimp habitat shall be restricted to the period between July 1 and November 1.
- b) At least 15 days prior to the onset of activities, DFG shall submit the name(s) and credentials of biologists who will conduct activities specified in the following measures to the USFWS. The grantee shall implement any additional conservation measures requested by DFG and/or the USFWS.
- c) DFG shall be notified at least one week in advance of the date on which work will start in the stream, so that a qualified DFG biologist can monitor activities at the work site. All work in the stream shall be stopped immediately if it is determined by DFG that the work has the potential to adversely impact shrimp or its habitat. Work shall not recommence until DFG is satisfied that there will be no impact on the shrimp.
- d) Where appropriate, a USFWS-approved DFG biologist will survey each site for shrimp before allowing work to proceed and prior to issuance of a Streambed Alteration Agreement. All overhanging vegetation, undercut banks, and tree roots will be surveyed with a butterfly net or fish net.
- e) Prior to the onset of work at a work site that may contain shrimp, the USFWS-approved DFG biologist shall conduct a training session for all construction personnel. At a minimum the training shall include a description of the shrimp and its habitat, the importance of the shrimp and its habitat, the general measures that are being implemented to conserve the shrimp as they relate to the work site, and the work site boundaries where construction may occur.
- f) Only USFWS-approved biologists shall participate in the capture, handling, and monitoring of shrimp. DFG shall report annually on the number of capture, release and injuries/mortality and agrees to modify capture/release strategy with USFWS staff as needed to prevent adverse effects.
- g) In site locations where shrimp are present, DFG will require the grantee to implement the mitigation measures listed:
 - a) Equipment work shall be performed only in riffle, shallow run, or dry habitats, avoiding low velocity pool and run habitats occupied by shrimp, unless shrimp are relocated according to the protocol described below. "Shallow" run habitat is defined as a run with a maximum water depth, at any point, less than 12 inches, and without undercut banks or vegetation overhanging into the water.
 - b) Hand placement of logs or rocks shall be permitted in pool or run habitat in stream reaches where shrimp are known to be present, only if the placement will not adversely affect shrimp or their habitat.
 - c) Care shall be taken during placement or movement of materials in the stream to prevent any damage to undercut stream banks and to minimize damage to any streamside vegetation. Streamside vegetation overhanging into pools or runs shall not be removed, trimmed, or otherwise modified.
 - d) No log or rock weirs (including vortex rock weirs), or check dams shall be constructed that would span the full width of the low flow stream channel.

Vegetation shall be incorporated with any structures involving rocks or logs to enhance migration potential for shrimp.

- e) No dumping of dead trees, yard waste or brush shall occur in shrimp streams, which may result in oxygen depletion of aquatic systems.
- h) If in the opinion of the USFWS-approved biologist, adverse effects to shrimp would be further minimized by moving shrimp away from the project site, the following procedure shall be used:
 - a) A second survey shall be conducted within 24 hours of any construction activity and shrimp shall be relocated to the nearest suitable habitat. Shrimp shall be moved while in the net, or placed in buckets containing stream water. Stress and temperature monitoring of shrimp shall be performed by the USFWS-approved biologist. Numbers of shrimp and any mortalities or injuries shall be identified and recorded. Shrimp habitat is defined as reaches in low elevation (less than 116 m) and low gradient (less than one percent) streams where banks are structurally diverse with undercut banks, exposed fine root systems, overhanging woody debris or overhanging vegetation.
 - b) When no other habitat exists on a landowner's property, the shrimp shall be held in suitable containers with site water and released at the end of the day. Containers shall be placed in the shade.
- i) If moving the shrimp out of the work area cannot be accomplished, and other avoidance measures have been deemed inappropriate, DFG shall drop activities at the work site from the project.
- j) A USFWS-approved DFG biologist shall be present at the work site until such time as all removal of shrimp, instruction of workers, and habitat disturbance associated with the restoration project have been completed. The USFWS-approved biologist shall have the authority to halt any action that might result in the loss of any shrimp or its habitat. If work is stopped, the USFWS-approved biologist shall immediately notify DFG and the USFWS.
- k) If a work site is temporarily dewatered by pumping, intakes shall be completely screened with wire mesh no larger than 0.2 inch to prevent shrimp from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow with the least disturbance to the substrate.
- l) A USFWS-approved biologist shall permanently remove from within the project work site, any individuals of exotic species, such as bullfrogs, centrarchid fishes, and non-native crayfish, to the maximum extent possible. The grantee shall have the responsibility that such removals are done in compliance with the California Department of Fish and Game.
- m) Invasive non-native vegetation that provides shrimp habitat and is removed as a result of Program activities shall be replaced with native vegetation that provides comparable habitat for the shrimp. Re-vegetated sites shall be irrigated as necessary until vegetation is established. Re-vegetated sites shall be monitored until shading and cover achieves 80% of pre-project shading and cover and for a minimum of 5 years.

3) **Coho salmon (*Oncorhynchus kisutch*), Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*), and coast cutthroat trout (*Oncorhynchus clarki clarki*)**

While all of the work proposed under this program will enhance habitat for one or more of these species, all of the work sites proposed as part of the 2013 grants program could involve instream work in their habitat (Appendix A). In order to avoid any potential for negative impacts to these species, the following measures will be implemented:

- a) Project work within the wetted stream shall be limited to the period between June 15 and November 1, or the first significant rainfall, or whichever comes first. This is to take advantage of low stream flows and to avoid the spawning and egg/alevin incubation period of salmon and steelhead. Actual project start and end dates, within this timeframe, are at the discretion of the Department of Fish and Game (i.e. on the Shasta River projects must be completed between July 1 and September 15 to avoid impacts to immigrating and emigrating salmonids). Whenever possible, the work period at individual sites shall be further limited to entirely avoid periods when salmonids are present (for example, in a seasonal creek, work will be confined to the period when the stream is dry).
- b) Suitable large woody debris removed from fish passage barriers that is not used for habitat enhancement, shall be left within the riparian zone so as to provide a source for future recruitment of wood into the stream, reduce surface erosion, contribute to amounts of organic debris in the soil, encourage fungi, provide immediate cover for small terrestrial species and to speed recovery of native vegetation.
- c) Prior to dewatering a construction site, fish and amphibian species shall be captured and relocated by DFG personnel (or designated agents). The following measures shall be taken to minimize harm and mortality to listed salmonids resulting from fish relocation and dewatering activities:
 - a) Fish relocation and dewatering activities shall only occur between June 15 and November 1 of each year.
 - b) Fish relocation shall be performed by a qualified fisheries biologist, with all necessary State and Federal permits. Rescued fish shall be moved to the nearest appropriate site outside of the work area. A record shall be maintained of all fish rescued and moved. The record shall include the date of capture and relocation, the method of capture, the location of the relocation site in relation to the project site, and the number and species of fish captured and relocated. The record shall be provided to DFG within two weeks of the completion of the work season or project, whichever comes first.
 - c) Electrofishing shall be conducted by properly trained personnel following NOAA *Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act*, June 2000.
 - d) Prior to capturing fish, the most appropriate release location(s) shall be determined. The following shall be determined:
 - i) Temperature: Water temperature shall be similar as the capture location.
 - ii) Habitat: There shall be ample habitat for the captured fish.
 - iii) Exclusions from work site: There shall be a low likelihood for the fish to reenter the work site or become impinged on exclusion net or screen.

- e) The most efficient method for capturing fish shall be determined by the biologist. Complex stream habitat generally requires the use of electrofishing equipment, whereas in outlet pools, fish may be concentrated by pumping-down the pool and then seining or dipnetting fish.
- f) Handling of salmonids shall be minimized. However, when handling is necessary, always wet hands or nets prior to touching fish.
- g) Temporarily hold fish in cool, shaded, aerated water in a container with a lid. Provide aeration with a battery-powered external bubbler. Protect fish from jostling and noise and do not remove fish from this container until time of release.
- h) Air and water temperatures shall be measured periodically. A thermometer shall be placed in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds 18 °C, fish shall be released and rescue operations ceased.
- i) Overcrowding in containers shall be avoided by having at least two containers and segregating young-of-year (YOY) fish from larger age-classes to avoid predation. Larger amphibians, such as Pacific giant salamanders, shall be placed in the container with larger fish. If fish are abundant, the capturing of fish and amphibians shall cease periodically and shall be released at the predetermined locations.
- j) Species and year-class of fish shall be visually estimated at time of release. The number of fish captured shall be counted and recorded. Anesthetization or measuring fish shall be avoided.
- k) If feasible, initial fish relocation efforts shall be performed several days prior to the start of construction. This provides the fisheries biologist an opportunity to return to the work area and perform additional electrofishing passes immediately prior to construction. In many instances, additional fish will be captured that eluded the previous day's efforts.
- l) If mortality during relocation exceeds three percent, capturing efforts shall be stopped and the appropriate agencies shall be contacted immediately.
- m) In regions of California with high summer temperatures, relocation activities shall be performed in the morning when the temperatures are cooler.
- n) DFG shall minimize the amount of wetted stream channel that is dewatered at each individual project site to the fullest extent possible.
- o) Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
- d) Mitigation measures for the cooperative rearing project at the Kingfisher Flat Conservation Genetic Rearing Facility (Facility) shall follow the conditions set forth by the DFG.
 - a) The hatchery infrastructure at the Facility shall be maintained in an acceptable condition and good operating order, such that salmonid eggs and fry will be handled and reared under the controlled conditions necessary for their successful incubation without unnecessary or undue mortality.

- b) The Facility Manager on staff shall be a qualified fish aquaculturist with credentials, education and experience representing a level of expertise commensurate with the responsibilities associated with spawning, rearing and managing a critically endangered species.
- c) Accurate records shall be kept by the Monterey Bay Salmon and Trout Project (MBSTP) using DFG Form 788 and annual report forms. No later than ten (10) days after completion of spawning operations, the completed forms shall be sent to the DFG Fish Rearing Coordinator, Manfred Kittel at 7329 Silverado Trail, Napa, CA 94558. Completed annual report forms shall be submitted to the DFG Fish Rearing Coordinator no later than July 1 of the subject spawning year.
- d) Unannounced inspections shall be periodically conducted by the DFG Fisheries Biologist, or by DFG law enforcement personnel, whenever fish are being spawned. Notice of intent to spawn shall be provided by the Facility Manager to DFG via telephone or email, as far in advance of any spawning as is practicable.
- e) At all times while the fish trap and holding facilities are in operation or fish are being held, they shall be closely attended by the Facility Manager or his or her designee. Names of all designated trapping assistants shall be provided to DFG at least 48 hours in advance of carrying out any trapping activities. No other person not possessing the necessary state and federal permits to handle CCC- steelhead shall be allowed to participate without first obtaining written approval from the DFG Biologist or Fish Rearing Coordinator. As the qualified fish aquaculturist on staff, the Facility Manager shall have sole authority and responsibility at all times for proper management and handling of the fish.
- f) Free passage past the trap will be maintained for fish when the trap is not being actively operated.
- g) All wild and captive coho salmon shall be spawned in strict accordance with the Spawning Genetic Matrix (SGM) prepared by Dr. Carlos Garza of NOAA Fisheries. The SGM is based on the genotype of each individual fish and identifies the most appropriate spawning pairs with the goal of minimizing risks of outbreeding or inbreeding depression. All female steelhead shall be spawned with up to four (4) males taken at approximately the same time the female was obtained.
- h) Coho salmon: The Facility is authorized to take eggs from up to 30 male, and 10 female wild coho salmon that return to Scott Creek. At the discretion of the NOAA biology team and DFG Fish Rearing Coordinator, wild coho salmon returns from streams other than Scott Creek shall be appropriately captured, taken to the Facility and included in the SGM. There are currently 350 captive broodstock coho salmon being held at the NOAA lab and Warm Springs Hatchery, which will also be brought back to the Facility and spawned in the 2012-2013 brood year. The Facility is authorized to rear up to 45,000 coho salmon eggs, total. Steelhead: The Facility is authorized to take eggs from up to 60 male, and up to 20 female wild San Lorenzo River returns. In addition, the facility is authorized to take eggs from up to 28 male, and 7 female wild Scott Creek returns. No wild steelhead returns from any other streams may be taken for propagation purposes. The facility is authorized to rear up to 45,000 steelhead eggs, total.
- i) Disposition of 2012-2013 brood year (BY) coho salmon eggs: Coho salmon shall be released as follows: 4,000 as unfed fry at predetermined locations on San Vicente Creek in June 2013; 5,000 as fingerlings in December 2013; 360 of most

robust and morphologically superior to be kept as broodstock; the remainder released in spring of 2014 as smolts.

- j) Planned outbreedings of Scott Creek run fish may occur at the discretion of the NOAA biology team and will include fish native to CCC runs occurring north of the Golden Gate Bridge, depending upon availability, suitability and Facility capacity. All other spawning protocols apply.
- k) Any San Lorenzo River steelhead eggs to be used for the Salmon and Trout Education Program (STEP) program shall be taken from the 40,000 egg allotment, in batches at the discretion of the DFG and the Facility Manager.
- l) No spawning of any fish may occur at the Facility if there is a pending storm event that stands to cause a failure at the Facility during the first 48 hours of incubation (when the eggs can't be moved). Under these circumstances, spawning will be delayed until storm threats pass.
- m) The weir and trap apparatus shall be removed from the stream or, if a permanent installation, modified to provide free passage of fish past the apparatus, once the limit of fish or eggs has been reached, whichever event occurs first.
- n) San Lorenzo River steelhead may be trapped at the Felton Diversion Dam upon receipt of permission by the property owner, City of Santa Cruz. Scott Creek coho salmon and steelhead may be trapped at the weir maintained by NOAA Fisheries on Scott Creek. All other collection of adult salmonids destined for use in the Facility program shall be limited to manual collection using dip nets and seines. Adult fish in the act of spawning shall not be taken. All normal and customary precautions to ensure the safety and health of the fish shall be taken.
- o) Weather and habitat conditions permitting, it is appropriate to begin to capture returning adult steelhead during the first week of December (between December 5 and December 10, 2013).
- p) Determination of the use of wild spawning-run coho salmon in the MBSTP captive spawning program will be made by DFG & NOAA Fisheries during the season. Few, if any, wild coho salmon returns are expected. All returning wild coho salmon will be included in the spawning matrix to maximize the genetic diversity of Scott Creek fish used in the restoration effort.
- q) All fish shall remain the property of the State of California and their ultimate disposition remains solely at the discretion of DFG.
- r) All 2012-2013 BY juvenile coho salmon reared at the Facility shall be marked with a PIT-tag ONLY (no adipose-clipping) prior to release to prevent inadvertent take via angling and ensure positive identification of any adult returns via PIT-tag readers installed on Waddell, Scott and San Vicente creeks. All 2012-2013 BY juvenile steelhead reared at the Facility shall be appropriately fin-clipped (via removal of the adipose fin) prior to release.
- s) For anesthetization purposes, the use of tricaine methane sulfonate (MS-222) on coho salmon and steelhead is authorized to prevent handling stress to the fish which may have adverse impacts on the viability of their gametes. All coho salmon treated with MS-222 will be either held in captivity for a minimum of twenty one (21) days post-treatment, or their spawned-out carcasses properly disposed of per the direction of the Facility Manager and NOAA biology team. All steelhead treated with MS-222 must be held for a minimum of twenty one (21) days prior to

release back to the stream. Alternatively, fish may be anesthetized with carbon dioxide in solution, if it is deemed necessary or acceptable by either the Facility Manager or NOAA biologist. Fish may not be treated with nor exposed to any other drug or other chemical during any activity carried out without prior written approval from the DFG Fish Rearing Coordinator or his or her designee.

- t) No fish or eggs acquired shall be possessed, transferred, or otherwise disposed of except as authorized by the DFG in writing.
 - u) All eggs, fry, and rearing juvenile fish shall be held in separate rearing tanks and/or raceways according to the site plan developed by NOAA Fisheries. This ensures the fish are broken out by species, stream of origin, brood year and family group (coho salmon).
 - v) If specifically directed by DFG, all heads of dead adipose-marked adult fish shall be removed, placed in plastic bags, frozen and shipped to the DFG Fish Rearing Coordinator: Manfred Kittel at 7329 Silverado Trail, Napa, CA 94558. Each bag shall contain only one head and have securely affixed to it a hard cardboard tag clearly marked with the following information: Species of fish, sex, date and location trapped, name of Facility, and name of Facility Manager.
 - w) When performing planned authorized releases of juvenile fish into any water body, the Facility Manager shall supervise and/or approve any and all individuals proposed to participate in such releases to ensure proper handling and care of fish.
 - x) When releasing adult or juvenile steelhead into the San Lorenzo River, all proper precautions to prevent contamination with or transmission of invasive New Zealand mud snails shall be observed. Waders, boots, hip boots or other personal gear used during the planned releases shall follow the decontamination procedures outlined on DFG's website: <http://www.dfg.ca/~ovlinvasives/mudsnail/>.
 - y) Juvenile steelhead released by this cooperative rearing program have been deemed to pose minimal competition risk to wild fish since release of juvenile steelhead is timed based on fish size and smolt stage, season, and water temperature, ensuring that they quickly exit to the ocean rather than remaining to rear in fresh water. Juvenile coho salmon released by this program are deemed to pose no risk to wild fish, since this program was established and is maintained to recovery the native genetic stock south of San Francisco Bay, originate from the genetic stock in this region, and are managed by the program to maximize the genetic integrity of wild fish to the greatest level that is scientifically feasible.
 - z) All coho salmon smolts will be planted in Scott Creek, Waddell Creek, San Vicente Creek, and any other appropriate watersheds as determined, in writing, by DFG and NOAA Fisheries. Planting shall occur proximal to the first new moon after the spring equinox.
- e) If these mitigation measures cannot be implemented, or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to anadromous salmonids or their habitat, then activity at that work site shall be discontinued.

4) Tidewater goby (*Eucyclogobius newberryi*)

The tidewater goby was listed by the state of California for protection in 1987, and federally listed in 1994. However, the fish's need for specific kind of habitat means that

the populations are isolated from each other, and subject to extirpation due to various human activities, such as draining of wetlands, sand bar breaches, pollutant accumulation in lagoons, and so forth.

Of the 47 work sites proposed as part of the 2013 grants program, there is a possibility of affecting tidewater goby at two sites (724144 Strawberry Creek Coho Passage Improvement Project and 724174 Francis Creek Barrier Removal at Port Kenyon Road). The potential for impacts to the tidewater goby will be mitigated by consulting the USFWS prior to the implementation of the projects. If mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to the tidewater goby or its habitat, then activity at that work site shall be discontinued.

5) California red-legged frog (*Rana aurora draytonii*)

Of the 47 work sites proposed as part of the 2013 grants program, 20 are listed on the corresponding species lists in Appendix A. Activities proposed for the sites (724018 Black Mountain Ranch Sediment Reduction Project, 724027 San Geronimo Landowners Assistance Program Instream Habitat Restoration, 724029 San Geronimo Golf Course Bank Stabilization Project, 724136 Green Gulch Habitat Enhancement, 724035 Steelhead Spawning Gravel Enhancement - Below Los Padres Dam, 724128 Sleepy Hollow Ford Removal and Bridge Replacement, 724070 Pismo Creek Fish Passage Improvement Project, 724020 Coastal San Mateo County Road Related Sediment Reduction Project, 724069 Driscoll Ranch Sediment Reduction to San Gregorio Creek, 724019 Monterey Bay Salmon & Trout Project Coho rearing & Captive Brood-stock, 724100 Rancho Tajiguas Barrier Removal Project – Phase 2, 724134 Blackhawk Canyon Creek Watershed Sediment Reduction Project- Phase 1, 724023 Mirabel Dam Modifications for Improved Fish Passage, 724037 Gilliam Creek Instream Habitat Restoration, 724038 Porter Creek Instream Habitat Restoration Project, 724052 Willow Creek Large Wood Recruitment Project, Phase II, 724062 Tannery Creek Upstream Wood Loading Project, 724066 Nolan and Thurston Creeks Coho Habitat Enhancement Project, 724125 Lancel Creek Fish Passage Barrier Removal Project, and 724015 Non-Native Plant Re-Treatments, San Antonio Creek) will not remove or degrade California red-legged frog (CRLF) habitat; however, precautions shall be required at these sites to avoid the potential for take of CRLF while using heavy equipment. The potential for impacts to CRLF will be mitigated by complying with all of the mandatory terms and conditions associated with incidental take authorized by the USFWS, Biological Opinion (file no. 1-1-03-F-273, 81420-2009-I-0748-1, and 81440-2009-F-0387 for projects within the San Francisco District of the USACE, and file no. 2008-F-0441 for projects within the Los Angeles District of the USACE). DFG shall implement the following measures to minimize adverse effects to the CRLF and its habitat:

- a) Project activities in potential red-legged frog habitat shall be restricted to the period between July 1 and October 15.
- b) At least 15 days prior to the onset of project activities, DFG shall submit the names(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities shall begin until DFG has received written approval from the USFWS that the biologist(s) is qualified to conduct the work.
- c) Prior to the onset of any project-related activities, the approved biologist must identify appropriate areas to receive red-legged frog adults and tadpoles from the project areas. These areas must be in proximity to the capture site, contain suitable habitat, not be affected by project activities, and be free of exotic predatory species (i.e. bullfrogs, crayfish) to the best of the approved biologist's knowledge.

- d) A USFWS-approved biologist shall survey the project site at least two weeks before the onset of activities. If red-legged frogs are found in the project area and these individuals are likely to be killed or injured by work activities, the USFWS-approved biologist will allow sufficient time to move them from the site before work activities resume. Only USFWS-approved biologists will participate in activities with the capture, handling, and monitoring of red-legged frogs.
- e) Prior to the onset of project activities, a USFWS-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the red-legged frog and its habitat, the importance of the red-legged frog and its habitat, the general measures that are being implemented to conserve the red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.
- f) A USFWS-approved biologist shall be present at the work site until such time as removal of red-legged frogs, instruction of workers, and habitat disturbance has been completed. The USFWS-approved biologist shall have the authority to halt any action that might result in impacts that exceed the levels anticipated by the USACE and USFWS during review of the proposed action. If work is stopped, the USACE and the USFWS shall be notified immediately by the USFWS-approved biologist or on-site biological monitor.
- g) If red-legged frogs are found and these individuals are likely to be killed or injured by work activities, the USFWS-approved biologists must be allowed sufficient time to move them from the site before work activities resume. The USFWS-approved biologist must relocate the red-legged frogs the shortest distance possible to one of the predetermined areas. The USFWS-approved biologist must maintain detailed records of any individuals that are moved (e.g., size, coloration, any distinguishing features, photographs (digital preferred) to assist in determining whether translocated animals are returning to the point of capture. Only red-legged frogs that are at risk of injury or death by project activities may be moved.
- h) A DFG monitoring plan shall be developed to determine the level of incidental take of the red-legged frog associated with the Restoration Program funded activities in the area. The monitoring plan must include a standardized mechanism to report any observations of dead or injured red-legged frog to the appropriate USACE and USFWS offices.
- i) If a work site is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh not larger than 0.125 inch to prevent red-legged frogs from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain down stream flows during construction activities and eliminate the possibility of ponded water. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow to resume with the least disturbance to the substrate.
- j) Ponded areas shall be monitored for red-legged frogs that may become entrapped. Any entrapped red-legged frog shall be relocated to a pre-determined receiving area by a USFWS-approved biologist.
- k) A USFWS-approved biologist will permanently remove from the project area, any individuals of exotic species, such as bullfrogs (*Rana catesbiana*), centrarchid fishes, and non-native crayfish to the maximum extent possible. The biologist will have the

responsibility to ensure that their activities are in compliance with the Fish and Game Code.

- l) The USFWS-approved biologist(s) who handle red-legged frogs shall ensure that their activities do not transmit diseases. To ensure that diseases are not conveyed between work sites by the USFWS-approved biologist, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force (http://www.fws.gov/ventura/species_information/protocols_guidelines/docs/DAFTA.pdf) shall be followed at all times.
- m) The DFG or USACE shall report any observation of the incidental take of red-legged frogs associated with the implementation of the Restoration Program projects in accordance with RGP78. The USFWS and the USACE must review the circumstances surrounding the incident to determine whether any patterns of repeated authorized or unauthorized activities are occurring that may indicate that additional protective measures are required. If, after completion of the review, the USACE and the USFWS agree that additional protective measures are required and can be implemented within the existing scope of the action, the USACE must require the DFG to implement the agreed-upon measures within a reasonable time frame; if the corrective actions cannot be implemented with the scope of the existing action, the USACE and USFWS will determine whether re-initiation of consultation is appropriate.
- n) Despite term and condition h of this section (above), the USACE must immediately re-initiate formal consultation with the USFWS, pursuant to 7(a) (2) of the Endangered Species Act, if red-legged frogs are taken within the action area at or in excess of the incidental take anticipated in the Incidental Take Statement section of the U.S. Fish and Wildlife biological opinion (file no. 2008-F-0441), whether by project or by year.
- o) If these mitigation measures cannot be implemented or the project activities proposed at a specific work site cannot be modified to prevent or avoid potential impacts to CRLF or its habitat, then project activity at that work site shall be discontinued.

6) Arroyo toad (*Bufo microscaphus californicus*)

None of the proposed projects in the 2013 grants program are located within the range of the Arroyo toad.

7) San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*)

Of the projects proposed in the 2013 grants program, two (724020 Coastal San Mateo County Road Related Sediment Reduction Project and 724069 Driscoll Ranch Sediment Reduction to San Gregorio Creek) are located within the range of the San Francisco garter snake. The potential for impacts to the San Francisco garter snake will be mitigated by consulting with the USFWS prior to the implementation of the projects. If mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to the San Francisco garter snake or its habitat, then activity at that work site shall be discontinued.

8) Least Bell's Vireo (*Vireo bellii pusillus*)

Following the listing of the least Bell's vireo subspecies as Federally Endangered in 1986, there has been much conservation, restoration, monitoring, and research that has taken place in its southern California range leading to increased populations in some areas. Of

the 47 projects proposed as part of the 2013 grants program, one is within the range of the least Bell's vireo. The potential for impacts to the least Bell's vireo will be mitigated by complying with all of the mandatory terms and conditions associated with incidental take authorized by the USFWS, Biological Opinion (file no. 1-8-08-F-17) within the Los Angeles District of the USACE. DFG shall implement the following measures to minimize adverse effects to the least Bell's vireo and its habitat:

- a) Prior to any work in areas where riparian habitat is present, a qualified biologist must do a habitat assessment and determine whether the area within 500 feet of the project site is suitable for nesting by least Bell's vireo. If not, work may proceed without further surveys. If the biologist determines that the area is suitable, a qualified biologist must monitor before and during the project to determine the status of least Bell's vireos within 500 feet of the project site.
- b) If any least Bell's vireos are observed nesting within 500 feet of the project activities, work will cease temporarily until it is determined that either the birds are not nesting or young have fledged.

9) Marbled murrelet (*Brachyramphus marmoratus*)

The marbled murrelet is listed as endangered under CESA and threatened under ESA. Activities to protect and restore habitat will not remove or degrade suitable habitat for marbled murrelets, however nesting birds could be disturbed by the noise from heavy equipment required for projects such as culvert removal or placement of large woody debris.

Twenty one of the 47 work sites proposed as part of the 2013 grants program are listed on the corresponding species lists in Appendix A. Activities proposed for the sites 724104 Bridge Creek Railroad Crossing Fish Passage Implementation Project, 724105 Lower Eel Riparian Planting, 724120 Lower Mattole Coho Salmon Habitat Enhancement, 724142 Mainstem SF Elk River Sediment Reduction and Habitat Improvement Project, 724144 Strawberry Creek Coho Passage Improvement Project, 724149 Redwood Creek LWD/Pool Improvement Project, 724161 Ryan Creek Habitat Sediment Reduction Project, 724164 Mattole Flow Program: Institutional Water Storage and Forbearance, 724011 Two Log Creek Large Woody Debris Project, 724103 Ramon Creek Sediment Reduction and Instream Enhancement Project, 724108 Neefus Gulch Coho Habitat Enhancement Project, 724129 Upper Noyo River Large Wood Enhancement Project-Phase II, 724132 Russell Brook Stream Habitat Enhancement Project-Phase II, 724147 Upper Tenmile Creek Salmonid Habitat Restoration Project, 724151 Cottaneva Creek Habitat Restoration Project, Phase III, 724152 North Fork Navarro Instream Coho Habitat Enhancement Project, 724154 Middle "Clark" Fork Ten Mile Instream Coho Habitat Enhancement Project, 724156 Bald Hill Creek Instream Coho Habitat Enhancement Project, 724158 Big River Instream Coho Habitat Enhancement Project, 724159 Using Large Wood to Increase Salmon Abundance in Pudding Creek: A BACI Experiment, 724019 Monterey Bay Salmon & Trout Project Coho rearing & Captive Brood-stock, 724020 Coastal San Mateo County Road Related Sediment Reduction Project, and 724069 Driscoll Ranch Sediment Reduction to Gregorio Creek, will not remove, degrade, or downgrade suitable marbled murrelet habitat. As a result, direct injury or mortality of murrelets is not an issue. The potential exists for noise from heavy equipment work at these sites to disrupt marbled murrelet nesting. To avoid this potential impact, the following mitigation measures shall be implemented:

- a) Restoration work in areas considered by the Arcata and Ventura USFWS offices shall not be conducted within 0.25 mile of occupied or un-surveyed suitable marbled

murrelet habitat between March 24 and September 15. Restoration work in areas considered by the Sacramento USFWS Office shall not be conducted within 0.25 mile of any occupied or un-surveyed suitable marbled murrelet habitat between November 1 and September 15.

- b) The work window at individual work sites near suitable habitat may be modified, if protocol surveys determine that habitat quality is low and occupancy is very unlikely.
- c) If these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential adverse effects to marbled murrelet or their habitat, then activity at that work site shall be discontinued.
- d) For projects contained in streams and watersheds included in a USFWS Habitat Conservation Plan the mitigation measures contained within those Habitat Conservation Plans shall be followed.

10) Northern spotted owl (*Strix occidentalis caurina*)

The northern spotted owl is listed as threatened under ESA. Restoration activities should not alter habitat for northern spotted owls, however nesting birds could be disturbed by the noise from heavy equipment during projects such as culvert removal or placement of large woody debris. Disturbance can be avoided by limiting heavy equipment work within 0.25 miles of suitable spotted owl habitat to the period outside the nesting season.

Of the 47 work sites proposed as part of the 2013 grants program, 32 are in potentially suitable habitat for the northern spotted owl (724016 Bobcat Run Riparian, 724104 Bridge Creek Railroad Crossing Fish Passage Implementation Project, 724105 Lower Eel Riparian Planting, 724120 Lower Mattole Coho Salmon Habitat Enhancement, 724142 Mainstem SF Elk River Sediment Reduction and Habitat Improvement Project, 724144 Strawberry Creek Coho Passage Improvement Project, 724149 Redwood Creek LWD/Pool Improvement Project, 724161 Ryan Creek Habitat Sediment Reduction Project, 724164 Mattole Flow Program: Institutional Water Storage and Forbearance, 724011 Two Log Creek Large Woody Debris Project, 724103 Ramon Creek Sediment Reduction and Instream Enhancement Project, 724108 Neefus Gulch Coho Habitat Enhancement Project, 724123 Ten-Mile River Coho Habitat Rehabilitation Program (Phase I), 724129 Upper Noyo River Large Wood Enhancement Project-Phase II, 724132 Russell Brook Stream Habitat Enhancement Project-Phase II, 724147 Upper Tenmile Creek Salmonid Habitat Restoration Project, 724151 Cottaneva Creek Habitat Restoration Project, Phase III, 724152 North Fork Navarro Instream Coho Habitat Enhancement Project, 724154 Middle "Clark" Fork Ten Mile Instream Coho Habitat Enhancement Project, 724156 Bald Hill Creek Instream Coho Habitat Enhancement Project, 724157 Little North Fork Noyo River Instream Coho Habitat Enhancement Project, 724158 Big River Instream Coho Habitat Enhancement Project, 724159 Using Large Wood to Increase Salmon Abundance in Pudding Creek: A BACI Experiment, 724008 Fort Goff Creek Bridge, 724009 Seiad Creek Coho Salmon Habitat Enhancement Project, 724018 Black Mountain Ranch Sediment Reduction Project, 724027 San Geronimo Landowners Assistance Program Instream Habitat Restoration, 724029 San Geronimo Golf Course Bank Stabilization Project, 724037 Gilliam Creek Instream Habitat Restoration, 724052 Willow Creek Large Wood Recruitment Project, Phase II, 724062 Tannery Creek Upstream Wood Loading Project, and 724066 Nolan and Thurston Creeks Coho Habitat Enhancement Project) (Appendix A). None of the activities will remove, degrade, or downgrade northern spotted owl habitat. As a result, direct injury or mortality of owls is not likely. The potential exists for heavy equipment work at these sites to disturb spotted owl nesting. To avoid this potential effect, the following mitigation measures will be implemented:

- a) Work with heavy equipment at any site within 0.25 miles of suitable habitat for the northern spotted owl shall not occur from November 1 to July 31 for projects in areas under the jurisdiction of the Sacramento USFWS Office and from November 1 to July 9 for projects in areas under the jurisdiction of the Arcata USFWS Office.
- b) The work window at individual work sites may be advanced prior to July 9 or July 31 (corresponding to the different time constraints of the Sacramento and Arcata USFWS office), if protocol surveys determine that suitable habitat is unoccupied.
- c) If these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to northern spotted owls or their habitat, then activity at that work site shall be discontinued and DFG must reinitiate consultation with USFWS.
- d) For projects contained within streams and watersheds included in a USFWS Habitat Conservation Plan the mitigation measures contained within those Habitat Conservation Plans shall be followed.

11) Willow flycatcher (*Empidonax traillii*).

Of the 47 work sites proposed as part of the 2013 grants program, seven are in potentially suitable habitat for the willow flycatcher (724104 Bridge Creek Railroad Crossing Fish Passage Implementation Project, 724120 Lower Mattole Coho Salmon Habitat Enhancement, 724144 Strawberry Creek Coho Passage Improvement Project, 724149 Redwood Creek LWD/Pool Improvement Project, 724164 Mattole Flow Program: Institutional Water Storage and Forbearance, 724009 Seiad Creek Coho Salmon Habitat Enhancement Project, and 724015 Non-Native Plant Re-Treatments, San Antonio Creek) (Appendix A). None of the activities proposed for these sites will significantly degrade existing willow flycatcher habitat; however, the potential exists for the noise from heavy equipment work or harvesting of revegetation material at these sites to disrupt willow flycatcher nesting. To avoid this potential impact, the following mitigation measures shall be implemented:

- a) Heavy equipment work shall not begin within one quarter mile of any site with known or potential habitat for the willow flycatcher until after August 15 and for the southwestern willow flycatcher until after September 15.
- b) Prior to any work in areas where riparian habitat is present, a qualified biologist shall do a habitat assessment and determine whether the area within 500 feet of the project site is suitable for nesting by southwestern willow flycatchers. If not, work may proceed without further surveys. If the biologist determines that the area is suitable, a qualified biologist must monitor before and during the project to determine the status of the southwestern willow flycatchers within 500 feet of the project site.
- c) The work window at individual work sites may be modified, if protocol surveys determine that nesting birds do not occur within 0.25 miles of the site during the breeding season.
- d) Harvest of willow branches at any site with potential habitat for the willow flycatcher shall not occur between May 1 and August 15. Harvest of willow branches at any site with potential habitat for the southwestern willow flycatcher shall not occur between May 1 and September 15.

- e) No more than 1/3 of any willow plant shall be harvested annually. Care shall be taken during harvest not to trample or over harvest the willow sources.
- f) If any southwestern willow flycatchers are observed nesting within 500 feet of the project activities, work shall cease temporarily until it is determined that either the birds are not nesting or young have fledged.
- g) DFG shall ensure that the grantee or responsible party is aware of this site-specific condition, and shall inspect the work site before, during, and after completion of the action item.
- h) If these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to willow flycatcher or their habitat, then activity at that work site shall be discontinued.

12) Point Arena mountain beaver (*Aplodontia rufa nigra*)

The Point Arena subspecies is only found within a disjunct, 24-square mile area in western Mendocino County, California. The U.S. Fish and Wildlife Service considers the range of the Point Arena mountain beaver (PAMB) to include areas five miles inland from the Pacific Ocean extending from a point two miles north of Bridgeport Landing south to a point five miles south of the town of Point Arena. PAMB can be found along Nulls Creek, Mallo Pass Creek, Irish Gulch, Alder Creek, Manchester State Park, Lagoon Lake, Lower Hathaway Creek, City of Point Arena, Lower and Middle Brush Creek, and Hathaway Creek.

Of the 47 projects proposed as part of the 2013 grants program, none of the projects list the PAMB in the species list (Appendix A). However, none of the activities proposed for these sites are within the range of the PAMB and will not degrade suitable PAMB habitat.

C. Riparian and re-vegetation

- 1) Planting of seedlings shall begin after December 1, or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings, but in no case after April 1.
- 2) Any disturbed banks shall be fully restored upon completion of construction. Revegetation shall be done using native species. Planting techniques can include seed casting, hydroseeding, or live planting methods using the techniques in Part XI of the *California Salmonid Stream Habitat Restoration Manual*.
- 3) Disturbed and compacted areas shall be re-vegetated with native plant species. The species shall be comprised of a diverse community structure that mimics the native riparian corridor. Planting ratio shall be 2:1 (two plants to every one removed).
- 4) Unless otherwise specified, the standard for success is 80 percent survival of plantings or 80 percent ground cover for broadcast planting of seed after a period of 3 years.
- 5) To ensure that the spread or introduction of invasive exotic plants shall be avoided to the maximum extent possible, equipment shall be cleaned of all dirt, mud, and plant material prior to entering a work site. When possible, invasive exotic plants at the work site shall be removed. Areas disturbed by project activities will be restored and planted with native plants.

- 6) Mulching and seeding shall be done on all exposed soil which may deliver sediment to a stream. Soils exposed by project operations shall be mulched to prevent sediment runoff and transport. Mulches shall be applied so that not less than 90% of the disturbed areas are covered. All mulches, except hydro-mulch, shall be applied in a layer not less than two (2) inches deep. Where feasible, all mulches shall be kneaded or tracked-in with track marks parallel to the contour, and tackified as necessary to prevent excessive movement. All exposed soils and fills, including the downstream face of the road prism adjacent to the outlet of culverts, shall be reseeded with a mix of native grasses common to the area, free from seeds of noxious or invasive weed species, and applied at a rate which will ensure establishment.
- 7) If erosion control mats are used in re-vegetation, they shall be made of material that decomposes. Erosion control mats made of nylon plastic, or other non-decomposing material shall not be used.
- 8) DFG shall retain as many trees and brush as feasible, emphasizing shade producing and bank stabilizing trees and brush to minimize impacts to the riparian corridor.
- 9) If riparian vegetation is to be removed with chainsaws, the grantee shall use saws that operate with vegetable-based bar oil when possible.
- 10) Disturbed and decompacted areas shall be re-vegetated with native species specific to the project location that comprise a diverse community of woody and herbaceous species.

V. CULTURAL RESOURCES

Ground-disturbance will be required to implement the project at certain locations that, despite efforts to identify cultural resources, have the potential to affect these resources. The procedure for a programmatic evaluation of archeological resources is provided in Appendix E. Potential for inadvertent impacts will be avoided through implementation of the following mitigation measures:

- 1) DFG shall contract with an archaeologist(s) or other historic preservation professional that meets The Secretary of the Interior's Professional Qualifications Standards (36 CFR Part 61, and 48 FR 44716) to complete cultural resource surveys at any sites with the potential to be impacted prior to any ground disturbing activities. This work may be augmented with the aid of a Native American cultural resources specialist that is culturally affiliated with the project area. Cultural and paleontological resource surveys shall be conducted using standard protocols to meet the 2010 CEQA Guideline requirements. Paleontological survey protocols are listed in Appendix D.
- 2) If cultural and/or paleontological resource sites are identified at a project location, DFG will require one or more of the following protective measures to be implemented before work can proceed: a) fencing to prevent accidental disturbance of cultural resources during construction, b) on-site monitoring by cultural and/or paleontological resource professionals during construction to assure that cultural resources are not disturbed, c) redesign of proposed work to avoid disturbance of cultural resources.
- 3) DFG shall report any previously unknown historic, archeological, and paleontological remains discovered at a project location to the USACE as required in the RGP.
- 4) DFG shall ensure that the grantee or responsible party is aware of these site-specific conditions, and shall inspect the work site before, during, and after completion of the action item.

- 5) Inadvertent Discovery of Cultural Resources - If cultural resources, such as lithic debitage, ground stone, historic debris, building foundations, or bone, are discovered during ground-disturbance activities, work shall be stopped within 20 meters (66 feet) of the discovery, per the requirements of CEQA (January 1999 Revised Guidelines, Title 14 CCR 15064.5 (f)). Work near the archaeological finds shall not resume until an archaeologist that meets the Secretary of the Interior's Standards and Guidelines suited to the discovery, has evaluated the materials and offered recommendations for further action. Cultural materials not associated with human interments shall be documented and curated in place.
- 6) Inadvertent Discovery of Human Remains - If human remains are discovered during project construction, work shall stop at the discovery location, within 20 meters (66 feet), and any nearby area reasonably suspected to overlie adjacent to human remains (Public Resources Code, Section 7050.5). The county coroner shall be contacted to determine if the cause of death must be investigated. If the coroner determines that the remains are of Native American origin, it is necessary to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American heritage Commission (NAHC) (Public Resources Code, Section 5097). The coroner will contact the NAHC. The descendants or most likely descendants of the deceased will be contacted, and work shall not resume until they have made a recommendation to the landowner or the person responsible for the excavation work for means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in Public Resources Code, Section 5097.98.
- 7) Procedures for treatment of an inadvertent discovery of human remains:
 - a) Immediately following discovery of known or potential human remains all ground-disturbing activities at the point of discovery shall be halted.
 - b) No material remains shall be removed from the discovery site, a reasonable exclusion zone shall be cordoned off.
 - c) The DFG Grant Manager and property owner shall be notified and the DFG Grant Manager shall contact the county coroner.
 - d) DFG shall retain the services of a professional archaeologist to immediately examine the find and assist the process.
 - e) All ground-disturbing construction activities in the discovery site exclusion area shall be suspended.
 - f) The discovery site shall be secured to protect the remains from desecration or disturbance, with 24-hour surveillance, if prudent.
 - g) Discovery of Native American remains is a very sensitive issue, and all project personnel shall hold any information about such a discovery in confidence and divulge it only on a need-to-know basis, as determined by the DFG.
 - h) The coroner has two working days to examine the remains after being notified. If the remains are Native American, the coroner has 24 hours to notify the NAHC in Sacramento (telephone 916/653-4082).
 - i) The NAHC is responsible for identifying and immediately notifying the Most Likely Descendant (MLD) of the deceased Native American.
 - j) The MLD may, with the permission of the landowner, or their representative, inspect the site of the discovered Native American remains and may recommend to the

landowner and DFG Grant Manager means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make recommendations or preferences for treatment with 48 hours of being granted access to the site (Public Resource Code, Section 5097.98(a)). The recommendation may include the scientific removal and non-destructive or destructive analysis of human remains and items associated with Native American burials.

- k) Whenever the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner or his/her authorized representative rejects the recommendation of the MLD and mediation between the parties by the NAHC fails to provide measures acceptable to the landowner, the landowner or his/her authorized representatives shall re-inter the human remains and associated grave offerings with appropriate dignity on the property in a location not subject to further subsurface disturbance in accordance with Public Resource Code, Section 5097.98(e).
 - l) Following final treatment measures, the DFG shall ensure that a report is prepared that describes the circumstances, nature and location of the discovery, its treatment, including results of analysis (if permitted), and final disposition, including a confidential map showing the reburial location. Appended to the report shall be a formal record about the discovery site prepared to current California standards on DPR 523 form(s). DFG shall ensure that report copies are distributed to the appropriate California Historic Information Center, NAHC, and MLD.
- 8) Pursuant to RGP78 and in accordance to 36 C.F.R. Section 800.13, in the event of any discovery during construction of human remains, archeological deposits, or any other type of historic property, the DFG shall notify the USACE archeological staff (Steve Dibble at 213-452-3849 or John Killeen at 213-452-3861) within 24 hours. Construction work shall be suspended immediately and shall not resume until USACE re-authorizes project construction.
 - 9) If it becomes impossible to implement the project at a work site without disturbing cultural or paleontological resources, then activity at that work site shall be discontinued.

VI. GEOLOGY AND SOILS

There is no potential for a significant adverse impact to geology and soils; implementation of the restoration project will contribute to an overall reduction in erosion and sedimentation. Existing roads will be used to access work sites. Ground disturbance at most work sites will be minimal, except for road improvements or decommissioning. Road improvements and decommissioning will involve moving large quantities of soil from road fills and stream crossings to restore historic land surface profiles and prevent chronic erosion and sediment delivery to streams. In order to avoid temporary increases in surface erosion, the following mitigation measures will be implemented:

- 1) DFG will implement the following measures to minimize harm to listed salmonids resulting from culvert replacement activities and other instream construction work:
 - a) All stream crossing replacement or modification designs, involving fish passage, shall be reviewed and approved by NOAA (or DFG) engineers prior to onset of work.
 - b) If the stream in the project location was not passable to, or was not utilized by all life stages of, all covered salmonids prior to the existence of the road crossing, the project shall pass the life stages and covered salmonid species that historically did pass there.

Retrofit culverts shall meet the fish passage criteria for the passage needs of the listed species and life stages historically passing through the site prior to the existence of the road crossing.

- 2) DFG shall implement the following measures to minimize harm to listed salmonids resulting from road decommissioning activities:
 - a) Woody debris will be concentrated on finished slopes of decommissioned roads adjacent to stream crossings to reduce surface erosion; contribute to amounts of organic debris in the soil; encourage fungi; provide immediate cover for small terrestrial species; and to speed recovery of native forest vegetation.
 - b) Work sites shall be winterized at the end of each day to minimize the eroding of unfinished excavations when significant rains are forecasted. Winterization procedures shall be supervised by a professional trained in erosion control techniques and involve taking necessary measures to minimize erosion on unfinished work surfaces. Winterization includes the following: smoothing unfinished surfaces to allow water to freely drain across them without concentration or ponding; compacting unfinished surfaces where concentrated runoff may flow with an excavator bucket or similar tool, to minimize surface erosion and the formation of rills; and installation of culverts, silt fences, and other erosion control devices where necessary to convey concentrated water across unfinished surfaces, and trap exposed sediment before it leaves the work site.
- 3) Effective erosion control measures shall be in-place at all times during construction. Construction within the 5-year flood plain shall not begin until all temporary erosion controls (i.e., straw bales or silt fences that are effectively keyed-in) are in place down slope or down stream of project activities within the riparian area. Erosion control measures shall be maintained throughout the construction period. If continued erosion is likely to occur after construction is completed, then appropriate erosion prevention measures shall be implemented and maintained until erosion has subsided.
- 4) An adequate supply of erosion control materials (gravel, straw bales, shovels, etc.) shall be maintained onsite to facilitate a quick response to unanticipated storm events or emergencies.
- 5) Use erosion controls that protect and stabilize stockpiles and exposed soils to prevent movement of materials. Use devices such as plastic sheeting held down with rocks or sandbags over stockpiles, silt fences, or berms of hay bales, to minimize movement of exposed or stockpiled soils.
- 6) When needed, instream grade control structures shall be utilized to control channel scour, sediment routing, and headwall cutting.
- 7) Temporary stockpiling of excavated material shall be minimized. However, excavated material shall be stockpiled in areas where it cannot enter the stream channel. Available sites at or near the project location shall be determined prior to the start of construction. If feasible, topsoil shall be conserved for reuse at project location or use in other areas.
- 8) For projects located within the USACE San Francisco District, an annual limit on the number of sediment-producing projects per HUC 10 watershed shall be implemented to ensure that potential sediment impacts will remain spatially isolated, thus minimizing cumulative turbidity effects. Sediment producing projects include instream habitat improvement, instream barrier removal, stream bank stabilization, fish passage improvement, upslope road work, and fish screen construction (unless the screen is

located in a diversion ditch and is disconnected from the waterway). The limit of projects shall be as follows:

Square mile of HUC 10 watershed	Maximum number of instream and upslope projects per year
<50	2
51-100	3
101-150	4
151-250	5
251-350	6
351-500	9
>500	12

Projects funded by the FRGP that are not authorized under the RGP (i.e., they have undergone separate consultation) or have already been authorized by the RGP in previous years(s) do not count toward the limits described above.

- 9) Each year, all instream projects shall be separated both upstream and downstream from other proposed instream projects by at least 1500 linear feet in fish bearing stream reaches. In non-fish bearing reaches, the distance separating sediment-producing projects will be 500 feet.
- 10) Upon project completion, all exposed soil present in and around the project site shall be stabilized within 7 days. Soils exposed by project operations shall be mulched to prevent sediment runoff and transport. Mulches shall be applied so that not less than 90% of the disturbed areas are covered. All mulches, except hydro-mulch, shall be applied in a layer not less than two (2) inches deep. Where feasible, all mulches shall be kneaded or tracked-in with track marks parallel to the contour, and tackified as necessary to prevent excessive movement. All exposed soils and fills, including the downstream face of the road prism adjacent to the outlet of culverts, shall be reseeded with a mix of native grasses common to the area, free from seeds of noxious or invasive weed species, and applied at a rate which will ensure establishment.
- 11) Soil compaction shall be minimized by using equipment with a greater reach or that exerts less pressure per square inch on the ground, resulting in less overall area disturbed and less compaction of disturbed areas.
- 12) Disturbed soils shall be decompacted at project completion as heavy equipment exits the construction area.
- 13) At the completion of the project, soil compaction that is not an integral element of the design of a crossing should be de-compacted.

VII. GREENHOUSE GAS EMISSIONS

No specific mitigation measures are required. Re-vegetation practices will help offset the short term, less than significant, greenhouse gas emissions.

VIII. HAZARDS AND HAZARDOUS MATERIALS

The project will not create a significant hazard to the public or the environment. At work sites requiring the use of heavy equipment, there is a small risk of an accident upsetting the

machine and releasing fuel, oil, and coolant, or of an accidental spark from equipment igniting a fire. The potential for these impacts will be reduced to a less than significant level through implementation of the following mitigation measures:

- 1) Heavy equipment that will be used in these activities will be in good condition and will be inspected for leakage of coolant and petroleum products and repaired, if necessary, before work is started.
- 2) When operating vehicles in wetted portions of the stream channel, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, the responsible party shall, at a minimum, do the following:
 - a) check and maintain on a daily basis any vehicles to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life, wildlife, or riparian habitat;
 - b) take precautions to minimize the number of passes through the stream and to avoid increasing the turbidity of the water to a level that is deleterious to aquatic life; and
 - c) allow the work area to "rest" to allow the water to clear after each individual pass of the vehicle that causes a plume of turbidity above background levels, resuming work only after the stream has reached the original background turbidity levels.
- 3) All equipment operators shall be trained in the procedures to be taken should an accident occur. Prior to the onset of work, DFG shall ensure that the grantee has prepared a Spill Prevention/Response plan to help avoid spills and allow a prompt and effective response should an accidental spill occur. All workers shall be informed of the importance of preventing spills. Operators shall have spill clean-up supplies on site and be knowledgeable in their proper deployment.
- 4) All activities performed in or near a stream will have absorbent materials designed for spill containment and cleanup at the activity site for use in case of an accidental spill. In an event of a spill, work shall cease immediately. Clean-up of all spills shall begin immediately. The responsible party shall notify the State Office of Emergency Services at 1-800-852-7550 and the DFG immediately after any spill occurs, and shall consult with the DFG regarding clean-up procedures.
- 5) All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 65 feet from any riparian habitat or water body and place fuel absorbent mats under pump while fueling. The USACE and the DFG will ensure contamination of habitat does not occur during such operations. Prior to the onset of work, the DFG will ensure that the grantee has prepared a plan to allow a prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.
- 6) Location of staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area. The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the restoration action. To avoid contamination of habitat during restoration activities, trash will be contained, removed, and disposed of throughout the project.
- 7) Petroleum products, fresh cement, and other deleterious materials shall not enter the stream channel.

- 8) Stationary equipment such as motors, pumps, generators, compressors, and welders, located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans.
- 9) No debris, soil, silt, sand, bark, slash, spoils, sawdust, rubbish, cement, concrete or washings thereof, asphalt, paint, or other coating material; oil or petroleum products; or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or 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 and disposed of in a lawful manner.
- 10) All internal combustion engines shall be fitted with spark arrestors.
- 11) The grantee shall have an appropriate fire extinguisher(s) and fire fighting tools (shovel and axe at a minimum) present at all times when there is a risk of fire.
- 12) Vehicles shall not be parked in tall grass or any other location where heat from the exhaust system could ignite a fire.
- 13) The grantee shall follow any additional rules the landowner has for fire prevention.
- 14) The potential for mercury contamination is largely predicted by the presence of historic hydraulic gold mines and mercury (cinnabar) mines (California's Abandoned Mines: A Report on the Magnitude and Scope of the Issue in the State, DOC 2000). Therefore, only a few limited areas within the geographic scope of this grant program have any potential for gravels contaminated with elemental mercury, they are: Middle Klamath River, Salmon River, Scott River, and the Lower Middle and Upper Trinity River. (Though studies by the USGS failed to find significant levels of methyl mercury near these mines.)
 - a) Given the limited geographical potential for encountering mercury contamination (from historic mining) within the geographic scope, and the limited number of projects within these areas that will either disturb the channel bottom or import gravels for instream restoration; the following avoidance and mitigation measure will be adhered to: any gravel imported from offsite shall be from a source known to not contain historic hydraulic gold mine tailings, dredger tailings, or mercury mine waste or tailings.

IX. HYDROLOGY AND WATER QUALITY

- 1) Instream work shall be conducted during the period of lowest flow.
- 2) Before work is allowed to proceed at a site, DFG shall inspect the site to assure that turbidity control measures are in place.
- 3) The waste water from construction area shall be discharged to an upland location where it will not drain sediment-laden water back to stream channel.
- 4) For projects within the USACE San Francisco District, if instream work liberates a sediment wedge, 80% of the wedge shall be removed before the sediment is liberated. The required amount can be modified if NOAA or DFG hydrologists or hydraulic engineers agree that removing a smaller amount will better protect and enhance fish habitat in the area of the project (e.g., leaving some sediment to replenish areas downstream that lack suitable substrate volume or quality).

- 5) To control erosion during and after project implementation, DFG shall implement best management practices, as identified by the appropriate Regional Water Quality Control Board.
- 6) Sediment-laden water caused by construction activity shall be filtered before it leaves the right-of-way or enters the stream network or an aquatic resource area. Silt fences or other detention methods shall be installed as close as possible to culvert outlets to reduce the amount of sediment entering aquatic systems.
- 7) If DFG determines that turbidity/siltation levels resulting from an activity or activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation shall cease until effective DFG approved sediment control devices are installed and/or abatement procedures are implemented.
- 8) Poured concrete shall be excluded from the wetted channel for a period of two weeks after it is poured. During that time the poured concrete shall be kept moist, and runoff shall not be allowed to enter flowing stream. Commercial sealants shall be applied to the poured concrete surface where concrete cannot be excluded from the stream flow for two weeks. If sealant is used, water shall be excluded from the site until the sealant is dry.
- 9) If the DFG determines that turbidity/siltation levels resulting from an activity or activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation shall cease until effective DFG approved sediment control devices are installed and/or abatement procedures are implemented.
- 10) Prior to use, all equipment shall be cleaned to remove external oil, grease, dirt, or mud. Wash sites shall be located in upland locations so that dirty wash water does not flow into the stream channel or adjacent wetlands.
- 11) Water conservation projects that include water storage tanks and a Forbearance Agreement, for the purpose of storing winter water for summer use, require registration of water use pursuant to the Water Code §1228.3, and require consultation with DFG and compliance with all lawful conditions required by DFG. Diversions to fill storage facilities during the winter and spring months shall be made pursuant to a Small Domestic Use Appropriation (SDU) filed with the State Water Resources Control Board (SWRCB). DFG will review the appropriation of water to ensure fish and wildlife resources are protected. The following conditions shall then be applied:
 - a) Seasonal Restriction: No pumping is allowed when stream flow drops below 0.7 cubic feet per second (cfs) except as permitted by DFG in the event of an emergency.
 - b) Bypass Flows: Pumping withdrawal rates shall not exceed 5% of stream flow. If DFG determines that the streamflow monitoring data indicate that fisheries are not adequately protected, then the bypass flows are subject to revision by DFG.
 - c) Cumulative Impacts: Pumping days shall be assigned to participating landowner(s) when streamflows drop below 1.0 cfs to prevent cumulative impacts from multiple pumps operating simultaneously.
 - d) Pump Intake Screens: Pump intake screens shall comply with the "2000 California Department of Fish and Game Screening Criteria"* for California streams that provide habitat for juvenile coho salmon, Chinook salmon and steelhead. The landowner shall be responsible for annual inspection and maintenance of screens. Additionally, the landowner shall be responsible for cleaning screens as needed to keep them free of debris and ensure that screen function complies with the criteria specifications.

- e) These conditions do not authorize incidental take of any species, removal of riparian vegetation, or bed, bank, or channel alteration.
- f) DFG shall be granted access to inspect the pump system. Access is limited to the portion of the landowner's real property where the pump is located and those additional portions of the real property which must be traversed to gain access to the pump site. Landowners shall be given reasonable notice and any necessary arrangements will be made prior to requested access including a mutually-agreed-upon time and date. Notice may be given by mail or by telephone with the landowner or an authorized representative of the landowner. The landowner shall agree to cooperate in good faith to accommodate DFG access.

* Fish Screening Criteria are from "State of California Resources Agency Department of Fish and Game Fish Screening Criteria, June 19, 2000." The "approach velocity" shall be calculated according to Section 2C "Screens which are not Self Cleaning." These screening criteria are available at <http://iep.water.ca.gov/cvffrt/DFGCriteria2.htm>.

X. LAND USE AND PLANNING

No specific mitigation measures are required for land use and planning.

XI. MINERAL RESOURCES

No specific mitigation measures are required for mineral resources.

XII. NOISE

Personnel shall wear hearing protection while operating or working near noisy equipment (producing noise levels ≥ 85 db, including chain saws, excavators, and back hoes). No other specific mitigation measures are required for noise.

XIII. POPULATION AND HOUSING

No specific mitigation measures are required for population and housing.

XIV. PUBLIC SERVICES

No specific mitigation measures are required for public services.

XV. RECREATION

No specific mitigation measures are required for recreation.

XVI. TRANSPORTATION/TRAFFIC

The project will not affect transportation/traffic, because erosion control and culvert replacement projects will occur in wildland/rural sites with very little use. There is a potential that culvert replacement at some work sites could temporarily interfere with emergency access. This potential impact will be avoided through implementation of the following mitigation measure at any sites where emergency access might be necessary:

- 1) During excavation for culvert replacement, the grantee shall provide a route for traffic around or through the construction site.

XVII. UTILITIES AND SERVICE SYSTEMS

No specific mitigation measures are required for utilities and service systems.

SECTION 2: MONITORING AND REPORTING

DFG shall implement the following measures to ensure that individual restoration projects authorized annually through the RGP (RGP12 and RGP78) will minimize take of listed salmonids, monitor and report take of listed salmonids, and to obtain specific information to account for the effects and benefits of salmonid restoration projects authorized through the RGP.

- 1) DFG shall provide USACE, NOAA, and USFWS notification of projects that are authorized through the RGP. The notification shall be submitted at least 90 days prior to project implementation and must contain specific project information including; name of project, type of project, location of project including hydrologic unit code (HUC), creek, watershed, city or town, and county.
- 2) DFG Grant Manager shall inspect the work site before, during, and after completion of the action item, to ensure that all necessary mitigation measures to avoid impacts are properly implemented.
- 3) DFG shall perform implementation monitoring immediately after the restoration activity is completed to ensure that projects are completed as designed.
- 4) DFG shall perform effectiveness/validation monitoring on at least 10 percent of restoration projects funded annually. A random sample, stratified by project type and region, shall be chosen from the pool of new restoration projects approved for funding each year. Pre-treatment monitoring shall be performed for newly selected projects, and post-treatment monitoring will be performed within three years following project completion.
- 5) Current monitoring forms and instructions used by DFG for the implementation monitoring and effectiveness monitoring are available online at: http://ftp.dfg.ca.gov/Public/FRGP/Qualitative_Monitoring_Forms/. DFG shall submit a copy of the annual report, no later than March 1 annually to NOAA.
- 6) The DFG annual report to NOAA shall include a summary of all restoration action items completed during the previous year. The annual report shall include a summary of the specific type and location of each project, stratified by individual project, 5th field HUC and affected species and evolutionary significant unit (ESU)/Distinct Population Segment (DPS). The report shall include the following project-specific summaries, stratified at the individual project, 5th field HUC, and ESU level:
 - a) A summary detailing fish relocation activities; including the number and species of fish relocated and the number and species injured or killed. Any capture, injury, or mortality of adult salmonids or half-pounder steelhead shall be noted in the monitoring data and report. Any injuries or mortality from a fish relocation site that exceeds 3.0% of the affected listed species shall have an explanation describing why.
 - b) The number and type of instream structures implemented within the stream channel.

- c) The length of stream bank (feet) stabilized or planted with riparian species.
 - d) The number of culverts replaced or repaired, including the number of miles of restored access to unoccupied salmonid habitat.
 - e) The distance (miles) of road decommissioned.
 - f) The distance (feet) of aquatic habitat disturbed at each project site.
- 7) DFG shall incorporate project data into a format compatible with the DFG/NOAA/Pacific Fisheries Management Council Geographic Information System (GIS) database, allowing scanned project-specific reports and documents to be linked graphically within the GIS database.
- 8) For Marin, Napa, Santa Cruz, and Sonoma Counties, DFG shall submit an annual report due by January 31 (RGP12) of each year of implemented projects to the U.S. Fish and Wildlife Service Office, 2800 Cottage Way, Sacramento, California 95825. The report must include:
- a) A table documenting the number of California freshwater shrimp or California red-legged frogs killed, injured, and handled during each FRGP project that utilizes the USACE authorization.
 - b) A summary of how the terms and conditions of the biological opinions (file no. 81420-2009-I-0748-1 and 1-103-F-273) and the protective measures by the USACE and DFG worked.
 - c) Any suggestions of how the protective measures could be revised to improve conservation of this species while facilitating compliance with the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).
- 9) For Santa Barbara, San Luis Obispo, and Ventura Counties, DFG shall submit an annual report due by January 31 (RGP12) and February 28 (RGP78) of each year of implemented projects to the U.S. Fish and Wildlife Service Office, 2493 Portola Road, Suite B, Ventura, California 93003. The report must include:
- a) A table documenting the number of red-legged frogs killed, injured, and handled during each FRGP project that utilizes the USACE authorization.
 - b) A summary of how the terms and conditions of the biological opinions (file no. 81440-2009-F-0387 and 2008-F-0441) and the protective measures by the USACE and DFG worked.
 - c) Any suggestions of how these protective measures could be revised to improve conservation of this species while facilitating compliance with the Act.
- 10) DFG shall submit annual reports on July 1 of each year to the 401 Program Managers of the State Water Resources Control Board and the appropriate Regional Water Quality Control Boards documenting work undertaken during the preceding year and identifying for all such work:
- a) Project name and grant number;
 - b) Project purpose and summary work description;
 - c) Name(s) of affected water body(ies);
 - d) Latitude/longitude in decimal degrees to at least four decimals;
 - e) For projects completed during the year:

- 1) The type(s) of receiving (affected) water body(ies) (e.g. at minimum: river/streambed, lake/reservoir, ocean/estuary/bay, riparian area, or wetland type); and
- 2) The total quantity in acres of each type of receiving water body temporarily impacted, and permanently impacted;
- f) For each water body type affected, the quantity of waters of the U.S. temporarily and permanently impacted. Fill/excavation discharges shall be reported in acres and fill/excavations discharges for channels, shorelines, riparian corridors, and other linear habitat shall also be reported in linear feet;
- g) Actual construction start and end-dates;
- h) Whether the project is on-going or completed.
- i) Copies of reports documenting the following monitoring activities:
 - 1) Post-project monitoring immediately after the activity is completed to ensure that projects are completed as designed; and
 - 2) Effectiveness monitoring on a random subset of 10% of the projects, within one to three years after project completion.
- 11) DFG shall report any previously unknown historic archeological and paleontological remains discovered at a site to the USACE as required in the RGP. This information will also be provided to the Native American Heritage Commission, 915 Capitol Mall, Sacramento, CA 95814.
- 12) Pursuant to RGP78, DFG shall monitor and maintain the structures or work conducted at a given site for at least three years after construction to ensure the integrity of the structure and successful growth of the planted vegetation.
- 13) DFG shall allow representatives of USACE to inspect the authorized activities at any time deemed necessary to ensure that they are being or have been accomplished with the terms and conditions of the RGP.
- 14) Pursuant to RGP78, DFG shall notify the USACE annually of the year's projects and shall not begin the activity until after receiving a written Notice to Proceed (NTP). The NTP may include site specific special conditions to avoid and minimize adverse impacts to waters of the U.S and shall be valid for the duration of the RGP78 unless there is a change in the project's scope of work.

INFORMATION HANDOUT

For Contract No. 02-4E6304

At 02-Sis-96-56.0

Identified by

Project ID 0212000010

AGREEMENTS

California Department of Fish and Wildlife

Notification No. 1600-2013-0248-R1

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
REGION 1 - NORTHERN
601 LOCUST STREET
REDDING, CA 96001



STREAMBED ALTERATION AGREEMENT
NOTIFICATION No. 1600-2013-0248-R1
FORT GOFF

CALIFORNIA DEPARTMENT OF TRANSPORTATION
DEREK WILLIS
FORT GOFF CREEK FISH PASSAGE RESTORATION PROJECT

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and California Department of Transportation (Permittee) represented by Derek Willis

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified CDFW on August 20, 2013 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, CDFW 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 is located at Fort Goff Creek in the County of Siskiyou, State of California; Latitude 41 51' 54.0"N, Longitude 123 15' 24.8"W. Section 32, Township 47N, Range 12W, U.S. Geological Survey (USGS) map Slater Butte, Mt. Diablo base and meridian.

PROJECT DESCRIPTION

The project is limited to the replacement of a 15 foot diameter culvert under State Route 96 with a single span bridge structure to improve fish passage on Fort Goff Creek. This will include a temporary stream diversion to isolate the work area from the live stream

and approximately 200 feet of stream channel restoration following the removal of the culvert and roadway material. An engineered design shall be approved prior to start of construction. Please see Fort Goff Creek Fish Passage Project, Initial Study with Mitigated Negative Declaration.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: Coho salmon (*Oncorhynchus kisutch*), Chinook salmon (*O. tshawytscha*), steelhead trout (*O. mykiss*), other non-game and game fishes, amphibians, reptiles, aquatic invertebrates, mammals, birds and other aquatic and riparian species.

The adverse effects the project could have on the fish or wildlife resources identified above include:

I. Impacts to bed, channel, or bank; effects on habitat structure

1. Permanent or temporary loss of natural bed or bank
2. Permanent or temporary relocation of stream channel or lake
3. Change in contour of bed, channel or bank
4. Change in gradient of bed, channel or bank
5. Channel profile change: confinement or widening
6. Channel degradation or aggradation
7. Accelerated channel scour
8. Temporary loss of bank stability during construction
9. Increase of bank erosion during construction
10. Change in composition of channel materials: LWD and D_{50}
11. Soil compaction or other disturbance
12. Restriction or increase in sediment transport
13. Debris dams
14. Debris transport impedance (from culverts and bridges)
15. Exposure of concrete sills on structures

II. Impacts to water quality

1. Change in Turbidity
 - a. Increased sedimentation from adjacent construction
 - b. Increased sedimentation from project roads
2. Chronic and stochastic increases of sedimentation to streams
3. Change in pH
4. Contaminants:
 - a. Short-term release (*e.g. incidental from construction*)

- b. Release of leachate (*e.g. concrete, creosote, wood preservatives, etc.*)
5. Change in water temperature
6. Change in dissolved oxygen (DO)

III. Impacts to bed, channel, or bank; more direct effects on fish, wildlife, and their habitat

1. Loss or decline of riparian and/or emergent marsh habitat
2. Decline of vegetative diversity
3. Colonization by exotic plant or animal species
4. Creation of predatory fish habitat
5. Loss or decline of instream channel habitat
6. Loss of or decline instream woody material
7. Loss or decline of natural bed substrate
8. Direct take of fish and other aquatic species, including redds
9. Direct impacts from dredging on benthic organisms
10. Hydroacoustic impacts on fish by pile driving
11. Construction pits and trenches that can capture terrestrial organisms
12. Disruption to nesting birds and other wildlife:
 - a. Direct take or
 - b. Disturbance from project activity
13. Loss of or decline of aquatic species' habitat: migration corridors, spawning or rearing areas
14. Loss of connection to hyporheic zone (culverts)
15. Loss of wildlife connectivity to water source
16. Permanent loss or impediment of terrestrial animal species travel routes due to permanent structures
17. Temporary loss or impediment of terrestrial animal species travel routes due to temporary structures such as survey tape, sandbags, erosion protection materials etc.
18. Change in shading or isolation leading to vegetative change
19. Direct loss of aquatic resources (organisms) as a result of boating/fishing activities
20. Loss of nearshore and riparian habitat as a result of boat navigation (wave action)
21. Long-term impact of gabion failure (metal debris in stream)

IV. Impacts to natural flow: effects on habitat structure and process

1. Change in stream flow (Q)
2. Diversion of flow water from stream activity site or around activity site
3. Dewatering
4. Rewatering
5. Impoundment above intake
6. Change in hydrology below intake
7. Habitat fragmentation below intake
8. Change (increase or decrease) in sediment delivery below intake
9. Change in flow depth, width or velocity
10. Flow deflection
11. Flow restriction (with risk of culvert or bridge failure)
12. Loss of pools or riffles
13. Change in percolation
14. Change in fluvial geomorphology
15. Effect on another water project on the same watercourse
16. Cumulative effect when other diversions on the same watercourse are considered

V. Impacts to natural flow: direct effects on fish and wildlife and their habitat

1. Direct take of aquatic species from pumps
2. Impediment to migration of aquatic and terrestrial species
3. Direct (seasonal) loss of resources for aquatic organisms
4. Entrapment in isolated pools due to loss of water surface elevation

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 CDFW 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 CDFW 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, CDFW shall contact Permittee to resolve any conflict.
- 1.4 **Project Site Entry.** Permittee agrees that CDFW personnel may enter the project site after notifying the Caltrans Resident Engineer 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 Only work described in the project description submitted in the Agreement notification shall be allowed. All work must be approved in writing in advance by the Department Grant Manager assigned to the project.
- 2.2 If, in the opinion of the Department, conditions arise or change in such a manner as to be considered deleterious to aquatic life, operations shall cease until corrective measures are taken.
- 2.3 **Timing.** To avoid impacts to aquatic habitat the activities carried out in the restoration program typically occur during the summer dry season.
 - A. Work within streams is restricted to the period of June 15 through November 1 or the first significant rainfall, whichever comes first. This is to take advantage of low stream flow and avoid the spawning and egg/alevin incubation period of salmon and steelhead.
 - B. No tree removal will occur between February 15 and September 1.
- 2.4 Projects shall not disturb or dewater more than 500 feet of contiguous stream reach.
- 2.5 During all activities at project work sites, all trash that may attract predators shall be properly contained, removed from the work site, and disposed of regularly.

Following construction, all trash and construction debris shall be removed from work areas.

- 2.6 Staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area where it cannot enter the stream channel. Stationary equipment such as motors, pumps, generators, compressors, and welders located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans. Vehicles will be moved out of the normal high water area of the stream prior to refueling and lubricating. The grantee shall ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, DFG shall ensure that the grantee has prepared a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.
- 2.7 The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the restoration action while minimizing riparian disturbance without affecting less stable areas, which may increase the risk of channel instability. Existing roads shall be used to access work sites as much as practicable.
- 2.8 The access and work area limits shall be identified with brightly colored flagging or fencing. Flagging and fencing shall be maintained in good repair for the duration of project activities. All areas beyond the identified work area limits shall not be disturbed.
- 2.9 Any construction debris shall be prevented from falling into the stream channel. Any material that does fall into a stream during construction shall be immediately removed in a manner that has minimal impact to the streambed and water quality.
- 2.10 Where feasible, the construction shall occur from the bank, or on a temporary pad underlain with filter fabric.
- 2.11 Any work within the stream channel shall be performed in isolation from the flowing stream and erosion protection measures shall be in place before work begins.
 - A. Prior to dewatering, the best means to bypass flow through the work area to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic invertebrates shall be determined.
 - B. If there is any flow when work will be done, the grantee shall construct coffer dams upstream and downstream and divert all flow from upstream. No downstream coffer dam will be needed due to pumping.
 - C. No heavy equipment shall operate in the live stream, except as may be

necessary to construct coffer dams to divert stream flow and isolate the work site.

- D. Cofferdams may be constructed with clean river run gravel or sand bags, and may be sealed with sheet plastic. Upon project completion, sand bags and any sheet plastic shall be removed from the stream. Clean river run gravel may be left in the stream channel, provided it does not impede stream flow or fish passage, and conforms to natural channel morphology without significant disturbance to natural substrate.
- E. Dewatering shall be coordinated with a qualified fisheries biologist to perform fish and amphibian relocation activities.
- F. When bypassing stream flow around work area, stream flow below the construction site shall be maintained similar to the unimpeded flow at all times.
- G. The work area shall be periodically pumped dry of seepage. Pumps shall be placed in flat areas, away from the stream channel. Pumps shall be secured by tying off to a tree or staked in place to prevent movement by vibration. Pump intakes shall be covered with 0.125 inch mesh to prevent entrainment of fish or amphibians that failed to be removed. Pump intakes shall be periodically checked for impingement of fish or amphibians, and shall be relocated according to the approved measured outlined for each species below.
- H. If necessary, flow shall be diverted around the work site, either by pump or by gravity flow, the suction end of the intake pipe shall be fitted with fish screens meeting CDFW and NOAA criteria to prevent entrainment or impingement of small fish. Any turbid water pumped from the work site itself to maintain it in a dewatered state shall be disposed of in an upland location where it will not drain directly into any stream channel.
- I. Fish shall be excluded from the work area by blocking the stream channel above and below the work area with fine-meshed net or screen. Mesh shall be no greater than 1/8-inch diameter. The bottom edge of the net or screen shall be completely secured to the channel bed to prevent fish from reentering the work area. Exclusion screening shall be placed in areas of low water velocity to minimize fish impingement. Screens shall be regularly checked and cleaned of debris to permit free flow of water.

2.12 Where the disturbance to construct coffer dams to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), the action shall be carried out without dewatering and fish relocation. Furthermore, measures shall be put in place immediately downstream of the work site to capture suspended sediment. This may include installation of silt catchment fences across the stream, or placement of a filter berm of clean river gravel. Silt

fences and other non-native materials will be removed from the stream following completion of the activity. Gravel berms may be left in the stream channel provided it does not impede stream flow or fish passage, and conforms to natural channel morphology without significant disturbance to natural substrate.

- 2.13 Any equipment entering the active stream (for example, in the process of installing a coffer dam) shall be preceded by an individual on foot to displace wildlife and prevent them from being crushed.
- 2.14 If any non-special status wildlife are encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed, and shall be flushed, hazed, or herded in a safe direction away from the project site. "Special status wildlife" is defined as any species that meets the definition of "endangered, rare, or threatened species" in section 15380, article 20 in Title 14 of the California Code of Regulations, also known as the "CEQA Guidelines".
- 2.15 For any work sites containing salamander, foothill yellow-legged frogs or tailed frogs, the grantee shall provide to the CDFW grant manager for review and approval, a list of the exclusion measures that will be used at their work site to prevent take or injury to any individual salamanders, or frogs that could occur on the site. The grantee shall ensure that the approved exclusion measures are in place prior to construction. Any salamanders or frogs found within the exclusion zone shall be moved to a safe location upstream or downstream of the work site, prior to construction.
- 2.16 All habitat improvements shall be done in accordance with techniques in the California Salmonid Stream Habitat Restoration Manual. The most current version of the manual is available at:
<http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp>.
- 2.17 The grantee shall have dependable radio or phone communication on-site to be able to report any accidents or fire that might occur.
- 2.18 Temporary fill (except clean washed gravel) shall be removed in its entirety prior to close of work-window.

Specific Measures for Endangered, Rare, or Threatened Species That Could Occur at Specific Work Sites

- 2.19 Coho salmon (*Oncorhynchus kisutch*), Chinook salmon (*Oncorhynchus tshawytscha*), Steelhead (*Oncorhynchus mykiss*), and Coast cutthroat trout (*Oncorhynchus clarki clarki*)

In order to avoid any potential for negative impacts to these species, the following measures will be implemented:

- A. Project work within the wetted stream shall be limited to the period between June 15 and November 1, or the first significant rainfall, or which ever comes first. This is to take advantage of low stream flows and to avoid the spawning and egg/alevin incubation period of salmon and steelhead. Whenever possible, the work period at individual sites shall be further limited to entirely avoid periods when salmonids are present (for example, in a seasonal creek, work will be confined to the period when the stream is dry).

- B. Prior to dewatering a construction site, fish and amphibian species shall be captured and relocated by CDFW personnel (or designated agents). Measures shall be taken to minimize harm and mortality to listed salmonids resulting from fish relocation and dewatering activities:
 - a. Fish relocation and dewatering activities shall only occur between June 15 and November 1 of each year.
 - b. Fish relocation shall be performed by a qualified fisheries biologist, with all necessary State and Federal permits. Rescued fish shall be moved to the nearest appropriate site outside of the work area. A record shall be maintained of all fish rescued and moved. The record shall include the date of capture and relocation, the method of capture, the location of the relocation site in relation to the project site, and the number and species of fish captured and relocated. The record shall be provided to CDFW within two weeks of the completion of the work season or project, whichever comes first.
 - c. Electrofishing shall be conducted by properly trained personnel following NOAA Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
 - d. Prior to capturing fish, the most appropriate release location(s) shall be determined. The following shall be determined:
 - i. Temperature: Water temperature shall be similar as the capture location.
 - ii. Habitat: There shall be ample habitat for the captured fish.
 - iii. Exclusions from work site: There shall be a low likelihood for the fish to reenter the work site or become impinged on exclusion net or screen.
 - e. The most efficient method for capturing fish shall be determined by the biologist. Complex stream habitat generally requires the use of electrofishing equipment, whereas in outlet pools, fish may be concentrated by pumping-down the pool and then seining or dipnetting

fish.

- f. Handling of salmonids shall be minimized. However, when handling is necessary, always wet hands or nets prior to touching fish.
- g. Temporarily hold fish in cool, shaded, aerated water in a container with a lid. Provide aeration with a battery-powered external bubbler. Protect fish from jostling and noise and do not remove fish from this container until time of release.
- h. Air and water temperatures shall be measured periodically. A thermometer shall be placed in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds 18 °C, fish shall be released and rescue operations ceased.
- i. Overcrowding in containers shall be avoided by having at least two containers and segregating young-of-year (YOY) fish from larger age-classes to avoid predation. Larger amphibians, such as Pacific giant salamanders, shall be placed in the container with larger fish. If fish are abundant, the capturing of fish and amphibians shall cease periodically and shall be released at the predetermined locations.
- j. Species and year-class of fish shall be visually estimated at time of release. The number of fish captured shall be counted and recorded. Anesthetization or measuring fish shall be avoided.
- k. If feasible, initial fish relocation efforts shall be performed several days prior to the start of construction. This provides the fisheries biologist an opportunity to return to the work area and perform additional electrofishing passes immediately prior to construction. In many instances, additional fish will be captured that eluded the previous day's efforts.
- l. If mortality during relocation exceeds five percent, capturing efforts shall be stopped and the appropriate agencies shall be contacted immediately.
- m. In regions of California with high summer temperatures, relocation activities shall be performed in the morning when the temperatures are cooler.
- n. The responsible party shall minimize the amount of wetted stream channel that is dewatered at each individual project site to the fullest extent possible.
- o. Additional measures to minimize injury and mortality of salmonids during

fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the California Salmonid Stream Habitat Restoration Manual.

- C. If these mitigation measures cannot be implemented, or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to anadromous salmonids or their habitat, then activity at that work site shall be discontinued.

2.20 Riparian and re-vegetation

- A) Planting of seedlings shall begin after December 1, or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings, but in no case after April 1.
- B) Any disturbed banks shall be fully restored upon completion of construction. Revegetation shall be done using native species. Planting techniques can include seed casting, hydroseeding, or live planting methods using the techniques in Part XI of the California Salmonid Stream Habitat Restoration Manual.
- C) Disturbed and compacted areas shall be re-vegetated with native plant species. The species shall be comprised of a diverse community structure that mimics the native riparian corridor. Planting ratio shall be 2:1 (two plants to every one removed).
- D) Unless otherwise specified, the standard for success is 80 percent survival of plantings or 80 percent ground cover for broadcast planting of seed after a period of 3 years.
- E) To ensure that the spread or introduction of invasive exotic plants shall be avoided to the maximum extent possible, equipment shall be cleaned of all dirt, mud, and plant material prior to entering a work site. When possible, invasive exotic plants at the work site shall be removed. Areas disturbed by project activities will be restored and planted with native plants.
- F) Mulching and seeding shall be done on all exposed soil which may deliver sediment to a stream. Soils exposed by project operations shall be mulched to prevent sediment runoff and transport. Mulches shall be applied so that not less than 90% of the disturbed areas are covered. All mulches, except hydro-mulch, shall be applied in a layer not less than two (2) inches deep. Where feasible, all mulches shall be kneaded or tracked-in with track marks parallel to the contour, and tackified as necessary to prevent excessive movement. All exposed soils and fills, including the downstream face of the road prism adjacent to the outlet of culverts, shall be reseeded with a mix of native grasses common to the area, free

from seeds of noxious or invasive weed species, and applied at a rate which will ensure establishment.

G) If erosion control mats are used in re-vegetation, they shall be made of material that decomposes. Erosion control mats made of nylon plastic, or other non-decomposing material shall not be used.

H) The responsible party shall retain as many trees and brush as feasible, emphasizing shade producing and bank stabilizing trees and brush to minimize impacts to the riparian corridor.

I) If riparian vegetation is to be removed with chainsaws, the grantee shall use saws that operate with vegetable-based bar oil when possible.

J) Disturbed and decompacted areas shall be re-vegetated with native species specific to the project location that comprise a diverse community of woody and herbaceous species.

2.21 CULTURAL RESOURCES

Impacts to cultural resources will be avoided through implementation of the following mitigation measures:

- A. If cultural and or paleontological resource sites are identified at a site, CDFW shall require one or more of the following protective measures to be implemented before work can proceed: a) fencing to prevent accidental disturbance of cultural resources during construction, b) on-site monitoring by a cultural and or paleontological resource professional during construction to assure that cultural resources are not disturbed, c) redesign of proposed work to avoid disturbance of cultural resources.
- B. CDFW shall report any previously unknown historic, archeological and paleontological remains discovered at a site to the USACE as required in the RGP.
- C. CDFW shall ensure that the grantee or responsible party is aware of these site-specific conditions, and shall inspect the work site before, during, and after completion of the action item.
- D. Inadvertent Discovery of Cultural Resources - If cultural resources, such as lithic debitage, ground stone, historic debris, building foundations, or bone are discovered during ground-disturbance activities, work shall be stopped within 20

meters (66 feet) of the discovery, per the requirements of CEQA (January 1999 Revised Guidelines, Title 14 CCR 15064.5 (f)). Work near the archaeological finds shall not resume until a professional archaeologist, who meets the Secretary of the Interior's Standards and Guidelines, has evaluated the materials and offered recommendations for further action. [Prehistoric materials which could be encountered include: obsidian and chert flakes or chipped stone tools, grinding implements, (e.g., pestles, handstones, mortars, slabs), bedrock outcrops and boulders with mortar cups, locally darkened midden, deposits of shell, dietary bone, and human burials. Historic materials which could be encountered include: ceramics/pottery, glass, metal, can and bottle dumps, cut bone, barbed wire fences, building pads, structures, trails/roads, railroad rails and ties, trestles, etc.]

- E. Inadvertent Discovery of Human Remains - If human remains are discovered during project construction, work shall stop at the discovery location, within 20 meters (66 feet), and any nearby area reasonably suspected to overlie adjacent to human remains (Public Resources Code, Section 7050.5). The county coroner shall be contacted to determine if the cause of death must be investigated. If the coroner determines that the remains are of Native American origin, it is necessary to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American heritage Commission (NAHC) (Public Resources Code, Section 5097). The coroner will contact the NAHC. The descendants or most likely descendants of the deceased will be contacted, and work shall not resume until they have made a recommendation to the landowner or the person responsible for the excavation work for means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in Public Resources Code, Section 5097.98. Work may resume if NAHC is unable to identify a descendant or the descendant failed to make a recommendation.
- F. Procedures for treatment of an inadvertent discovery of human remains:
- a. Immediately following discovery of known or potential human remains all ground-disturbing activities at the point of discovery shall be halted.
 - b. No material remains shall be removed from the discovery site, a reasonable exclusion zone shall be cordoned off.
 - c. The CDFW Grant Manager and property owner shall be notified and the CDFW Grant Manager shall contact the county coroner.
 - d. CDFW shall retain the services of a professional archaeologist to immediately examine the find and assist the process.
 - e. All ground-disturbing construction activities in the discovery site exclusion area shall be suspended.
 - f. The discovery site shall be secured to protect the remains from desecration or disturbance, with 24-hour surveillance, if prudent.
 - g. Discovery of Native American remains is a very sensitive issue, and all project personnel shall hold any information about such a discovery in

- confidence and divulge it only on a need-to-know basis.
- h. The coroner has two working days to examine the remains after being notified. If the remains are Native American, the coroner has 24 hours to notify the NAHC in Sacramento (telephone 916/653-4082).
 - i. The NAHC is responsible for identifying and immediately notifying the Most Likely Descendant (MLD) of the deceased Native American.
 - j. Within 24 hours of their notification by the NAHC, the MLD shall be granted permission by the landowner's authorized representative to inspect the discovery site, if they so choose.
 - k. Within 24 hours of their notification by the NAHC, the MLD shall recommend to the landowner and CDFW Grant Manager means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The recommendation may include the scientific removal and non-destructive or destructive analysis of human remains and items associated with Native American burials.
 - l. Whenever the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner or his/her authorized representative rejects the recommendation of the MLD and mediation between the parties by the NAHC fails to provide measures acceptable to the landowner, the landowner or his/her authorized representatives shall re-inter the human remains and associated grave offerings with appropriate dignity on the property in a location not subject to further subsurface disturbance.
 - m. Following final treatment measures, the CDFW shall ensure that a report is prepared that describes the circumstances, nature and location of the discovery, its treatment, including results of analysis (if permitted), and final disposition, including a confidential map showing the reburial location. Appended to the report shall be a formal record about the discovery site prepared to current California standards on DPR 523 form(s). CDFW shall ensure that report copies are distributed to the appropriate California Historic Information Center, NAHC and MLD.
- G. Pursuant to RGP78 and in accordance to 36 C.F.R. Section 800.13, in the event of any discovery during construction of human remains, archeological deposits, or any other type of historic property, the CDFW shall notify the USACE archeological staff (Steve Dibble at 213-452-3849 or John Killeen at 213-452-3861) within 24 hours. Construction work shall be suspended immediately and shall not resume until USACE re-authorizes project construction.
- H. If it becomes impossible to implement the project at a work site without disturbing cultural or paleontological resources, then activity at that work site shall be discontinued.

2.22 GEOLOGY AND SOILS

- A. The responsible party will implement the following measures to minimize harm to listed salmonids resulting from culvert replacement activities and other instream construction work:
 - a. All stream crossing replacement or modification designs, involving fish passage, shall be reviewed and approved by NOAA (or CDFW) engineers prior to onset of work.****

- I. Effective erosion control measures shall be in-place at all times during construction. Construction within the 5-year flood plain shall not begin until all temporary erosion controls (i.e., straw bales or silt fences that are effectively keyed-in) are in place down slope or downstream of project activities within the riparian area. Erosion control measures shall be maintained throughout the construction period. If continued erosion is likely to occur after construction is completed, then appropriate erosion prevention measures shall be implemented and maintained until erosion has subsided.**

- J. An adequate supply of erosion control materials (gravel, straw bales, shovels, etc.) shall be maintained onsite to facilitate a quick response to unanticipated storm events or emergencies.**

- K. Use erosion controls that protect and stabilize stockpiles and exposed soils to prevent movement of materials. Use devices such as plastic sheeting held down with rocks or sandbags over stockpiles, silt fences, or berms of hay bales, to minimize movement of exposed or stockpiled soils.**

- L. When needed, instream grade control structures shall be utilized to control channel scour, sediment routing, and headwall cutting.**

- M. Temporary stockpiling of excavated material shall be minimized. However, excavated material shall be stockpiled in areas where it cannot enter the stream channel. Available sites at or near the project location shall be determined prior to the start of construction. If feasible, topsoil shall be conserved for reuse at project location or use in other areas.**

- N. Upon project completion, all exposed soil present in and around the project site shall be stabilized within 7 days. Soils exposed by project operations shall be mulched to prevent sediment runoff and transport. Mulches shall be applied so that not less than 90% of the disturbed areas are covered. All mulches, except hydro-mulch, shall be applied in a layer not less than two (2) inches deep. Where feasible, all mulches shall be kneaded or tracked-in with track marks parallel to the contour, and tackified as necessary to prevent excessive movement. All exposed soils and fills, including the downstream face of the road prism adjacent to the outlet of culverts, shall be reseeded with a mix of native grasses common to the area, free from seeds of noxious or invasive weed**

species, and applied at a rate which will ensure establishment.

- O. Soil compaction shall be minimized by using equipment with a greater reach or that exerts less pressure per square inch on the ground, resulting in less overall area disturbed and less compaction of disturbed areas.
- P. Disturbed soils shall be decompacted at project completion as heavy equipment exits the construction area.
- Q. At the completion of the project, soil compaction that is not an integral element of the design of a crossing should be de-compacted.

2.23 HAZARDS AND HAZARDOUS MATERIALS

- A. Heavy equipment that will be used will be in good condition and will be inspected for leakage of coolant and petroleum products and repaired, if necessary, before work is started.
- B. When operating vehicles in wetted portions of the stream channel, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, the responsible party shall, at a minimum, do the following:
 - a. Check and maintain on a daily basis any vehicles to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life, wildlife, or riparian habitat;
 - b. Take precautions to minimize the number of passes through the stream and to avoid increasing the turbidity of the water to a level that is deleterious to aquatic life; and
 - c. Allow the work area to "rest" to allow the water to clear after each individual pass of the vehicle that causes a plume of turbidity above background levels, resuming work only after the stream has reached the original background turbidity levels.
- C. All activities performed in or near a stream will have absorbent materials designed for spill containment and cleanup at the activity site for use in case of an accidental spill. In an event of a spill, work shall cease immediately. Clean-up of all spills shall begin immediately. The responsible party shall notify the California Emergency Management Agency at 1-800-852-7550 and the CDFW immediately after any spill occurs, and shall consult with the CDFW regarding clean-up procedures.
- D. All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 65 feet from any riparian habitat or water body and place fuel

absorbent mats under pump while fueling. The USACE and the CDFW will ensure contamination of habitat does not occur during such operations. Prior to the onset of work, the CDFW will ensure that the grantee has prepared a plan to allow a prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

- E. Location of staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area. The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the restoration action. To avoid contamination of habitat during restoration activities, trash will be contained, removed and disposed of throughout the project.
- F. Petroleum products, fresh cement, and other deleterious materials shall not enter the stream channel.
- G. Stationary equipment such as motors, pumps, generators, compressors, and welders, located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans.
- H. No debris, soil, silt, sand, bark, slash, spoils, sawdust, rubbish, cement, or concrete or washings thereof; asphalt, paint, or other coating material; oil or petroleum products; or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or 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 and disposed of in a lawful manner.
- I. All internal combustion engines shall be fitted with spark arrestors.
- J. The grantee shall have an appropriate fire extinguisher(s) and fire fighting tools (shovel and axe at a minimum) present at all times when there is a risk of fire.
- K. Vehicles shall not be parked in tall grass or any other location where heat from the exhaust system could ignite a fire.
- L. The grantee shall follow any additional rules the landowner has for fire prevention.

2.24 HYDROLOGY AND WATER QUALITY

- A. Instream work shall be conducted during the period of lowest flow.
- B. Before work is allowed to proceed at a site, Caltrans shall notify CDFW that

turbidity control measures are in place. CDFW Grant Manager or Aquatics Conservation Planning personnel shall inspect the site to assure that turbidity control measures are in place.

- C. The de-watered water from construction area shall be discharged to an upland location where it will not drain sediment-laden water back to stream channel.
- D. If instream work liberates a sediment wedge, 80% of the wedge shall be removed before the sediment is liberated. The required amount can be modified if NOAA or CDFW hydrologists or hydraulic engineers agree that removing a smaller amount will better protect and enhance fish habitat in the area of the project (e.g., leaving some sediment to replenish areas downstream that lack suitable substrate volume or quality).
- E. To control erosion during and after project implementation, the responsible party shall implement best management practices, as identified by the appropriate Regional Water Quality Control Board.
- F. Sediment-laden water caused by construction activity shall be filtered before it leaves the right-of-way or enters the stream network or an aquatic resource area. Silt fences or other detention methods shall be installed as close as possible to culvert outlets to reduce the amount of sediment entering aquatic systems.
- G. Poured concrete shall be excluded from the wetted channel for a period of two weeks after it is poured. During that time the poured concrete shall be kept moist, and runoff shall not be allowed to enter flowing stream. Commercial sealants shall be applied to the poured concrete surface where concrete cannot be excluded from the stream flow for two weeks. If sealant is used, water shall be excluded from the site until the sealant is dry.
- H. If the CDFW determines that turbidity/siltation levels resulting from an activity or activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation shall cease until effective DFG approved sediment control devices are installed and/or abatement procedures are implemented.
- I. Prior to use, all equipment shall be cleaned to remove external oil, grease, dirt, or mud. Wash sites shall be located in upland locations so that dirty wash water does not flow into the stream channel or adjacent wetlands.

3. Reporting Measures

Permittee shall meet each reporting requirement described below.

- 3.1 A record shall be maintained of all fish rescued and moved. The record shall include the date of capture, and relocation, the method of capture, the location of the relocation site in relation to the project site and the number and species of fish captured and relocated. The record shall be provided to CDFW within two weeks of the completion of the work season or project, whichever comes first. Caltrans shall provide fish relocation data to the CDFW Grant Manager on a form provided by CDFW.

CONTACT INFORMATION

Any communication that Permittee or CDFW 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 CDFW specifies by written notice to the other.

To Permittee:

Department of Transportation
Derek Willis
1031 Butte Street
Redding, CA 96001
Phone – (530) 225-3466
Fax – (530) 225-3324
Email – Derek.willis@dot.ca.gov

cc. Brian Humphrey, brian.humphrey@dot.ca.gov

To CDFW:

Department of Fish and Wildlife
Northern Region
601 Locust Street
Redding, CA 96001
Attn: Lake and Streambed Alteration Program – Bob Hawkins
Notification #1600-2013-0248-R1
Phone – (530) 841-2554
Fax – (530) 842-4035
Robert.Hawkins@wildlife.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 CDFW'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

CDFW 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 CDFW 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 CDFW 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 CDFW to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes CDFW 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 CDFW'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

CDFW may amend the Agreement at any time during its term if CDFW 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 CDFW and Permittee. To request an amendment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in CDFW'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 CDFW 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 CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in CDFW'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 CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). CDFW 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 (FGC section 1605(f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of CDFW's signature, which shall be: 1) after Permittee's signature; 2) after CDFW 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.wildlife.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire on December 31, 2017, 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

The documents listed below are included as exhibits to the Agreement and incorporated herein by reference.

- A. Fort Goff Creek Fish Passage Project, Initial Study with Mitigated Negative Declaration.

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.

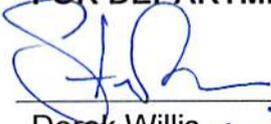
AUTHORIZATION

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 CDFW in accordance with FGC section 1602.

CONCURRENCE

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

FOR DEPARTMENT OF TRANSPORTATION



Derek Willis ← Steve Rogers
For
California Department of Transportation

10/21/13

Date

FOR DEPARTMENT OF FISH AND WILDLIFE



Donna L. Cobb
Aquatic Conservation Planning Supervisor

10/21/13

Date

Prepared by: Bob Hawkins
Senior Environmental Scientist (Specialist)

Fort Goff Creek Fish Passage Project

SISKIYOU COUNTY, CALIFORNIA

02-SIS-96-PM 56.0

02-4E6300

EFIS#: 02-1200-0010

Initial Study with Mitigated Negative Declaration



Prepared by the
State of California Department of Transportation District 2
1657 Riverside Drive, MS-30
Redding, CA 96001



June 2013

General Information about This Document

What's in this document?

The California Department of Transportation (Caltrans) is concerned about how their transportation projects impact the environment. Federal and State laws and regulations require analysis and evaluation of project impacts, and provide guidelines for minimizing impacts to the environment. This Initial Study has been written to comply with the California Environmental Quality Act (CEQA).

The draft document was circulated for review and comment among project stakeholders, including public agencies and the general public, from May 9, 2013 through June 7, 2013. This final version of the Initial Study includes revisions to address comments received during the draft circulation period. A vertical line in the outside margin of the document denotes new text. Based on an analysis of project alternatives, potential environmental impacts, and consideration of public input, Caltrans has chosen a project alternative and approved a Mitigated Negative Declaration. The next phase in the project development process entails final project design. During the design process, Caltrans will continue to work with project stakeholders in an effort to meet the needs of the traveling public and the community, and to avoid and/or minimize adverse impacts.

Comments or questions regarding this document should be sent to

California Department of Transportation
Attention: Brian Humphrey
North Region Office of Environmental Mgmt.
1657 Riverside Drive, MS-30
Redding, CA 96001

For individuals with sensory disabilities, this document is available in Braille, large print, on audiocassette, or computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Equal Employment Opportunity Officer, 1657 Riverside Drive, Redding, CA 96001; (530) 225-3055 Voice, or use the California Relay Service TTY number, (530) 225-2019.

SCH No. 2013052023
02-SIS-96-PM 56.0
02-4E6300
EFIS#: 02-2000010

Fort Goff Creek Fish Passage Project

In Siskiyou County, California on State Route 96
at Post Mile 56.0

**INITIAL STUDY WITH PROPOSED
MITIGATED NEGATIVE DECLARATION**

Submitted Pursuant to: (State) Division13, California Public Resources Code

STATE OF CALIFORNIA
Department of Transportation

May 3, 2013
Date of Approval


CINDY ANDERSON
Office Chief-North
North Region Environmental Services
California Department of Transportation
CEQA Lead Agency

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SCH No. 2013052023
02-SIS-96-56.0
02-4E6300
EFIS#: 02-200-0010

Proposed Mitigated Negative Declaration

Pursuant to: Division 13, California Public Resources Code

Project Description

The California Department of Transportation (Caltrans) is proposing to improve fish passage on Fort Goff Creek. The proposed project is located approximately 4 miles west of the community of Seiad Valley in Siskiyou County. The proposed project would include replacing an existing 15-foot diameter culvert under State Route 96 with a single span bridge structure. The project as proposed would improve fish passage on Fort Goff Creek under State Route 96.

Determination

Caltrans has prepared an Initial Study for this project, and following public review, has determined from this study that the project will not have a significant effect on the environment for the following reasons:

- The proposed project is consistent with planning, land use, transportation, housing, emergency services, utilities, and other social and economic factors relevant to the area.
- The proposed project will not have an effect on aesthetics, agriculture, forest resources, air quality, historical and cultural resources, geology and soils, hazardous materials, mineral resources, public services, wild and scenic rivers, or energy resources.
- The proposed project will have a less than significant effect on noise, floodplain, and water quality.
- The proposed project will not have a significant effect on fish and wildlife, riparian habitat, or water quality standards because the following mitigation measures will reduce potential effects to a level below significance.
 - A temporary stream diversion will be utilized to isolate the work area from the flowing stream, while work within the stream channel will take place during the summer/fall low flow period.
 - Any fill material placed within the channel for the temporary stream diversion or temporary detour will consist of clean river run gravel or

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SCH No. 2013052023
02-SIS-96-56.0
02-4E6300
EFIS#: 02-200-0010

- streambed material approved by California Department of Fish and Wildlife.
- o Fish and amphibian species will be excluded from entering the project limits, while any fish and amphibian species located within the project limits will be relocated outside the project limits.
 - o Any pumps used for dewatering will have intakes fitted with fish screens.
 - o Installation of pile casings will avoid percussive pile driving activities.
 - o A Storm Water Pollution Prevention Plan will be prepared by the contractor, which will include Caltrans' best management practices to minimize potential sediment delivery or chemical contamination from entering Fort Goff Creek and/or the Klamath River.
 - o Removal of vegetation will be minimized to the extent necessary to construct the project. Following construction, all disturbed stream banks will be planted with native riparian vegetation, while upland ground disturbance will be hydro-seeded.
- The proposed project would improve fish passage for state and federally threatened Southern Oregon/Northern California Coast (SONCC) coho salmon, as well as other anadromous salmonids and other local fish species. The proposed project would also improve passage for other species, such as lamprey, amphibians and terrestrial wildlife.



Cindy Anderson
Office Chief - North
North Region Environmental Services
California Department of Transportation
CEQA Lead Agency

June 17, 2013

Date

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Chapter 1. **Proposed Project**

1.1. Project Title

Fort Goff Creek Fish Passage Project

1.2. Lead Agency Name and Address

California Department of Transportation, District 2
1657 Riverside Drive, MS-30
Redding, CA 96001

1.3. Contact Person and Phone Number

Brian Humphrey
Environmental Coordinator
Caltrans, North Region Office of Environmental Management
Redding, CA
Phone (530) 225-2917

1.4. Project Location

The proposed project is located on Fort Goff Creek, approximately 400-500 feet (ft.) upstream of its confluence with the Klamath River, where flows are conveyed under State Route 96 at Post Mile 56.0. Fort Goff Creek is located approximately four miles west of the community of Seiad Valley in Siskiyou County ([Figures 1 and 2](#)).

1.5. Project Sponsor's Name and Address

California Department of Transportation, District 2
North Region Office of Environmental Management
1657 Riverside Drive, MS-30
Redding, CA 96001

1.6. Purpose and Need

In addition to California Department of Transportation (Caltrans) funds, Caltrans has also received grant funding from both U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife's (DFW's) Fisheries Restoration Grant Program (FRGP) to replace the existing culvert with a bridge. A Mitigated Negative Declaration pursuant to CEQA has been prepared by DFW to address potential environmental impacts associated with projects funded under DFW's FRGP, which includes the Fort Goff Creek Fish Passage Project.

Purpose

The project proposes to improve fish passage near the mouth of Fort Goff Creek, where a 15 ft. diameter culvert currently conveys flows under State Route 96.

Need

The existing culvert currently restricts steelhead (*Oncorhynchus mykiss*) upstream access to approximately 4 miles of suitable habitat, while restricting coho salmon (*Oncorhynchus kisutch*) and Chinook salmon (*Oncorhynchus tshawytscha*) access to approximately 1.6 miles of suitable habitat. The need to remedy the fish passage barrier at Fort Goff Creek is listed in the National Marine Fisheries Service's (NMFS).

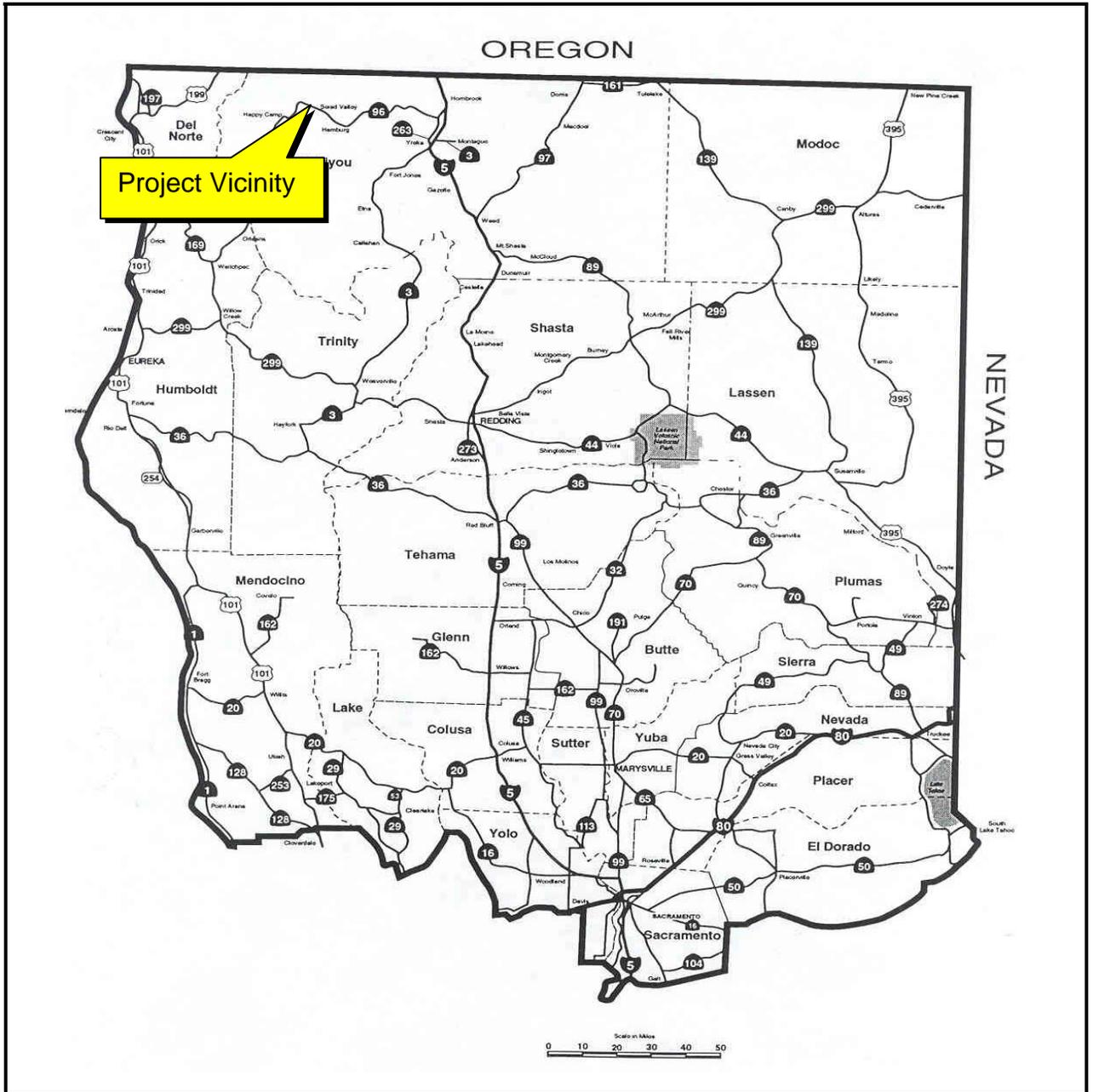


Figure 1. Project Vicinity Map

	State of California Department of Transportation	Fort Goff Creek Fish Passage Improvement Project
	SIS-96-PM 56.0 02-4E6300 EFIS#: 02-1200-0010	

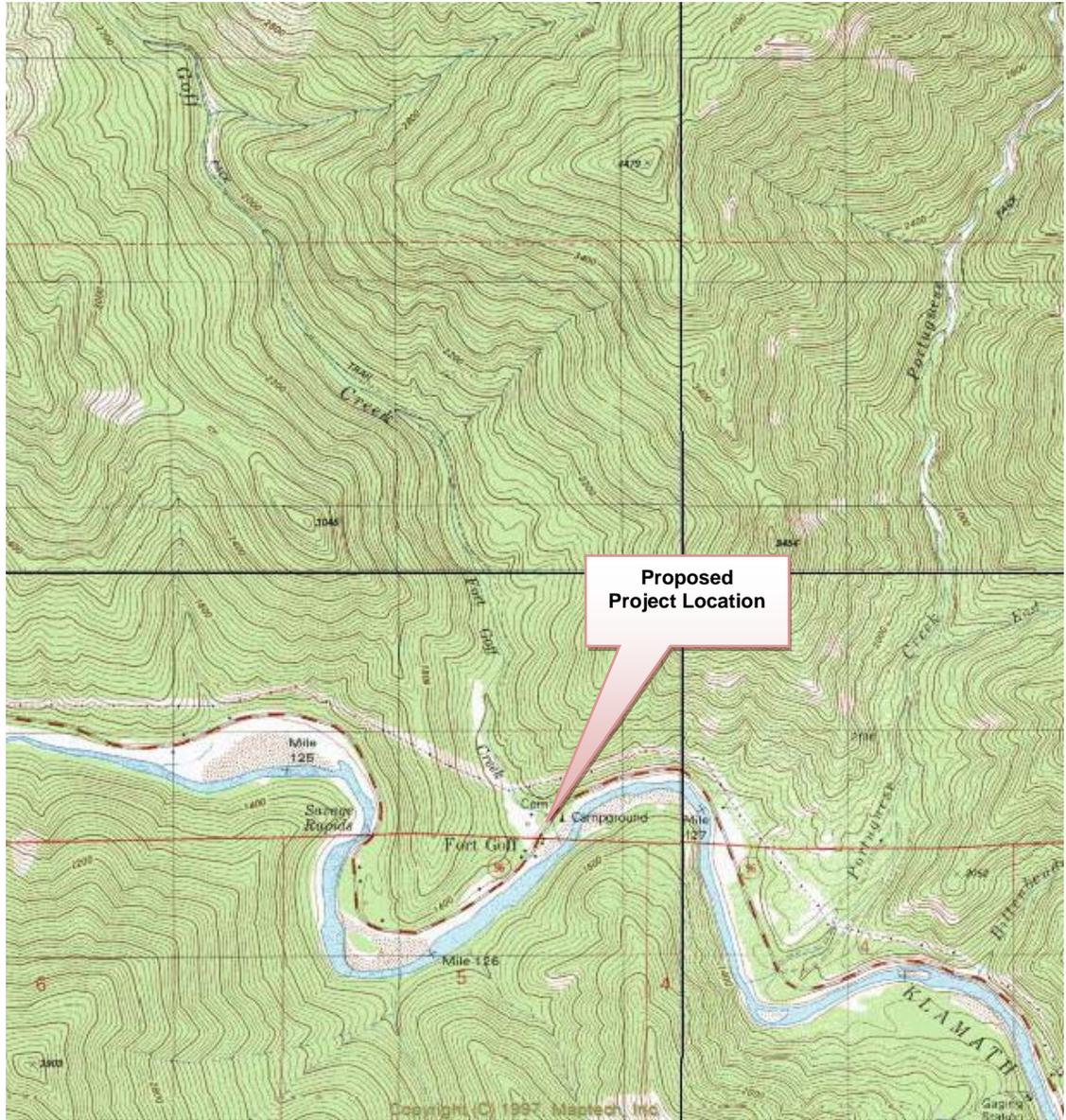


Figure 2. Project Location Map

	State of California Department of Transportation	Fort Goff Creek Fish Passage Project
	02-4E630-SIS-96 EFIS#: 02-1200-0010	

“Draft Southern Oregon/Northern California Coast Coho Recovery Plan” (NMFS 2012) and the DFW’s “Recovery Strategy for California Coho Salmon” (CDFG 2004).

Caltrans has been working in partnership with the DFW, USFWS, and NMFS to identify and prioritize barriers to fish passage on the state highway system in Caltrans District 2. Fort Goff Creek is currently identified as the highest priority fish passage project on the state highway system in Caltrans District 2. Other agencies and groups supportive of improving fish passage on Fort Goff Creek include the Karuk Tribe, Mid-Klamath Watershed Council, and U.S. Forest Service (USFS).

1.7. Project Alternatives

Two project alternatives have been considered and are discussed in this Initial Study; Alternative “A” the preferred alternative, and a “No-Build” alternative. After consideration of all comments received as a result of circulating the Initial Study for public review, Caltrans has identified Alternative A as the preferred alternative. Pursuant to CEQA, Caltrans has approved a Mitigated Negative Declaration, which explains the effects the proposed project may have on the environment. Construction is currently anticipated to take place between May and November 2014.

“No Build” Alternative

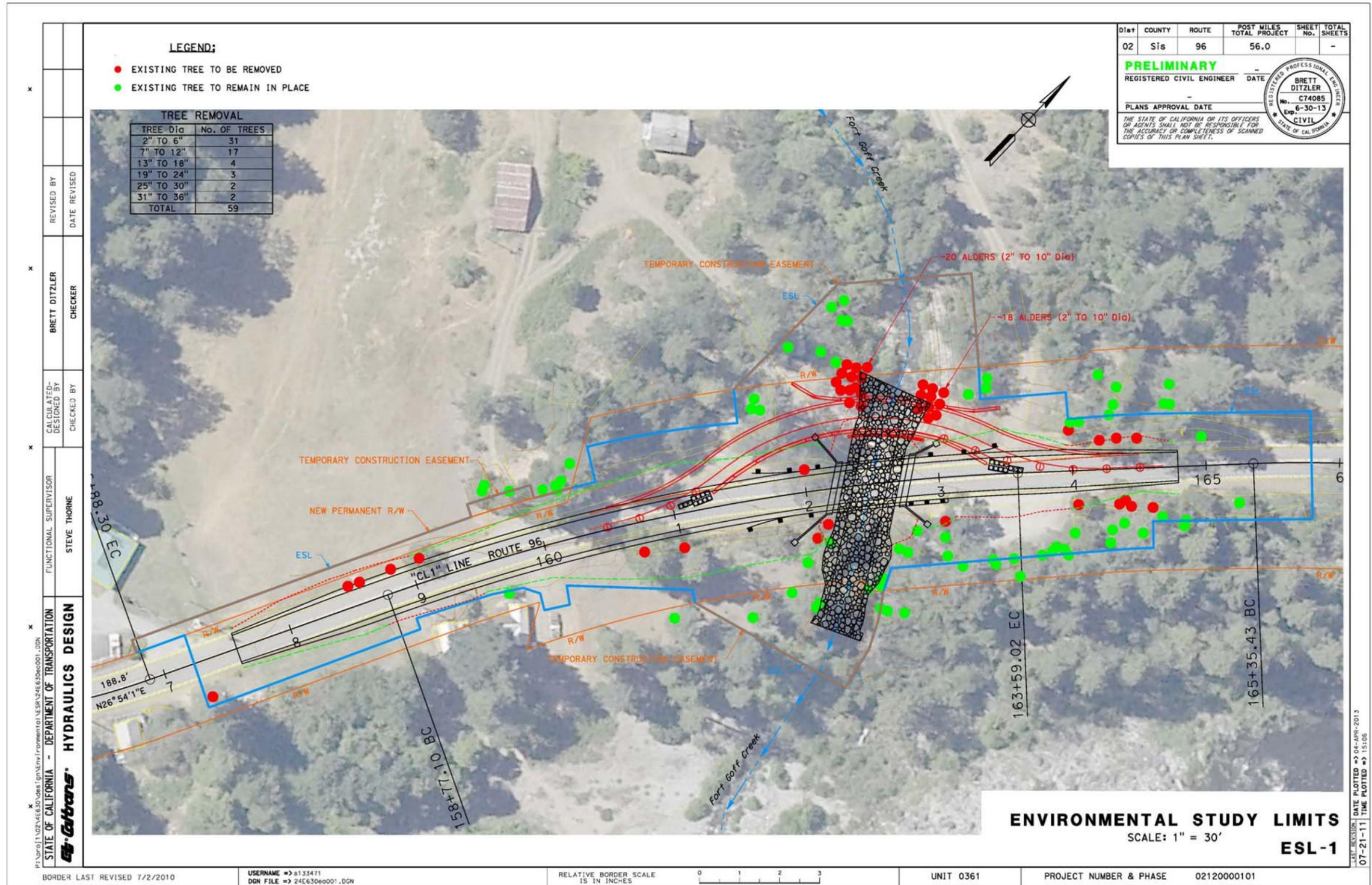
The No-Build Alternative is defined as not implementing any aspect of the proposed project. A no-build alternative should also be considered as it provides a baseline for comparing the environmental impacts associated with the proposed build alternative. This alternative would not result in temporary environmental impacts, but would continue to impede state and federally threatened Southern Oregon Northern California Coasts (SONCC) coho salmon access to an additional 1.6 miles of suitable adult spawning and juvenile rearing habitat, which could contribute to the decline of SONCC coho salmon.

Alternative “A”

This alternative proposes to replace the existing structural steel plate culvert with a concrete single span (no piers) bridge structure. The existing culvert measures 15 feet (ft.) in diameter and 65 ft. in length. The culvert replacement would require diverting stream flow through the project site and removing the existing culvert and roadway fill material from the stream channel with heavy equipment. The project would also involve stream channel restoration, roadway realignment, tree removal, shoulder widening, utility relocation, and right of way acquisition (Figure 3). The green dash lines depicted on Figure 3 represent the placement of fill material. It is anticipated, the project would require approximately 120 working days over one construction season.

In addition to providing fish passage, the proposed project will also improve the hydraulic capacity of the stream crossing, allowing larger debris to flow under the highway and minimizing the risk of flows overtopping the roadway. By minimizing the risk of debris being caught upstream of the roadway during storm events, this will reduce the need for debris removal at this location. In addition, the roadway lanes and shoulders will be widened to improve safety for the travelling public.

Figure 3. Environmental Study Limit Map



Temporary Stream Diversion

A temporary stream diversion will be required to isolate the work area from the live stream, which will likely be accomplished by diverting flows through the work area using temporary culvert(s) and/or a plastic lined ditch. It is anticipated a gravel berm, sandbags, k-rail, or combination of these would be placed with plastic sheeting upstream of the temporary detour area to divert the stream flows into a temporary pipe culvert(s) and/or plastic lined ditch. The temporary stream diversion would convey stream flows through the construction area and outlet downstream of the work area. If a gravel berm is used to divert stream flows, materials shall consist of clean river run gravel. Following construction, flows will be returned to the stream channel, while clean river run gravel may be left in the stream channel, provided it does not impede stream flow or fish passage, and conforms to the natural channel morphology. If any other materials are used to divert the stream flows, they shall be removed from the stream channel following construction.

Temporary Detour

The proposed culvert removal and bridge construction would require a temporary traffic detour upstream of the existing culvert during construction. The detour would likely consist of a single lane with flashing beacons and stop signs at each end of the detour, which would allow traffic to stop and proceed through the detour when clear.

The detour would either utilize a temporary bridge to span Fort Goff Creek or consist of temporary fill and culverts placed within the channel immediately upstream of the existing culvert. Temporary fill material placed within the stream channel will consist of clean river run gravel or streambed material approved by DFW.

Bridge Structure

The proposed single span bridge structure will measure 38 ft. wide by 60 ft. in length, which would provide a 12 ft. lane and 4 ft. shoulder in each direction (Figure 4). The proposed bridge structure will consist of a pre-cast bridge deck, two pre-cast bridge abutments, and four pre-cast wing walls. The proposed bridge deck will be supported by an abutment at each end, while wing walls would be placed upstream and downstream of each abutment. Six 24 inch (in.) diameter cast-in-drilled-hole (CIDH) piles will be utilized to secure each bridge abutment (Figure 5).

Stream Channel Restoration

Following the removal of the existing culvert and roadway fill material, approximately 200 ft. of stream channel within the project limits will be restored with input provided by DFW. The channel profile would be slightly adjusted to match the existing stream gradient, while the channel bottom would be reshaped and reinforced with new bed material within the limits of the existing culvert and for a short distance upstream and downstream. Fine sediment will be incorporated into the streambed material mix to fill voids and prevent stream flows from flowing sub-surface, resulting in a potential fish barrier. The stream banks will be reinforced with rock slope protection upstream and downstream of the proposed wing walls. The placement of rock will extend up the stream bank to approximately the 5-year water surface elevation (Figure 6).

Additional Roadway Improvements

This section of highway will be improved for a length of 720 feet in order to conform to the proposed bridge structure. Metal beam guardrail will be installed along the

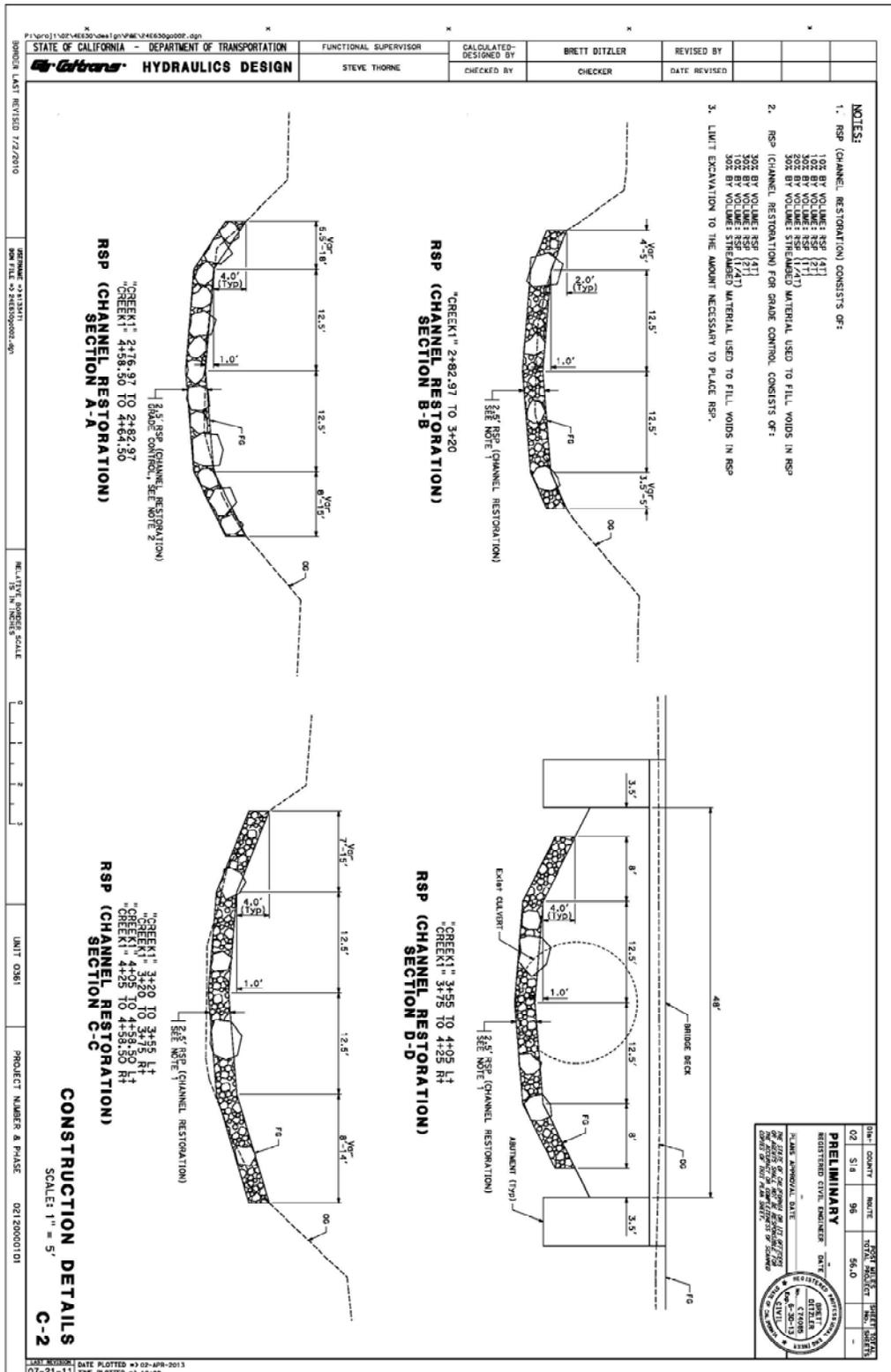


Figure 6. Channel Restoration Plan

roadway shoulders at each of the bridge approaches. The existing lanes will be widened from 11 ft. to 12 ft., while the existing roadway shoulders will be widened from approximately 1 ft. to 4 ft. The super-elevation will be adjusted and the roadway will be slightly realigned no more than 4 ft. to the north or south. The roadway widening and may require Caltrans to purchase additional right of way to the north along the west side of Fort Goff Creek. Caltrans is currently in the process of determining if additional right of way will actually be necessary. A clear recovery zone for errant vehicles will be provided along this section of highway, which would require tree removal adjacent to the highway.

Staging Areas and Stream Access

The campground parking area and existing wide pull-outs on each side of Fort Goff Creek will likely be used for the staging of equipment and materials. Staging areas will also include the existing pull-outs and roadway shoulders within the project limits. Temporary construction easements will be necessary to access the stream channel both upstream and downstream of the proposed work area, which will require a

Special Use Permit to be obtained from the USFS to access the stream channel downstream of the work area.

1.8. Permits and Approvals

Proposed work within Fort Goff Creek will require permits from DFW, U.S. Army Corps of Engineers (USACE), and Regional Water Quality Control Board (RWQCB). Proposed activities within and adjacent to Fort Goff Creek require consultation with NMFS pursuant to Section 7(a)(2) of the Endangered Species Act with regards to potential impacts to Southern Oregon/Northern California Coasts (SONCC) coho salmon Evolutionary Significant Unit (ESU) and its designated critical habitat. In addition, Wild and Scenic River concurrence has been obtained by USFS and a Special Use Permit will be obtained from the USFS.

The Fisheries Restoration Grant Program (FRGP) operates under USACE Regional General Permit (RGP) 12 (file number 2003-27922N), which was issued by the San Francisco District USACE in 2010 to allow DFW, grantees and other individuals and groups to conduct fishery habitat restoration activities using methods described in the "California Salmonid Stream Habitat Restoration Manual 4th edition" (Flosi et al. 2010) that have been evaluated by DFW biologists. NMFS and USFWS have issued biological opinions to address the impacts of the FRGP, which stipulate the conservation measures that shall be implemented to avoid and/or minimize impacts to listed species. The biological opinions have been incorporated in the USACE RGP 12 (USACE 2010), which address potential impacts to SONCC coho salmon.

The FRGP shall submit an annual application for a programmatic Section 401 Certificate to the State Water Resources Control Board. A description of project work and methods to prevent impacts on water quality shall be provided annually to the State Water Resources Control Board and to the North Coast RWQCB.

A Storm Water Pollution Prevention Plan (SWPPP) will be prepared and implemented in accordance with the National Pollutant Discharge Elimination System (NPDES). Caltrans will obtain a DFW Streambed Alteration Agreement, and a USFS Special Use permit prior to beginning construction.

Chapter 2. CEQA Environmental Checklist

02-SIS-96

56.0

02-4E6300

Dist.-Co.-Rte.

P.M/P.M.

E.A.

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included in the section following the CEQA checklist. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

I. AESTHETICS: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

II. AGRICULTURE AND FOREST

RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IV. BIOLOGICAL RESOURCES:

Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

V. CULTURAL RESOURCES: Would the project: Potentially Significant Impact Less Than Significant with Mitigation Less Than Significant Impact No Impact

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

d) Disturb any human remains, including those interred outside of formal cemeteries?

VI. GEOLOGY AND SOILS: Would the project: Potentially Significant Impact Less Than Significant with Mitigation Less Than Significant Impact No Impact

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning

Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| ii) Strong seismic ground shaking? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| iii) Seismic-related ground failure, including liquefaction? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| iv) Landslides? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Result in substantial soil erosion or the loss of topsoil? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

VII. GREENHOUSE GAS EMISSIONS:

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While Caltrans has included this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the body of the environmental document.

VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IX. HYDROLOGY AND WATER QUALITY: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
X. LAND USE AND PLANNING: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

XI. MINERAL RESOURCES: Would the project:

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

XII. NOISE: Would the project result in:

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

XIII. POPULATION AND HOUSING: Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

XIV. PUBLIC SERVICES:

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

XV. RECREATION:

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

XVI. TRANSPORTATION/TRAFFIC: Would the project:

- | | | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Result in inadequate emergency access? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:

- | | | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Comply with federal, state, and local statutes and regulations related to solid waste? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

- | | | | | |
|--|--------------------------|-------------------------------------|--------------------------|-------------------------------------|
| a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Chapter 3. Discussion of Environmental Impacts

3.1. Biological Resources

Threatened, Endangered or Proposed Species

There is potential at the project site for the presence of state and federally threatened SONCC coho salmon. Proposed activities within and adjacent to Fort Goff Creek have the potential to impact SONCC coho salmon and their designated critical habitat. As part of the funding received by DFW's FRGP, NMFS has issued a biological opinion, pursuant to Section 7 of the Endangered Species Act, which addresses potential impacts and stipulates appropriate conservation measures that will be implemented to avoid and/or minimize impacts to SONCC coho salmon and their designated critical habitat.

Proposed construction activities within Fort Goff Creek will take place during the summer/fall low flow period. A temporary stream diversion will be utilized to isolate the work area from the flowing stream. If a gravel berm is utilized in the temporary stream diversion or temporary detour, material placed within the stream channel will consist of clean river run gravel. Prior to the placement of the temporary stream diversion, fish will be excluded from the work area by placing fine mesh net or screen both upstream and downstream of the project site, while any fish and/or amphibians within the project limits will be captured and relocated to an appropriate location outside the project limits. Any pumps used for dewatering will have intakes fitted with fish screens meeting DFW and NMFS criteria to prevent entrainment or impingement of small fish and/or amphibians.

Conditions at the site preclude the design of a temporary stream diversion that would facilitate fish passage during construction. However, following construction the proposed project would improve passage for coho salmon, Chinook salmon, steelhead, Pacific lamprey (*Entospherius tridentatus*), Klamath River lamprey (*Entospherius similes*), and other native fish species. The proposed bridge would also provide a wildlife crossing corridor for other aquatic and terrestrial species. The proposed project will follow the guidelines for Salmonid Passage at Stream Crossings (NMFS 2001) and DFW Criteria for Fish Passage (Flosi et al. 2003). The proposed project would provide a long-term benefit to both anadromous salmonids and other fish and wildlife.

Riparian Vegetation

Riparian vegetation adjacent to streams and rivers provide a variety of important values to fish and wildlife species. Riparian trees provide canopy, which result in cooler water temperatures and retain high levels of dissolved oxygen. Riparian trees provide bank stabilization, large woody debris, leaf litter, and invertebrates. In addition, riparian areas can also act as wildlife corridors.

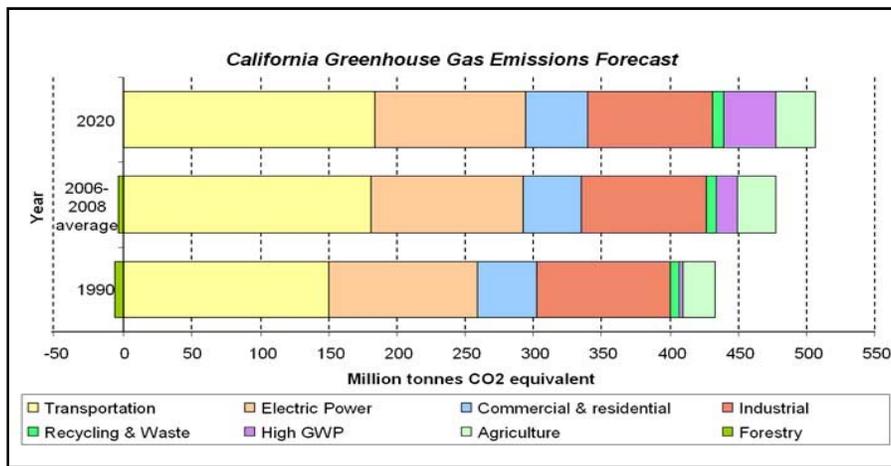
The proposed temporary detour and proposed construction activities adjacent to Fort Goff Creek is estimated to require the removal of approximately 40 white alder (*Alnus rhombifolia*), ranging in size from 2 in. to 10 in. diameter at breast height (dbh). Tree removal will be limited to the minimum extent necessary to construct the proposed project. Where possible, riparian vegetation anticipated to be removed will be trimmed or cut back rather than removed in an attempt to leave the root system intact. Following

construction, all disturbed stream banks will be replanted with native riparian species. The proposed project would improve the riparian corridor within the project site, since the bridge would allow the riparian on both sides of the highway to be contiguous.

3.2. Greenhouse Gas Emissions

An individual project does not generate enough greenhouse gas (GHG) emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may contribute to a potential impact through its *incremental* change in emissions when combined with the contribution of all other sources of GHG.¹ In assessing cumulative impacts, it must be determined if a project’s incremental effect is “cumulatively considerable” (CEQA Guidelines sections 15064(h)(1) and 15130). To make this determination the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult, if not impossible, task.

The AB 32 Scoping Plan mandated by AB 32 contains the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the Draft Scoping Plan, ARB released the GHG inventory for California (forecast last updated: October 28, 2010). The forecast is an estimate of the emissions expected to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the GHG inventory for 2006, 2007, and 2008.



Source:
<http://www.arb.ca.gov/cc/inventory/data/forecast.htm>

Figure 7. California Greenhouse Gas Forecast

¹ This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, Caltrans has created and is implementing the Climate Action Program at Caltrans that was published in December 2006.²

Project Analysis

The purpose of the proposed project is to improve fish passage on Fort Goff Creek by replacing a 15 ft. diameter culvert with a single span bridge. The proposed project will not increase capacity or vehicle miles travelled, therefore no increases in operational GHG emissions are anticipated.

Construction Emissions

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. Even though the project is not anticipated to increase operational GHG emissions, the proposed project would generate some GHG emissions during construction.

CEQA Conclusion

While construction will result in a slight increase in GHG emissions during construction, it is anticipated that the project will not result in any increase in operational GHG emissions. While it is Caltrans' determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct impact and its contribution on the cumulative scale to climate change. Caltrans is firmly committed to implementing measures to help reduce GHG emissions. These measures are outlined in the following section.

Greenhouse Gas Reduction Strategies

Project level GHG measures

Following construction, the project proposes planting riparian vegetation along Fort Goff Creek. Planting trees and other vegetation reduces surface warming, and through photosynthesis decreases carbon dioxide. It is currently estimated the proposed project will not require more than 120 working days to construct. During construction, the project will utilize a "stop and proceed when clear" type of temporary detour, which would eliminate traffic delays and long periods of traffic holding (idling). While

² Caltrans Climate Action Program is located at the following web address:
http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf

construction emissions of greenhouse gases are unavoidable, the proposed project is minor in scope. Construction utilizing mechanized equipment will be of short duration and the type of equipment used will be small in scale.

AB 32 Compliance

Caltrans continues to be actively involved on the Governor's Climate Action Team as ARB works to implement the Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the



Figure 8. Mobility Pyramid

targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a \$222 billion infrastructure improvement program to fortify the state's transportation system, education, housing, and waterways, including \$100.7 billion in transportation funding during the next decade. The Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in

GHG emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together are expected to reduce congestion. The Strategic Growth Plan relies on a complete systems approach to attain CO₂ reduction goals: systems monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as depicted in Figure 8.

Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high density housing along transit corridors. Caltrans works closely with local jurisdictions on planning activities, but does not have local land use planning authority. Caltrans assists efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; Caltrans is doing this by supporting on-going research efforts at universities, by supporting legislative efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important to note; however, that the control of the fuel economy standards is held by U.S.EPA and ARB.

Adaptation Strategies:

"Adaptation strategies" refer to how Caltrans and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds by longer periods of intense

heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

On November 14, 2008, former Governor Arnold Schwarzenegger signed EO S-13-08 which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea level rise.

Executive Order S-13-08 also directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level rise affecting safety, maintenance and operational improvements of the system, and economy of the state. The Department continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

The proposed project location is outside of the coastal zone and is not in an area expected to experience direct impacts due to sea level rise for the projected 2050 and 2100 years.

Currently, the Department is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change effects, the Department has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, the Department will be able review its current design standards to determine what changes, if any, may be warranted in order to protect the transportation system from sea level rise.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. The Department is an active participant in the efforts being conducted in response to EO S-13-08 and is mobilizing to be able to respond to the National Academy of Science Sea Level Rise Assessment Report.

3.3. Hydrology and Water Quality

The temporary stream diversion and reconstruction of the stream channel is anticipated to result in short-term increases in turbidity during channel dewatering, rewatering, and during the first major rain event following project completion. It is expected the majority of suspended fines will likely settle out within a few hours and prior to reaching the Klamath River. Some fines may reach the Klamath River, but this would not have an appreciable effect on background sediment levels in the river.

In accordance with the Caltrans Standard Specifications, the contractor will be required to submit a SWPPP. The SWPPP must be prepared in accordance with Caltrans' Storm Water Management Program and the Statewide Caltrans NPDES Permit issued by the State Water Resources Control Board. The SWPPP identifies potential sources of pollution and includes Caltrans' best management practices (BMPs) that will be

implemented to avoid and/or minimize potential sediment delivery or chemical contamination from entering Fort Goff Creek and/or Klamath River. Construction activities within the stream channel will take place during the summer and fall, when flows are at their lowest.

3.4. Noise

The project is located within a rural setting, approximately 4 miles west of the community of Seiad Valley. Existing noise receptors near the project limits include an adjacent campground and a couple of adjacent residences. The campground is seldom used and the parking area would be closed for staging of equipment and/or materials during the majority of proposed construction activities. Temporary increases in ambient noise levels will occur in the project vicinity during construction due to the operation of construction equipment. To avoid potential impacts to fisheries and the adjacent campground and residences, installation of pile casings will avoid the use of percussive pile driving activities.

Noise produced by construction equipment shall conform with Caltrans' 2010 Standard Specifications, Section 14-8.02. The noise level from proposed construction activities between 9:00 p.m. and 6:00 a.m. shall not exceed 86dBa (decibels) at a distance of 50'. The noise level requirement shall apply to the equipment on the job or related to the job, including but not limited to trucks, transit mixers or transient equipment that may or may not be owned by the Contractor. The use of loud signals shall be avoided in favor of light warnings, except those required by safety laws for the protection of personnel. All internal combustion engines used for any purpose on the job or related to the job, shall be equipped with the manufacturer recommended muffler. No internal combustion engine shall be operated on the project site without a muffler. In addition, personnel shall wear hearing protection while operating or working near equipment (producing noise levels greater than 84 db, including chainsaws, excavators, and backhoes).

Chapter 4. List of Preparers

This Initial study was prepared by the California Department of Transportation, North Region Office of Environmental Management, with input from the following staff:

Brett Ditzler, Project Engineer
Contribution: Project design

Tom Graves, Hazardous Waste Coordinator
Contribution: Initial Site Assessment for Hazardous Waste

Brian Humphrey, Environmental Coordinator / Biologist
Contribution: Document writer and review of biological studies

Tauni Melvin, Federal Lands Coordinator
Federal Agency Liaison and Right-of-Way coordination

Brenda Powell-Jones, Senior Environmental Planner
Contribution: Greenhouse Gas Emissions

Chris Quiney, Environmental Branch Chief
Contribution: Document preparation oversight

Steve Thorne, Senior Hydraulics Engineer
Contribution: Project Design

Brian Walsh, Project Archaeologist
Contribution: Cultural resource surveys, Native American coordination and Section 106 compliance

Chapter 5. **References**

- California Department of Fish and Game. 2004. Recovery strategy for California coho salmon. Report to the California Fish and Game Commission. 594pp.
- California Department of Transportation. 2010. Standard Specifications. State of California Department of Transportation. 1066pp.
- Flosi, G., S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 1998. California Salmonid Stream Habitat Restoration Manual, 3rd Edition. California Department of Fish and Game.
- _____. 2003. California Salmonid Stream Habitat Restoration Manual, 3rd Edition, Volume II, Part IX: Fish passage evaluation at stream crossings and Part XI: Riparian habitat restoration. California Department of Fish and Game.
- _____. 2010. California Salmonid Stream Habitat Restoration Manual, 4th Edition, Part XII: Fish passage design and implementation. California Department of Fish and Game.
- Flosi, G. and K. Carpio. 2012. Mitigated Negative Declaration for the 2013 Fisheries Restoration Grant Program. State of California The Resources Agency Department of Fish and Game.
- Kier Associates. 1999. Historical and current presence and absence of coho salmon, *Oncorhynchus kisutch*, in the Northern California portion of the Southern Oregon/Northern California coasts Evolutionary Significant Unit. Prepared for the U.S. Fisheries Department of Commerce, NOAA National Marine Fisheries Service, Southwest Fisheries Science Center, Service Order 40 ABNF-7-01479.
- Moyle, Peter B. 2002. Inland Fishes of California. University of California Press, Berkeley and Los Angeles, California. 502pp.
- National Marine Fisheries Service. 2001. Guidelines for salmonid passage at Stream Crossings. National Marine Fisheries Service, Southwest Region. 14pp.
- _____. 2001. Status review update for coho salmon (*Oncorhynchus kisutch*) from the central California coast and the California portion of the southern Oregon/northern California coasts Evolutionarily Significant Units. Southwest Fisheries Science Center, Santa Cruz Laboratory.
- _____. 2001. Water Drafting Specifications. National Marine Fisheries Service, Southwest Region. 3pp.

Soto, T. and M. Kleeman. 2011. Fish habitat assessment for three middle Klamath River tributaries- Cade Creek, Fort Goff Creek, Portuguese Creek. Prepared for U.S. Fish and Wildlife Service. Karuk Tribe. 24pp.

U.S. Army Corps of Engineers. 2010. Department of the Army Regional General Permit for the California Department of Fish and Game's Fisheries Restoration Grant Program (Corps File No.: 2003-279220N). San Francisco District, U.S. Army Corps of Engineers. 11pp.

Appendix A. Proposed Conservation Measures

The following conservation measures will be included in the project to avoid and/or minimize adverse impacts:

1. All construction activities within the live stream of Fort Goff Creek shall take place during the summer low flow period, which will be specified in the DFW 1602 Streambed Alteration Agreement.
2. The environmental construction liaison shall be notified at least two weeks prior to construction for direction of the placement of Environmental Sensitive Area (ESA) fencing. To prevent impacts to any cultural resources, ESA fencing will be placed between the roadway shoulder and the adjacent cemetery.
3. The DFW FRGP Grant Manager shall be notified a minimum of 5 working days prior to the placement of the temporary stream diversion, which will allow DFW to supervise the implementation of the water diversion plan and oversee the safe removal and relocation of salmonids, other fish life, and amphibians from the project area.
4. Prior to the placement of the temporary stream diversion, fish will be excluded from the work area by placing a fine mesh net or screen both upstream and downstream of the proposed temporary stream diversion. Mesh shall be no greater than 1/8 inch diameter, while the bottom edge of the net or screen shall be completely secured to the channel bed. Nets or screens shall be regularly checked and cleaned of debris.
5. Several days prior to the placement of the temporary stream diversion, fish and/or amphibian species will be captured and relocated by DFW personnel or designated agents. The following measures shall be implemented to minimize harm or mortality to captured fish or amphibian species:
 - Fish relocation shall take place during the low flow period, specified in the DFW 1602 Streambed Alteration Agreement.
 - All electro-fishing shall be performed by a qualified fisheries biologist and conducted according to the NMFS, Guidelines for Electro-fishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
 - Prior to capturing fish, the most appropriate release location shall be determined. Rescued fish shall be moved to the nearest appropriate site outside the project area, which include the following:
 - The water temperature shall be similar as the capture location.
 - There shall be ample habitat for the captured fish.
 - There shall be a low likelihood for the fish to re-enter the work site or become impinged on exclusion net or screen.
 - A record shall be maintained of all fish rescued and moved. The record shall include the date of capture, and relocation, the method of capture, the location of the relocation site in relation to the project site, and the number and species of fish captured and relocated. The record shall be provided to DFW within two weeks of the completion of the work season or project, whichever comes

- first. Caltrans shall provide fish relocation data to the DFW Grant Manager on a form provided by DFW.
- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the California Salmonid Stream Habitat Restoration Manual.
6. A temporary stream diversion will be utilized to isolate the work area from the flowing stream. Any equipment entering the active stream shall be preceded by an individual on foot to displace fish or amphibians and prevent them from being crushed. If a gravel berm is utilized in the stream diversion, material shall consist of clean river run gravel or streambed material approved by DFW. Following construction, clean river run gravel utilized in the temporary stream diversion or detour may be left in the stream channel, provided it does not impede stream flow or fish passage. The temporary stream diversion shall not dewater more than 500 ft. of Fort Goff Creek, while making every effort to minimize the length of stream to be dewatered.
 7. If a temporary traffic detour requires placement of fill within Fort Goff Creek, material placed within the channel will consist of clean river run gravel or streambed material approved by DFW.
 8. The contractor shall prepare a SWPPP, which will include Caltrans' BMPs that will be implemented to avoid and/or minimize potential sediment or chemical contamination from entering Fort Goff Creek and/or Klamath River.
 9. Any pumps used for dewatering shall have intakes fitted with fish screens meeting DFW and NMFS criteria to prevent entrainment or impingement of small fish or amphibians. Pump intakes shall be periodically checked for impingement of fish or amphibians, and shall be relocated outside the project area. Any turbid water pumped from the work site will be pumped to a portable tank, truck, or an adjacent upland area, making certain surface water will not be returned to Fort Goff Creek or the Klamath River.
 10. All equipment used in the implementation of this project shall be cleaned (i.e. free of dirt, grease, debris and material that may harbor noxious weeds and their seeds) prior to its arrival to the project site.
 11. Noise produced by construction equipment shall conform with Caltrans' 2010 Standard Specifications, Section 14-8.02. The noise level from proposed construction activities between 9:00 p.m. and 6:00 a.m. shall not exceed 86dBa (decibels) at a distance of 50 ft. The use of loud signals shall be avoided in favor of light warnings, except those required by safety laws for the protection of personnel. All internal combustion engines used for any purpose on the job or related to the job, shall be equipped with the manufacturer recommended muffler.
 12. To avoid potential impacts to fisheries and the adjacent campground and residences, installation of pile casings will avoid percussive pile driving activities.
 13. Vegetation removal will be limited to the minimum extent necessary to construct the proposed project. Chainsaws shall use vegetable-based bar oil when possible during the removal of riparian vegetation. Where possible, riparian vegetation will be cut back rather than removed in an attempt to leave the root system intact.

14. Staging areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the high water channel and associated riparian area of Fort Goff Creek. Stationary equipment such as motors, pumps, generators, compressors, and welders located within the dry portion of the stream channel or adjacent to Fort Goff Creek, will be positioned with drip pans. Vehicles will be moved out of the normal high water area of Fort Goff Creek prior to refueling and lubricating. Best management practices to reduce spills will be used during equipment refueling and other activities that may release petroleum products into the environment.
15. The project will follow the NMFS Guidelines for Salmonid Passage at Stream Crossings (NMFS 2001) and DFW Criteria for Fish Passage (as described in the Third Edition, Volume II, Part IX, February 2003, of the California Salmonid Stream Habitat Restoration Manual (Flosi. 2003). The engineered plans for the bridge installation shall be visually reviewed and authorized by NMFS or DFW engineers prior to commencement of work.
16. Following construction, all disturbed areas will be stabilized with mulch and/or erosion control seed mix.
17. Following construction, all disturbed stream banks will be replanted with native riparian species at a 2 to 1 replacement ratio. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.
18. Excavated material shall be stockpiled in areas where it cannot enter Fort Goff Creek.
19. If DFW determines that turbidity/siltation levels resulting from an activity or activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation shall cease until effective DFW approved sediment control devices are installed and/or abatement procedures are implemented.
20. Personnel shall wear hearing protection while operating or working near equipment (producing noise levels greater than 84 db, including chainsaws, excavators, and backhoes).

Appendix B. Public Comments and Responses

The following are comments received during the public comment period for the Initial Study and Caltrans' responses.

1. Comment: Does anyone care about the impacts this will have on the lives of the residents who live nearby, and those of us along the river?

Response: Caltrans is seeking input from the public, including local residents and other stakeholders in the community, early in the project development process regarding potential impacts or concerns that may result from the project. Caltrans will continue to work with the local residents, traveling public, and other stakeholders through the construction of the proposed project. A public meeting is currently scheduled for June 25, 2013 at the Seiad Valley Fire Department to discuss current and future Caltrans projects along State Route 96.

2. Comment: What about the impact this will have on the historical cemetery?

Response: Temporary fencing will be placed between the roadway and the cemetery during construction to prevent the cemetery from being impacted. The cemetery grounds will be designated as an "environmentally sensitive area" on the plan sheets and not accessible to the contractor for any purpose. In addition, access to the cemetery will be improved following construction.

3. Comment: What about the impact this will have on the campground? Many people use the campground during the recreation season. Campers, kayakers, and fisherman. The same time of year you intend to use it as a parking lot.

Response: The proposed project will not physically impact the campground facilities, but due to the proximity of the Fort Goff Campground, the campground will likely be closed to the public during construction for safety reasons. The campground is a walk-in campground with a total of 5 campsites and no water or garbage services. Based on usage and services provided, the U.S. Forest Service and Caltrans concurred the campground is not considered a significant publicly owned property. There are other U.S. Forest Service campgrounds located along the Klamath River within the vicinity of the Fort Goff Campground, which could be used by campers, kayakers, and fishermen. The Sarah Totten U.S. Forest Service campground is located approximately 15 miles to the east, while the Curly Jack U.S. Forest Service campground is located approximately 15 miles to the west. There is also river access at Portuguese Creek, located approximately 1 mile east. Following construction, the campground will be improved with wider roadway shoulders and a paved parking area.

4. Comment: What about the impact if removing the only public toilet and public pay phone within 5 miles?

Response: It is not uncommon for a public toilet and/or pay phone to be unavailable within a 5 segment of the state highway system. There s a pay phone located at the Seiad Store, which is located approximately 4 miles to the east. Happy Camp is located approximately 14 miles to the west, where public facilities, such as a public toilet and pay phone can be found.

5. Comment: Referring to the Fort Goff Creek Fish Passage Project document and Map ESL-1. Please advise what the green dash lines represent that extend from each wing of the proposed new bridge structure.

Response: The green dash lines on the map “ESL-1” represent the limits of fill material to be placed.

6. Comment: As the construction plan is currently laid out, all available parking space has been designated “staging area” for the contractor’s use with no provision for temporary cemetery parking in case of need.

Response: The existing cemetery pull-through access driveway will be kept open during construction. It should only have to be closed a couple of days during construction when the contractor is improving the driveway access. The contractor will be required to coordinate with the cemetery caretaker for the closure of the access driveway and/or any burial services planned during construction. The contractor may be required to temporarily suspend construction activities during burial services and provide adequate parking either onsite or off-site. There should be enough area onsite for the contractor to temporarily vacate a portion of the USFS campground parking area. Following construction, the existing pull-through cemetery driveway access will be improved by paving the western driveway approach.

7. Comment: The water source next to Fort Goff Creek consists of a 5000 gallon tank connected to a private water supply with a hydrant placed at a location accessible to fire trucks. The hydrant is close to the proposed detour and could easily be blocked during construction. We feel access to this water source is essential during the construction period, since this period corresponds with our primary fire season.

Response: Based on current information available it appears the water tank is located outside Caltrans right of way, while the private hydrant is located within Caltrans right of way. Caltrans has designed the temporary detour to avoid and provide access to the hydrant. During construction, the contractor will be required to provide access to the water source at all times.

INFORMATION HANDOUT

For Contract No. 02-4E6304

At 02-Sis-96-56.0

Identified by

Project ID 0212000010

MATERIALS INFORMATION

Final Hydraulic Report

State of California - Department of Transportation
Division of Engineering Services
Structure Hydraulics & Hydrology Branch

FINAL HYDRAULIC REPORT

Fort Goff Creek Bridge

Br. No. 02-0200

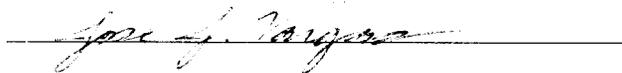
02 - SIS - 96 - PM 56.0

Located near Happy Camp, California

PROJECT DESCRIPTION:

Proposed Replacement of Existing Culvert with Bridge Structure
(EA 02-4E6301_EFIS: 02 12000010)

Prepared by:



Jose J. Vargas, P.E.
Transportation Engineer (Civil)
Structure Hydraulics & Hydrology Branch
May 17, 2013



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General Notes:

- 1) *Unless otherwise noted, elevations in this report are referenced to the North American Vertical Datum of 1988 (NAVD88).*
 - 2) *The estimated details for proposed bridge items (i.e. pile details, bridge deck cross-slope, bridge soffit elevations, etc.) are based on the proposed General Plan (GP) sheet for "Alternative 5" (dated 12/5/12).*
 - 3) *The assumed channel cross-sections at the upstream and downstream bridge faces (i.e. final thalweg elevations, "abutment catch elevations", etc.) are based on proposed channel profile information (dated 1/23/13) provided by North Region (District 2) Hydraulics Branch.*
 - 4) *The Caltrans Preliminary Hydraulic Report (dated 2/10/12) and Preliminary Drainage Report (dated 11/30/11) were used as references for this study. The reports are referenced as the 2012 PHR and 2011 PDR, respectively.*
-
-

DESCRIPTION OF PROJECT

It is proposed to remove an existing 15-foot diameter Corrugated Structural Steel Plate (CSSP) culvert and replace it with a new single-span structure, Fort Goff Creek Bridge (Br. No. 02-0200). In addition to the new bridge, the project will incorporate fish passage design details in the channel to facilitate fish migration upstream of the site. North Region (District 2) Hydraulics Branch has proposed a Rock Slope Protection (RSP) plan which will extend some distance upstream and downstream from the bridge. The proposed bridge site is located on State Route 96 between the towns of Happy Camp and Seiad Valley in Siskiyou County.

The existing CSSP culvert is roughly 65 feet in total length. Based on the proposed General Plan (GP) sheet for Alternative 5 (sheet dated 12/5/12), the proposed bridge design is a single-span, Pre-Cast (PC) / Pre-Stressed (PS), Voided Concrete Slab bridge with a (deck) structure depth of 2 feet-0 inches. The proposed bridge is roughly 60 feet in total length (distance along the new State Route centerline) and roughly 36 feet in total width (distance perpendicular to route centerline). The bridge will have a bridge skew of roughly 17-19 degrees.

Pile foundations are proposed for both abutments. Preliminary indications from the Caltrans Geotechnical Branch and Bridge Design Branch suggest local bedrock may be located at relatively shallow depths beneath the proposed bridge site. The proposed GP sheet indicates a single row of 24-inch diameter Cast-In-Drilled-Hole (CIDH) concrete piling (rock socket) at each abutment.

In December 2011, the North Region (District 2) Hydraulics Branch provided a Preliminary Drainage Report, PDR (dated 11/30/11) and a HEC-RAS (hydraulic) model. At that time, modifications to the District's HEC-RAS model were made to include the proposed bridge structure in order to evaluate the proposed hydraulic and scour conditions. The 2012 PHR was based on the 2011 PDR and (modified) HEC-RAS model.

For the 2013 Final Hydraulic Report (FHR) study, the original survey data provided by District 2 was used to create a new HEC-RAS model. The new HEC-RAS model includes additional cross-sections along the entire channel profile and is also "geo-referenced" (based on real-world coordinates).

PEAK DISCHARGES

Based on the 2011 PDR completed by North Region (District 2) Hydraulics Branch, the total watershed drainage area is roughly 13.0 square miles and the 50-year and 100-year frequency discharges are 3,708 cfs and 4,433 cfs, respectively. The discharges were determined using historical streamgage data from a nearby USGS gage (Indian Creek near Happy Camp, No. 11521500) for years ranging from 1912 to 2009 (58 years of record). The USGS Bulletin No. 17B method and basin transfer method (to account for differences in drainage areas) were used to estimate flows at the proposed bridge site.

It may be noted that there are two additional streamgage data records available (for water years 2010 and 2011) since the 2011 PDR discharges were determined. For comparison purposes, the estimated 50-year and 100-year frequency discharges using all available gage data (based on the PKFQWin (Version 5.2) software program available from the USGS) were roughly 3,500 cfs and 4,200 cfs, respectively. For hydraulic evaluation purposes, the more conservative (higher) peak discharges determined in the 2011 PDR were considered for this study.

WATER SURFACE ELEVATIONS

For the purpose of evaluating potential hydraulic impacts due directly to the proposed bridge project, existing and proposed conditions were evaluated using HEC-RAS (Version 4.1) hydraulic modeling software. The Hydrologic Engineering Center - River Analysis System (HEC-RAS) is a one-dimensional hydraulic analysis program developed by the U.S. Army Corps of Engineers (USACOE). A hydraulic model of the bridge site was created based on survey/geometric data provided by District 2, proposed bridge/channel design details, and other assumptions necessary to run the model.

Field survey data for the bridge site was provided by District 2 in CAiCE file format. The surveyed elevations were referenced to District 2 survey control points based on the NAVD88 vertical datum. The field survey data included a series of consecutive and representative cross-sections taken across the channel and floodplain areas within the study reach and also additional ground/feature points at the bridge site. For information purposes, the upstream and downstream survey limits extended roughly 420 feet and 270 feet away from State Highway 96, respectively.

Representative Manning's roughness coefficients ("n") for the hydraulic model were estimated to account for relative differences in roughness (due to surface/material/vegetation type, size, & density/etc.) for the areas located within each cross-section. Based on aerial photos of the site and engineering judgment, values of 0.044 for the main channel area and 0.064 were selected for the overbank/floodplain areas. For channel/bank areas located within the proposed RSP design plan limits, a value of 0.048 was used to simulate the slightly higher roughness factor of the RSP surface.

The hydraulic analysis considered the estimated discharges for Fort Goff Creek and backwater elevations for the Klamath River determined in the 2011 PDR. Due to the close proximity of the Klamath River to the bridge site, local hydraulic conditions based on backwater effects were also evaluated. Three hydraulic conditions were considered for this study: 1) Fort Goff Creek discharge only (*no backwater effects*), 2) coincidental Fort Goff Creek and Klamath River events (*Fort Goff Creek with backwater effects*), and 3) Klamath River backwater effects only (*no discharge assumed from Fort Goff*

Creek). For information purposes, the estimated 50-year and 100-year WSEL's determined in the 2011 PDR for the Klamath River were roughly 1,315.1 feet and 1,320.2 feet, respectively.

Based on the HEC-RAS model results for the first two hydraulic conditions evaluated, the calculated (maximum) 50-year and 100-year WSEL's at the proposed bridge site are 1,319.2 feet and 1,320.0 feet, respectively. However, the controlling case for the 100-year WSEL at the bridge site actually occurs with the third hydraulic condition considered, "Klamath River backwater effects only (*no discharge assumed from Fort Goff Creek*)". As noted above, the estimated 100-year WSEL for the Klamath River at the bridge location is roughly 1,320.2 feet. Therefore, the controlling 50-year and 100-year WSEL's for the proposed bridge site are 1,319.2 feet and 1,320.2 feet, respectively.

PEAK VELOCITY

For the hydraulic conditions evaluated, the calculated (water) velocities vary significantly along the study reach and within the bridge site. Within the proposed bridge limits, the hydraulic model estimated a local (water) peak velocity of roughly 16 feet per second (ft/sec).

DRIFT & FREEBOARD

There is limited information available for this bridge site regarding the general type, size, and/or quantity of drift in order to accurately estimate potential drift loading conditions for the proposed bridge. The 2011 PDR noted, "*Yreka Maintenance Superintendent Tim Fitzpatrick stated that in 1997, while the Klamath River was also high, trees and other debris blocked the culvert inlet. Fort Goff Creek overflowed the west bank upstream of Route 96, flowed along the shoulder and crossed the highway about 600 feet to the west.*"

When compared to existing conditions, the proposed single-span bridge will provide a significantly larger/wider waterway opening which would be expected to reduce the overall tendency of floating drift accumulation during most typical high-flow events. Based on the limited information available regarding potential drift size/quantity at this bridge site, 2.0 feet of freeboard for drift passage purposes was assumed for this site.

HISTORICAL FLOODS

The 2011 PDR noted some information regarding high flow events for Fort Goff Creek during 1955 and 1997 (*For the 1997 event notes, refer to previous section, "DRIFT & FREEBOARD"*). The 2011 PDR indicated that a 1955 highwater mark was noted in historical records for the existing culvert. However, the actual highwater mark was not located in the field in order to estimate a corresponding WSEL or highwater discharge for comparison purposes. No additional information was located at this time related to significant or historical floods for Fort Goff Creek.

MINIMUM BRIDGE SOFFIT ELEVATION

Assuming no other site-specific and/or regulatory requirements are applicable, the recommended minimum bridge soffit elevation for a new bridge structure is typically estimated as the highest local WSEL based on either the 50-year WSEL plus site-specific freeboard, the 100-year WSEL (no additional freeboard provided), or the flood of record (historical highwater). Based on this general criteria, the reported 50-year WSEL (plus assumed freeboard of 2.0 feet) and the 100-year WSEL (no freeboard) are 1,321.2 feet and 1,320.2 feet, respectively.

The reported 50-year WSEL plus freeboard criteria would appear to control the recommended minimum bridge soffit elevation. However, the reported maximum 50-year WSEL for the entire bridge site occurs at the upstream face of the proposed bridge and the minimum bridge soffit elevation occurs at the downstream face (at the southwest corner of the bridge) - *Refer to Page 13, FIGURE 3B - HEC-RAS Model "Profile Plot" Close-Up View of Bridge (Proposed Conditions)*. Based on the proposed GP details, localized freeboard available at the upstream and downstream bridge face locations (for the 50-year frequency discharge) is roughly 3.9 feet and 4.8 feet, respectively. Therefore, provided that the currently-proposed bridge design does not change significantly, the recommended minimum bridge soffit elevation for the bridge site is 1,320.2 feet.

It should be noted that the recommended minimum bridge soffit elevation for the proposed bridge site is controlled by the Klamath River. Due to the close proximity of the bridge site to the Klamath River, the backwater from the Klamath River controls the locally-observed WSEL at the bridge site. Even with no discharge flowing downstream from Fort Goff Creek, the localized backwater effects of the Klamath River (100-year frequency discharge) could raise the local WSEL at the bridge site to roughly 1,320.2 feet.

POTENTIAL SCOUR

Potential scour for the proposed bridge site was evaluated based on the Hydraulic Engineering Circular No. 18 (HEC-18) Manual, "*Evaluating Scour at Bridges*" (5th Edition, April 2012). Total scour at a highway (bridge) crossing generally consists of three main components: general/contraction scour, local scour at piers/abutments, and long-term channelbed degradation. Potential lateral stream/thalweg migration to the pier/abutment locations is also assessed as part of the scour analysis procedure.

The selected hydraulic conditions for Fort Goff Creek were evaluated using the HEC-RAS model in order to estimate maximum potential scour depths and provide final foundation design recommendations. Both the 50-year and 100-year discharges were evaluated, assuming cases with and without backwater effects from the Klamath River. For scour assessment purposes, the estimated local/contraction scour and degradation depths conservatively assume fully-scourable material.

General / Contraction Scour

Based on HEC-RAS model results for the hydraulic conditions evaluated, the maximum contraction scour (depth) at the proposed bridge site is roughly 1.0 foot.

Local Scour - Abutments

The proposed GP sheet indicates a single row of multiple 24-inch diameter CIDH piles (rock sockets) at each abutment. For local scour evaluation purposes, the rows of CIDH piles were assumed to be generally aligned in the direction of flow (no hydraulic skew) and the bottom of abutment pile cap was generally assumed to be roughly 2 feet below the local ground elevation. During a significant scour event (or multiple events) at the bridge site, local abutment scour may eventually cause the bottom of the abutment pile cap to become exposed and subsequent localized scour would then continue at the piles. Based on this assumption, the piles were modeled as local pier scour (versus local abutment scour).

The HEC-RAS software includes a “Hydraulic Design - Bridge Scour” component which uses direct hydraulic results from the HEC-RAS model to provide scour estimates. Based on spill-through type abutments, the proposed bridge foundation details, and other current assumptions, the potential local pier scour (depth) is estimated as 6.0 feet for either abutment location.

Reference elevations for the assumed minimum “abutment catch elevation” (i.e. the local ground elevation at the abutment face) and thalweg elevation were estimated from the HEC-RAS model and other information provided by North Region (District 2) Hydraulics Branch. The referenced elevations used to estimate the reported scour elevations should be verified and/or updated since the proposed channel/ground elevations may change as the bridge design progresses.

LONG-TERM CHANNELBED CHANGES

Channelbed Degradation

The existing culvert has essentially controlled and maintained the current horizontal and vertical position of the “channel” at this waterway crossing location. Once the culvert is removed and replaced with a new bridge waterway opening and a more "natural" channel bottom (removing these “controls/restrictions”), there is some potential for both horizontal (lateral) and/or vertical changes to occur. Potential long-term changes (either natural or man-made) may include channelbed elevation changes (i.e. aggradation or degradation), effects due to lateral thalweg migration, channel meandering, and/or upstream headcut migration.

There is currently insufficient historical and site-specific information available to accurately forecast long-term (vertical) channelbed trends at the proposed bridge site. Considering the relatively steep longitudinal channel slopes and high water velocities calculated within the proposed main channel (thalweg) area, long-term channelbed changes may include some unknown amount of degradation. For foundation design recommendations, potential long-term degradation (depth) is conservatively assumed as 3.0 feet for a 75-year bridge design period. Long-term degradation is considered additional and independent of local scour.

Lateral Thalweg Migration

In general, long-term channelbed and lateral migration stability is a complex and dynamic process which may involve many site-specific (either natural and/or man-made) factors. Accurately forecasting long-term channelbed changes at this bridge site is difficult due to many unknown and/or unpredictable variables. Many site-specific factors at this bridge site may directly or indirectly influence both future channelbed and lateral migration trends in the future.

For long-term foundation design recommendations, potential full lateral thalweg migration to either abutment location was conservatively assumed. In the event that significant lateral thalweg migration toward the abutments does become an issue in the future, it may be a relatively gradual process that would likely allow adequate time to detect (during scheduled bridge inspections or other site visits) and address any concerns as required.

Based on the proposed channel profile information (sheet dated 1/23/13) provided by North Region (District 2) Hydraulics Branch, the proposed "final" thalweg elevation at the downstream face of the bridge is roughly 1,307.8 feet. If the final thalweg elevation has been since revised, the most current downstream thalweg elevation at the bridge site should be used as the reference elevation in order to estimate final scour elevations.

ADDITIONAL CONSIDERATIONS

RSP Scour Countermeasures

The project includes RSP-based channel and bank slope protection at the bridge site and some distance upstream and downstream of the bridge. Properly-designed and maintained RSP-based scour countermeasures may provide several hydraulic-related benefits at the proposed bridge site. The scour countermeasures may help minimize potential localized scour effects and other damage (i.e. washout, erosion, etc.) to the abutment embankments and roadway approaches during high-flow events and may also reduce the overall risk of full lateral thalweg migration to either abutment location. Additionally, RSP protection in the channelbed may help decrease localized contraction scour and long-term degradation effects.

Provided that the RSP scour countermeasure system remains in place and effective, it will provide some level of localized protection against scour and degradation in areas directly protected by the RSP. However, typical "loose" RSP is considered flexible and may be expected to move and settle over time and/or be washed downstream during higher flow events. In order to maintain the overall effectiveness of loose RSP as a long-term scour countermeasure (assuming a typical 75-year bridge design period), periodic inspection, maintenance (i.e. periodic replenishment of RSP), and other necessary repairs are required. If localized scour and degradation in the main channel area does become significant in the future (for any reason), some potential de-stabilization/failure of the designed RSP system may occur through the loss of lateral soil support, exposure and/or undermining of the slope toe, and other related factors.

Fish Passage Design

The proposed project incorporates fish passage design details and involves many State and Federal agencies, including the California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), and the National Oceanic and Atmospheric Administration - National Marine Fisheries Service (NOAA-NMFS). Due to the sensitive fish passage/environmental aspect of the project and potential agreements with other agencies involved, it is possible that future site access and/or any work in or around the channel (or at certain locations) may be restricted or entirely prohibited once the bridge construction is complete. If the proposed RSP scour countermeasure is not periodically inspected and adequately maintained/repared in the future (for any reason), the overall reliability and long-term effectiveness/service life of the RSP scour countermeasure will diminish over time and may eventually provide little or no scour protection.

Caltrans Geotechnical Branch Recommendations

The Caltrans Geotechnical Branch should be consulted regarding any site-specific geotechnical considerations which may potentially impact the structure foundation design. Geotechnical studies and recommendations may better indicate whether there are any local geotechnical features or conditions (i.e. competent bedrock outcroppings, "scour resistant" layers of material, soil material characteristics/composition/location/etc.) which may affect or limit the estimated scour/degradation depths provided in the report and/or which may affect the overall risk of potential abutment foundation exposure due to long-term lateral thalweg migration to the abutments.

SUMMARY INFORMATION FOR THE BRIDGE DESIGNER

NOTE: Unless otherwise specified, elevations in this report are referenced to the North American Vertical Datum of 1988 (NAVD88).

Total Scour and Degradation Summary Table

Description	Depth (feet)	Estimated Elevation (feet)
Assumed minimum "abutment catch elevation" <i>(i.e. minimum local ground elevation at abutment face)</i>	--	1,316.0
Potential long-term degradation	3.0	1,313.0
Potential contraction scour	1.0	1,312.0
Potential local abutment scour (either abutment)	6.0	1,306.0
Proposed thalweg elevation <i>(at downstream bridge face)</i>	--	1,307.8
Thalweg elevation with long-term degradation	--	1,304.8
Thalweg elevation with degradation & contraction scour	--	1,303.8

NOTES:

- (1) Estimated ground elevations for the "abutment catch elevations" were obtained from the HEC-RAS model. Estimated thalweg elevation based on proposed channel profile information (dated 1/23/13) provided by North Region (District 2) Hydraulics Branch. The most updated proposed thalweg/ground/channel elevations should be used to estimate final scour/degradation elevations.
- (2) Estimated scour and degradation depths conservatively assume fully-scourable material (no RSP protection is assumed) and consider a typical 75-year bridge design period. Potential lateral thalweg migration to either abutment location was conservatively assumed.

- Local peak (water) velocity at bridge *(within the bridge limits)* = 16 ft/sec
- Assumed bridge freeboard of 2.0 feet for potential drift loading conditions
- **Recommended minimum bridge soffit elevation = 1,320.2 feet**
- **For foundation design recommendations, the controlling long-term scour/degradation elevation at either abutment location is roughly 1,303.8 feet.**

SUMMARY INFORMATION FOR THE BRIDGE DESIGNER (continued)

Hydrologic / Hydraulic Summary			
Total Drainage Basin Area: 13.0 square miles			
	Design Flood	Base Flood	Overtopping Flood
Frequency, years	50	100	N/A
Discharge, cfs	3,708	4,433	N/A
Water Surface Elevation at Bridge, feet	1,319.2 *	1,320.2 **	N/A
Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation.			

N/A = Not Applicable or Not Available

* Calculated WSEL at the upstream face of proposed bridge.

** The 100-year WSEL for the bridge site is based on the estimated 100-year WSEL for the Klamath River and represents the case of "backwater effects only" (i.e. no discharge from Fort Goff Creek).

LIST OF ACRONYMS USED IN THE REPORT

BB	Beginning of Bridge
CAiCE	Computer-Aided Civil Engineering (<i>software program</i>)
Caltrans	California Department of Transportation
CDFW	California Department of Fish & Wildlife
cfs	cubic feet per second
CIDH	Cast-In-Drilled-Hole (Pile)
CSSP	Corrugated Structural Steel Plate
DHIPP	Digital Highway Inventory Photography Program (Caltrans)
EB	End of Bridge
FHR	Final Hydraulic Report
GP	General Plan
HEC-18	Hydraulic Engineering Circular No. 18 “ <i>Evaluating Scour at Bridges</i> ”
HEC-RAS	Hydrologic Engineering Center - River Analysis System (<i>software program</i>)
NAVD88	North American Vertical Datum of 1988
NOAA-NMFS	National Oceanic and Atmospheric Administration - National Marine Fisheries Service
PC	Pre-Cast (Concrete)
PDR	Preliminary Drainage Report
PHR	Preliminary Hydraulic Report
PS	Pre-Stressed (Concrete)
RSP	Rock Slope Protection
USACOE	United States Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WSEL	Water Surface Elevation

REFERENCES

- 1) **California Department of Transportation (Caltrans)**
Bridge Inspection Reports (BIR's), Supplemental Bridge Reports (SBR's), Bridge File, As-Built Plans, Site Photos, Digital Highway Inventory Photography Program (DHIPP) - aerial photos
 - Preliminary Hydraulic Report (PHR) *(dated 2/10/12) - also referenced as the 2012 PHR*
 - Final Hydraulic Report (FHR) request letter from Bridge Design Branch 7 *(dated 12/6/12)*
 - Proposed General Plan (GP) sheet for "Alternative 5" *(dated 12/5/12)*

- 2) **Caltrans North Region (District 2) Hydraulics Branch**
 - Preliminary Drainage Report, PDR *(dated 11/30/11) - also referenced as the 2011 PDR*
 - Proposed channel profile information *(dated 1/23/13)*

- 3) **Additional References:**
 - Google (search engine) *<http://www.google.com/>*
 - Google Maps *<http://maps.google.com/>*
 - Google Earth (Version 7.0) *<http://www.google.com/earth>*

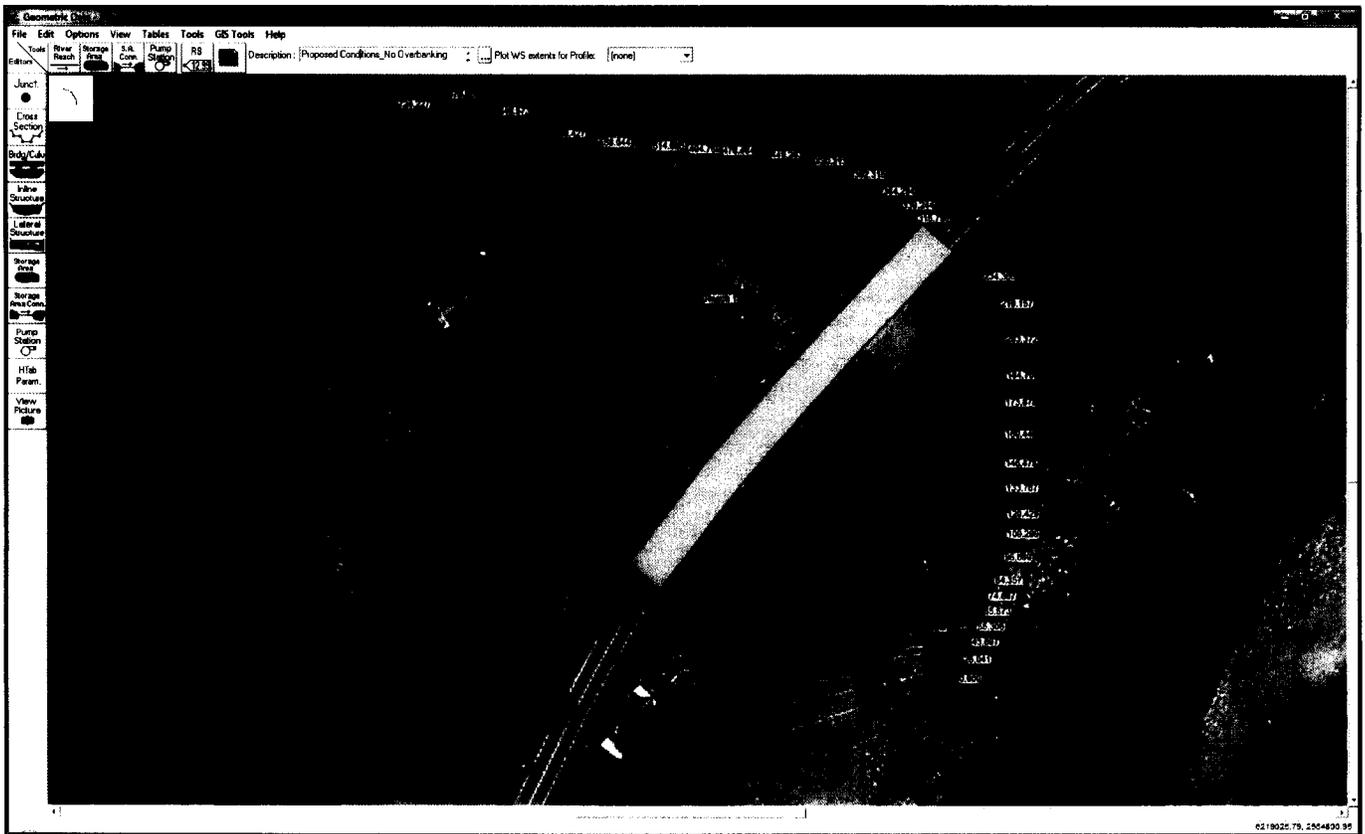


FIGURE 1 - HEC-RAS Model Schematic of Fort Goff Creek (Aerial Image Source: Caltrans DHIPP)

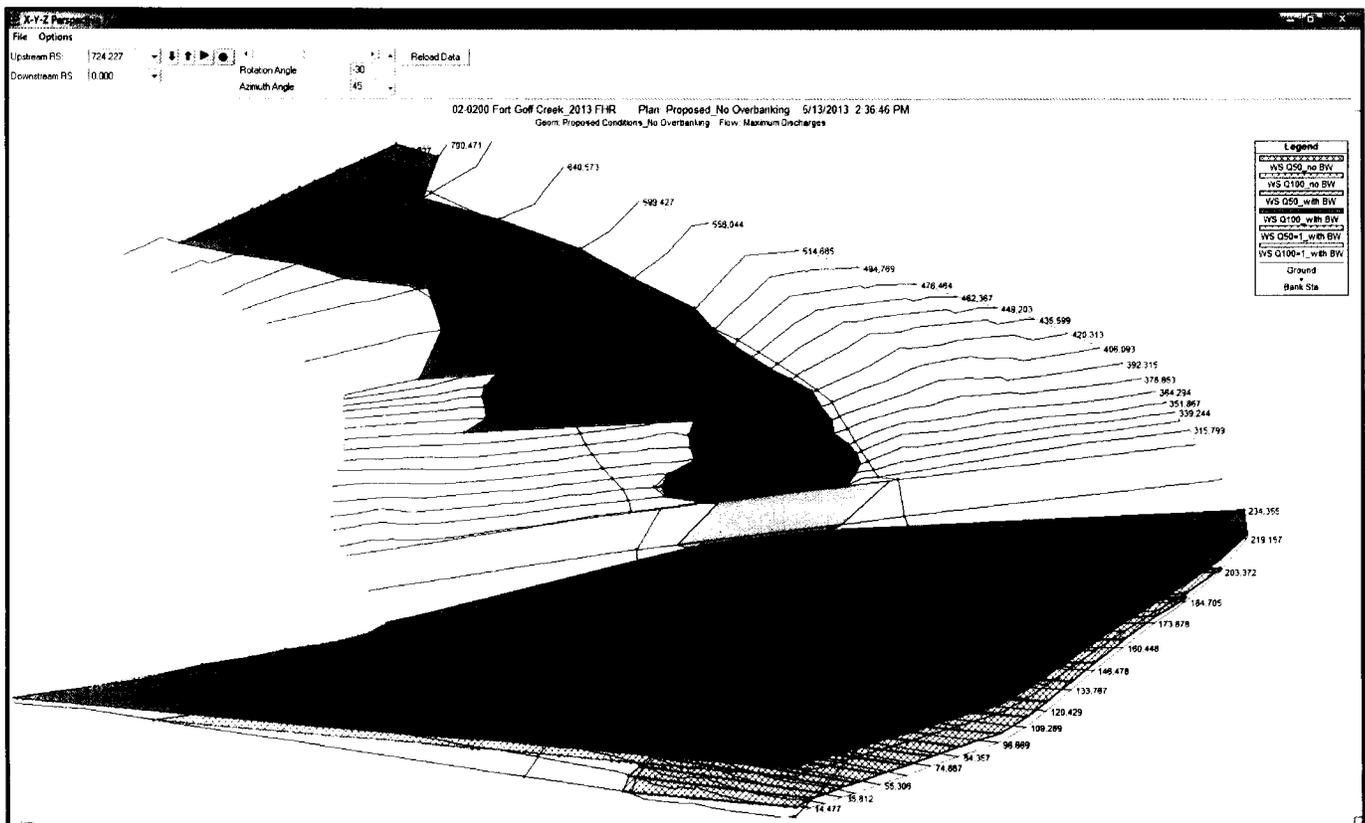


FIGURE 2 - HEC-RAS Model "X-Y-Z Perspective Plot" (Looking Upstream, U/S)

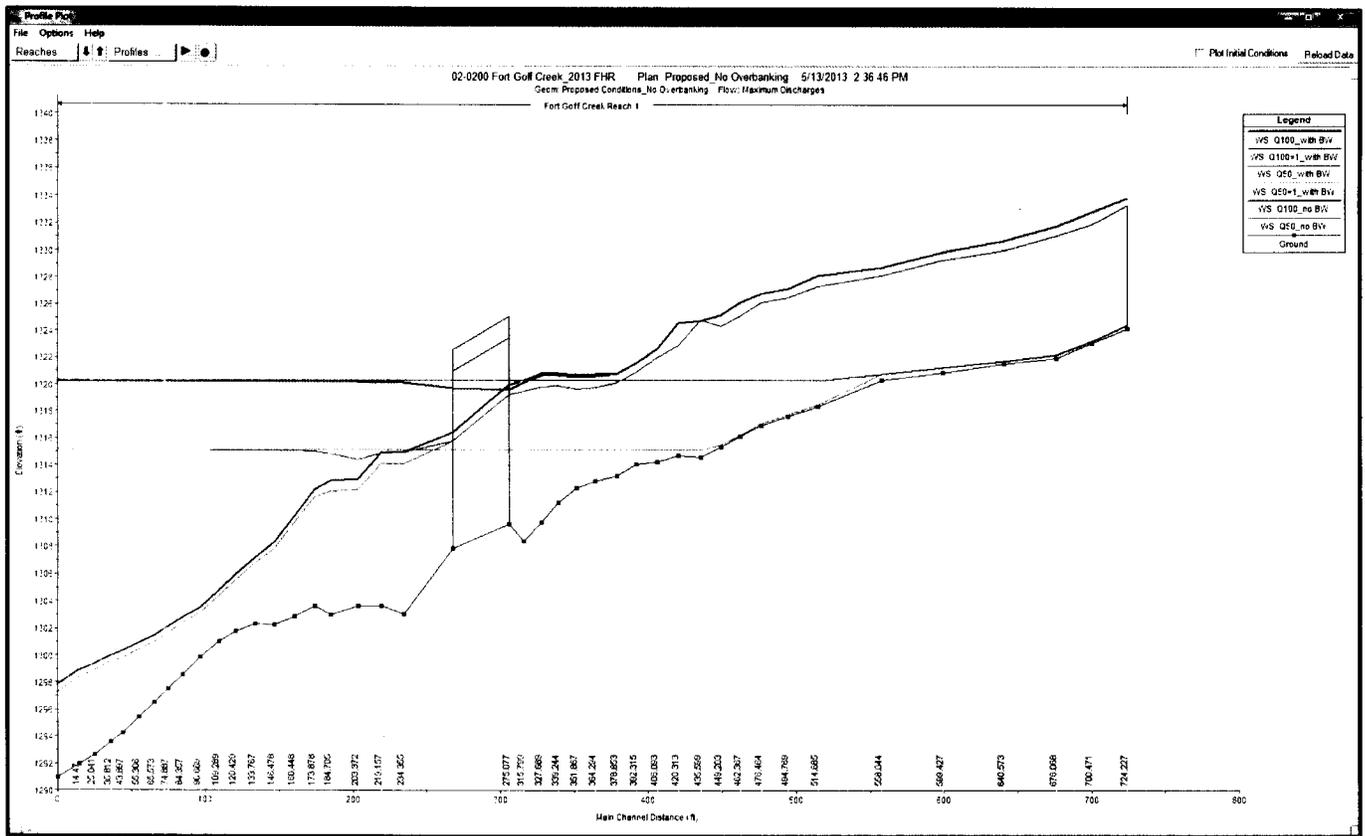


FIGURE 3A - HEC-RAS Model (Longitudinal) "Profile Plot" (Proposed Conditions)

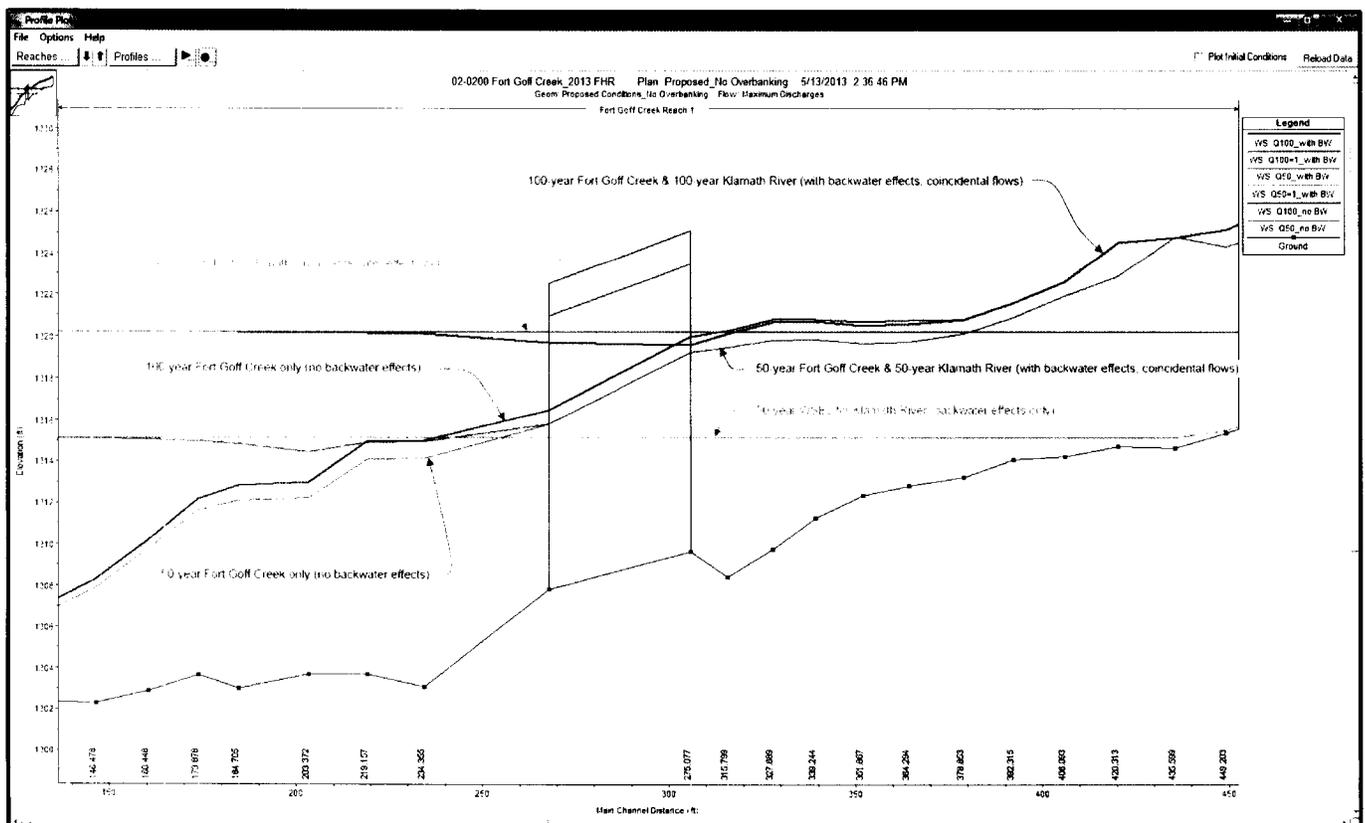


FIGURE 3B - HEC-RAS Model "Profile Plot" Close-Up View of Bridge (Proposed Conditions)

INFORMATION HANDOUT

For Contract No. 02-4E6304

At 02-Sis-96-56.0

Identified by

Project ID 0212000010

MATERIALS INFORMATION

Revised Foundation Report

Memorandum

*Flex your power!
Be energy efficient!*

To: KELLY HOLDEN
Branch Chief
Bridge Design Branch 7
Office of Bridge Design South
**DIVISION OF ENGINEERING SERVICES,
STRUCTURE DESIGN**

Date: June 4, 2013

File: 02-SIS-96-PM 56.0
EA: 02-4E630
EFIS: 0212000010
Fort Goff Creek Br.(New)
Br. No. 02-0200

Attention: Mario Guadamuz

From: **DEPARTMENT OF TRANSPORTATION**
Division of Engineering Services
Geotechnical Services – MS 5
Office of Geotechnical Design – North

Subject: Revised Foundation Report (FR) for Fort Goff Creek Bridge (New)

Scope of work

This revised report supersedes the Foundation Report (FR) dated May 30, 2013, for Fort Goff Creek Bridge (02-0200). This revision/update is necessary in order to incorporate the changes presented in the final Hydraulic Report (HR) dated May 17, 2013.

The Office of Geotechnical Design North (OGD-N) presents this Foundation Report (FR) for the proposed new Fort Goff Creek Bridge located on State Route (SR) 96 in Siskiyou County. It is response to your request in a memo dated December 6, 2012. This report is based on a site reconnaissance conducted on October 19, 2011, and on a subsurface investigation performed by OGD-N in December 2011. The project proposes to replace the existing steel culvert with a single span bridge structure on similar grade.

In December 2011, two rotary soil borings were drilled at the proposed new bridge site. The foundation recommendations presented in this report are based on the subsurface data generated during this field investigation and on a review of other pertinent documents that are listed in the Reference section of this report.

Project Description

The subject project site is located on SR 96 approximately 4 miles west of Seiad Valley. The roadway at the site is carried over a 65-foot long by 16 foot-diameter steel culvert. The culvert consists of Corrugated Structural Steel Plate (CSSP) which is covered by earth and asphalt concrete travel way. According to the Typical Cross Sections from Hydraulics dated July 7, 2010, the existing culvert is placed on the creek bed at elevation 1,306.52 feet at the upstream edge and at elevation 1,305.01 feet at the downstream edge.

According to the Summary of Type Selection Meeting dated March 9, 2012, the current project is "officially a Fish Restoration Project." The project proposes to replace the existing steel culvert with a single-span bridge.

According to the draft project General Plan (GP) dated January 31, 2013, the new bridge will be a 60-foot long and 36-foot wide roadway that will carry two lanes for east and west traffic on SR 96. The new bridge will facilitate easy passage of fish up and downstream in Fort Goff Creek.

The proposed bridge will consist of a pre-cast/pre-stressed (PC/PS) voided concrete slab on short seat abutments supported by 24-inch Cast-in-Drilled-Hole (CIDH)/Drilled Shaft concrete pile foundations (Rock Sockets).

At the proposed new bridge location Fort Goff Creek flows through a rugged valley on a hillside and empties into the Klamath River approximately 250 feet south of the existing bridge. The creek channel and the immediate banks are covered by cobbles and boulders. Rock slope protection has been placed around the edges of the culvert. The banks are forested and have thick undergrowth. The creek was about 1-2 feet deep and was fast flowing during the field exploration in December, 2011.

Field Investigation and Testing Program

The Office of Geotechnical Design-North conducted an on-site foundation investigation program in December 2011 for the proposed new bridge. The program consisted of surface and subsurface field exploration including drilling, sampling and testing of the foundation material. One mud rotary soil/rock boring was drilled for each of the proposed abutments. Boring RC-11-001 was drilled for Abutment 1 and Boring RC-11-002 for Abutment 2.

The mud rotary borings were advanced using a self-casing wireline drilling method. The maximum depth attained during the December 2011 subsurface investigation was approximately 51 feet. Standard Penetration Tests (SPTs) were performed for the upper part of the borings but were aborted when rock coring commenced. Selected soil and rock samples were collected for testing in the Caltrans soils laboratory. Tests were performed on samples for corrosion, unconfined compression and for point load strength index. Results of the laboratory tests referred to above are attached to this report.

A temporary piezometer was installed in Boring RC-11-001 for groundwater level measurements. Table 1 below presents a summary of the borings drilled during the subsurface investigation completed in December 2011.

Table 1: 2011 Subsurface Exploration Summary for the Fort Goff Creek Bridge (Br. No. 02-0200)

Boring No.	Completion Date	Drill Rig Type	Hammer Type	Hammer Efficiency (%)	Approx. Ground Surface Elevation (ft)	Boring Depth (ft)
RC-11-001	11/30/2011	Acker MPCA	Automatic	80	1323	49
RC-11-002	12/1/2011	Acker MPCA	Automatic	80	1324	51

The boring data, including laboratory results for the selected soil and rock samples, will be provided on the Log of Test Borings (LOTB) for this project.

Site Geology and Subsurface Conditions

The project site is located within the Klamath Mountains geomorphic province of California (Norris and Webb 2nd Edition). According to the Geologic Map of the Weed Quadrangle (Wagner and Saucedo, 1987) the site lies within the Western Paleozoic and Triassic Belt (MzPz) of the Klamath Mountains.

The Western Paleozoic and Triassic Belt (MzPz) is comprised of an assemblage of diverse rock types ranging from Paleozoic to mostly Mesozoic age. According to the Weed Quadrangle (Wagner and Saucedo, 1987), the project site is within a unit mapped as "sch" (amphibolite and greenschist), which is part of the MzPz belt. The Weed Quadrangle map (referenced above) shows a general east-west trending thrust fault (inactive per Caltrans criteria: Martha Merriam, electronic mail communication, February 24, 2012) approximately 0.5 miles to the north of the proposed bridge site.

The subsurface soil/rock encountered during this foundation investigation consists of stream alluvium comprised of gravels, cobbles and boulders in a sand and silt matrix. The alluvium overlies a bedrock of greenschist and quartz.

The soil/rock layers encountered can be generalized as follows:

1. A 10 to 12 feet upper layer of loose to very dense sandy and silty gravels with cobbles (from approximate original ground elevation of 1323 feet to an approximate elevation of 1313 feet in Boring RC-11-001, and from an approximate ground elevation of 1324 feet to an approximate elevation of 1312 feet in Boring RC-11-002).
2. Next is a very dense layer consisting of 60 to 75 % cobbles and boulders with interstitial gravels and sand, which extends approximately from elevation 1313 feet to an approximate elevation of 1297 feet in Boring RC-11-001, and from an approximate elevation of 1312 feet to an approximate elevation of 1293 feet in Boring RC-11-002. Cobbles of up to 1 foot and boulders of up to 3 feet in diameter were intersected during drilling. The cobbles and boulders consist mostly of amphibolite, gabbro and greenschist clasts.

3. Below the alluvial layers described above, is the bedrock consisting of metamorphic rock (greenschist and greenschist and quartz), which was encountered at an approximate elevation of 1297 feet and extends approximately to elevation 1274 feet, which is the maximum depth explored in Boring RC-11-001. In Boring RC-11-002, bedrock was encountered at an approximate of elevation 1293 feet and extends to the maximum depth explored at elevation 1273 feet.

In general, the greenschist bedrock is dark greenish gray, foliated, moderately to slightly weathered, moderately hard to hard and intensely to moderately fractured.

Groundwater

Groundwater was measured at elevation 1308.0 feet in January 2012 in the piezometer installed in Boring RC-11-001.

Scour Evaluation

Detail analysis and conclusion of the scour regime at the proposed new Fort Goff Bridge site are presented in the Final Hydraulic Report (HR) dated May 17, 2013 for this project. Regarding lateral thalweg migration, the HR states, "For long-term foundation design considerations, potential full lateral thalweg migration to either abutment location is conservatively assumed." The HR concludes that at the downward face of the bridge, the "final" thalweg elevation is roughly 1,307.8 feet.

In general, the HR summarizes the scour for the new bridge as follows:

- Maximum potential contraction scour depth is 1 foot for the hydraulic conditions evaluated.
- Potential long-term channel degradation of 3 ft is predicted for the 75-year bridge design period.
- Long-term degradation is considered additional and independent of local scour.
- The potential local pier scour depth 6 feet for either abutments.
- The design flood (Q 50 years) estimated elevation is 1319.2 feet and the base flood (Q 100 years) elevation is 1320.2 ft.

Table 2 below presents a summary of local and degradation scour for the site of the new bridge based on the HR of May 17, 2013.

Table 2: Total Scour and Degradation Summary

Description	Depth (feet)	Estimated Elevation (feet)
Assumed minimum "abutment catch elevation" (i.e. minimum local ground elevation at abutment)	--	1,316.0
Potential long-term degradation	3.0	1,313.0
Potential contraction Scour	1.0	1,312.0
Potential local abutment scour (either abutment)	6.0	1,306.0
Proposed thalweg elevation (at downstream bridge face)	--	1,307.8
Thalweg elevation with long-term degradation	--	1,304.8
Thalweg elevation with degradation & contraction scour		1,303.8

The HR concludes that “ for foundation design recommendations, the controlling long-term scour/degradation elevation at either abutment location is roughly 1,303.8 feet.”

This assumed long-term degradation scour elevation corresponds to a depth of 19.2 feet at Abutment 1 and 20.10 feet for Abutment 2 of the proposed new bridge.

Table 3 below provides the scour data for the proposed new Fort Goff Creek Bridge (Br. No. 02-0200), based on the PHR of February 10, 2012.

Table 3: Scour Data (Br. No. 02-0200)

Support No.	Long Term (Degradation and Contraction) Scour Elevation (ft)	Short Term (Local) Scour Depth (ft)
Abut 1	1,303.8	6.0 (elevation 1306.0)
Abut 2	1,303.8	6.0 (elevation 1306.0)

Corrosion Evaluation

Caltrans considers a site to be corrosive to foundation elements if one or more of the following conditions exist(s) for the representative soil and/or water samples taken at the site:

Chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater, or the pH is 5.5 or less.

Table 4 below shows laboratory results for soil samples collected during the foundation investigations conducted in December 2011 for this project and analyzed for corrosion.

Table 4: Corrosion Test Summary Report

SIC Number (TL101)	Sample Location (Boring Number)	Sample Type	Sample Depth (ft)	Minimum Resistivity (ohm-cm)	pH	Chloride Content (ppm)	Sulfate Content (ppm)
C4698512	RC-11-001 (Abut 1)	Soil	1.9-5.0	6969	7.30	-	-
C4698513	RC-11-002 (Abut 2)	Soil	0-3.5	9754	7.43	-	-

Based on these corrosion results, the native soil beneath the proposed new Fort Goff Creek Bridge site is non-corrosive to foundation elements per Caltrans standards.

Seismic Recommendations

Based on the Caltrans ARS Online Tool (Version 2.0.5), the nearest active fault for the site is the Cascadia Subduction Zone (Fault ID No. 5) with MMax of 8.3. The fault is located west of the bridge site. The closest distance the fault rupture plane from the bridge site is approximately 65 miles.

Based on the Log of Test Borings developed from the subsurface investigation performed in December 2011 for the proposed new bridge, a V_{S30} (the weighted shear wave velocity for the top 100 feet of foundation materials) of 1120 feet per second is considered to be applicable to the foundation materials.

Based on the “Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, November 2012,” the design ground motion is the highest spectral acceleration as obtained by any or a combination of the following three methods for the Fort Goff Creek Bridge:

- 1) State wide minimum deterministic spectrum requirements with MMax of 6.5, vertical strike-slip event with a rupture distance of 7.5 miles.
- 2) The nearest active fault as shown on the ARS Online Tool (Version 2.0.5).
- 3) The USGS 5% Probability of Exceedance in 50 years (975 years return period).

From our analyses, the Design Acceleration Response Spectrum (ARS) is based on the USGS Probabilistic Spectrum as stated above. The peak ground acceleration is estimated to be 0.31g as shown on the ARS curve.

The potential for surface rupture at the site due to fault movement is considered insignificant since there are no known faults projecting towards or passing directly through the project site.

The liquefaction analysis indicates the foundation material has minimal potential to liquefy during an earthquake.

As-Built Foundation Data

The proposed structure is a new bridge and has no existing As-Built information. The roadway of SR 96 crosses over a 16 foot-diameter Corrugated Structural Steel Plate (CSSP) culvert at the project site. Rock slope protection is provided on the slopes of the upstream and downstream edges of the culvert.

Foundation Recommendations

The proposed new Fort Goff Creek Bridge (Br. No. 02-0200), as indicated on the Draft Fort Goff Creek General Plan dated January 31, 2013, may be supported on 24-inch Cast-in-Drilled-Hole (CIDH) piles (Rock-Socketed Shafts) with permanent casings at Abutments 1 and 2 according to the table below.

Table 5: Abutment Foundations Design Recommendations (Fort Goff Creek Br. No. 02-0200)									
Support	Pile	Cut-off Elevation (ft)*	WSD Service-I Limit State Load (kips) per Support		WSD Service-I Limit State Total Load (kips) per Pile (Compression)	Nominal Resistance (kips)	Design Pile Tip Elevation (ft)	Specified Pile Tip Elevation (ft)	Steel Casing Specified Tip Elevation (ft)**
			Total	Permanent					
Abut 1	24-inch CIDH	1311.5	1200	1050	200	400	(a) 1281.0	1281.0	1295.5
Abut 2	24-inch CIDH	1312.3	1200	1050	200	400	(a) 1276.0	1276.0	1292.0

*Average Elevation.

** Specified Tip Elevation of casing is intended to extend a minimum of 1 foot into bedrock. Top of bedrock elevation may vary across the bridge site (steel casing is 30" diameter x 0.5" thick).

Notes:

1. Design tip elevations are controlled by (a) Compression.
2. The CIDH specified tip elevation shall not be raised.
3. The specified tip elevation shall not be raised above the designed tip elevation for Lateral Load.
4. Unsuitable soil layers (scourable), that do not contribute to the design nominal resistance exist at Abutments 1 and 2 extend to elevation 1303 ft.
5. Minimum rock socket length shall be 14.5 feet for Abutment 1 and 16.0 feet for Abutment 2.

Table 6: Pile Data Table (Abutments 1 and 2 Br. No. 02-0200)						
Location	Pile Type	Nominal Resistance (kips)		Steel Casing Specified Tip Elevation (ft)*	Design Pile Tip Elevation (ft)	Specified Pile Tip Elevation (ft)
		Compression	Tension			
Abutment 1	24" CIDH Piles with permanent casing	400	0	1295.5	(a) 1281.0	1281.0
Abutment 2	24" CIDH Piles with permanent casing	400	0	1292.0	(a) 1276.0	1276.0

* Specified Tip Elevation of casing is intended to extend a minimum of 1 foot into bedrock. Top of bedrock elevation may vary across the bridge site (steel casing is 30" diameter x 0.5" thick).

Notes:

1. Design tip elevations are controlled by (a) Compression.
2. The CIDH specified tip elevation shall not be raised.
3. Unsuitable soil layers (scourable), that do not contribute to the design nominal resistance exist at Abutments 1 and 2 extend to elevation 1303 ft.
4. Minimum rock socket length is 14.5 feet for Abutment 1 and 16.0 feet for Abutment 2.

In determining the geotechnical capacity of the CIDH pile foundations recommended in this report, the procedures described in the National Cooperative Highway Research Program (NCHRP) Synthesis 360, titled "Rock-Socketed Shafts for Highway Structure Foundations, A Synthesis of Highway Practice" Transportation Research Board of the National Academies, were utilized.

The geotechnical capacity of the CIDH piles at all support locations for Abutments 1 and 2 of the proposed new bridge, is mainly derived from side resistance resulting from the shear stress that develops at the concrete-rock interface along the sides of the shaft.

General Note to Designer

If the tip elevations for Lateral Load for the CIDH piles recommended in this report are lower than the Specified Tip Elevations provided in the pile data tables above, OSD shall contact OGD-N so that the Pile Tip Elevations herein recommended can be reviewed and amended accordingly.

Construction Considerations

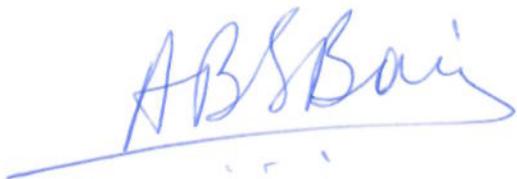
1. Groundwater was encountered during the December 2011 subsurface investigations of the proposed bridge site and will need to be considered for all phases of foundation construction. Groundwater was measured at approximately elevation 1308 feet in January 2012, in the piezometer installed in Boring RC-12-001, but the Contractor should anticipate seasonal fluctuations in ground water level. Wet installation of the CIDH piles should also be expected during foundation construction.
2. Alluvial material comprised of sand, cobbles and boulders overlies the bedrock at the site. Permanent casings are recommended and specified to prevent caving of the alluvium and to control water seepage.
3. Installation of the casing will encounter difficulty through the hard cobbles and boulders in the alluvium. It is therefore advisable for the Contractor to anticipate drilling through large and hard boulders and be prepared with tools and equipment for coring to install the casing.
4. Because large boulders are anticipated, impact driving of the permanent steel casing through the alluvial materials can result in deformation of the end of the casing. The Contractor should therefore employ alternative and more appropriate installation methods.
5. The thickness and type of material used for the permanent casing is dependent upon the stresses the casing is subjected to prior to placement of concrete. Steel casing diameter of 30 inches with a wall thickness of 0.5 inches have been recommended as permanent casings for this project.
6. The permanent casing will be used as a structural component that requires lateral resistance within the zone of the permanent casing. If the casing is installed into an oversized hole, then the annular space around the outside of the casing should be filled with cement grout.
7. The permanent casings are intended to tip at a minimum of one foot into bedrock. Based on the subsurface information, the top of the bedrock is anticipated to be irregular and undulating, and top of the bedrock is expected to vary across the site.
8. Where the bedrock is encountered at elevations lower than the specified tip elevation for the casing, the contractor is expected to provide longer casing sections in order to achieve the minimum embedment of 1 foot into bedrock.
9. 24-inch diameter CIDH pile shafts are recommended for foundation support for the proposed new bridge.
10. The CIDH piles are designed to derive bearing from side resistance (skin friction) entirely from the rock below the permanent casing. The piles must, therefore, be installed to the recommended tips specified in the pile data table to achieve the required embedment.

11. The CIDH piles are designed for an embedment of 14.5 feet for Abutment 1 and 16.0 feet for Abutment 2 into the bedrock. If during construction the top of bedrock is encountered at elevations different from the Specified Tip Elevations recommended in this report for the casings, OGD-N shall be contacted so that the Specified Tip Elevations herein provided can be reviewed and amended before construction can continue.
12. The bedrock is generally hard but fractured. The Contractor should therefore be prepared for vertical and horizontal variations in hardness when coring the CIDH shafts.
13. The CIDH pile shafts should not be left open more than necessary for placement of reinforced concrete. Cage placement and concrete pour should be done as soon as the excavation has reached specified tip elevation.
14. If the CIDH piles are constructed in the wet condition as anticipated, they will need to be gamma-gamma tested.
15. The tools and equipment that are planned for use by the Contractor should be described in the Contractor's drilled shaft installation plan and the equipment actually used documented in the construction records.
16. The Office of Geotechnical Design-North should be invited to a pre-construction meeting.

The recommendations contained in this memorandum are based on specific project information regarding structure type, location and design loads that have been provided by Structure Design. If any conceptual changes to the structure are proposed during final project design, the Office of Geotechnical Design-North should review those changes to determine if the foundation recommendations herein provided are still applicable.

If you have any questions or need further information regarding this report, please contact Abu Barrie at (916) 227-1043, John L. Thorne at (912) 227-1034, Reid Buell at (916) 227-1012, or Reza Mahallati at (916) 227-1033.

Report by:



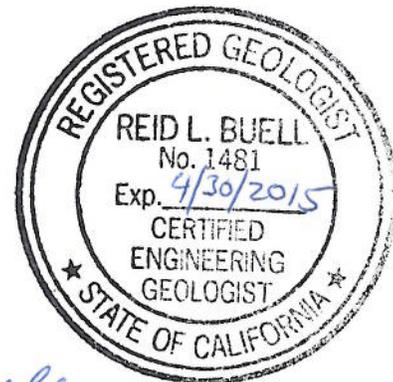
ABUBAKARR BARRIE
Engineering Geologist
Office of Geotechnical Design-North



JOHN T. THORNE
Associate Engineering Geologist
Office of Geotechnical Design-North

Attachments: 1. ARS curve
2. Lab results.

C: RBuell
GDN File
Derek Willis, District Project Manager (E-copy)
Rich Melvin, Project Coordination Engineer (E-copy)
Chris Quiney, District Environmental Planning (E-copy)
Byron Berger, District Materials Engineer, DME (E-copy)



REID BUELL, C.E.G. 1481
Senior Engineering Geologist
Office of Geotechnical Design-North



REZA MAHALLATI, P.E. 49374
Senior Materials and research Engineer
Office of Geotechnical Design-North

REFERENCES

1. Alternative 5, Fort Goff Creek Bridge, General Plan, dated January 31, 2013.
2. Fort Goff Creek Bridge, Foundation Plan, dated December 11, 2012.
3. Summary of Type Selection Meeting, (Mario Guadamuz and Kelly A. Holden), dated March 9, 2012.
4. Preliminary Hydraulic Report (PHR) for Fort Goff Creek, Br. No. 02-0200 (New), dated February 10, 2012.
5. Caltrans ARS Online (Version 2.0.4) and the Caltrans Fault Database (Version 2a) at http://dap3.dot.ca.gov/shake_stable/v2/index.php (2012).
6. FR request memo from the Office of Bridge Design South (OSD) titled: "Fort Goff Creek Bridge (# 02-0200); Preliminary Foundation Report with Seismic Recommendations," dated November 21, 2011.
7. National Cooperative Highway Research Program, NCHRP Synthesis 360: Rock-Socketed Shafts for Highway Structure Foundations, A Synthesis of Highway Practice, Transportation Research Board of the National Academies.
8. Drilled Shafts: Construction Procedures and LRFD Methods. (NHI Course No. 132014) FHWA-NHI-10-016, FHWA GEC 010, May 2010.
9. Deep Foundations (Memo to Designers 3-1, July 2008).
10. Geology of California (Norris and Webb, 2nd Edition, 1990).
11. Geologic Map of the Weed Quadrangle (D.L. Wagner, G.J. Saucedo 1987).

Fort Goff Creek Br. (New)

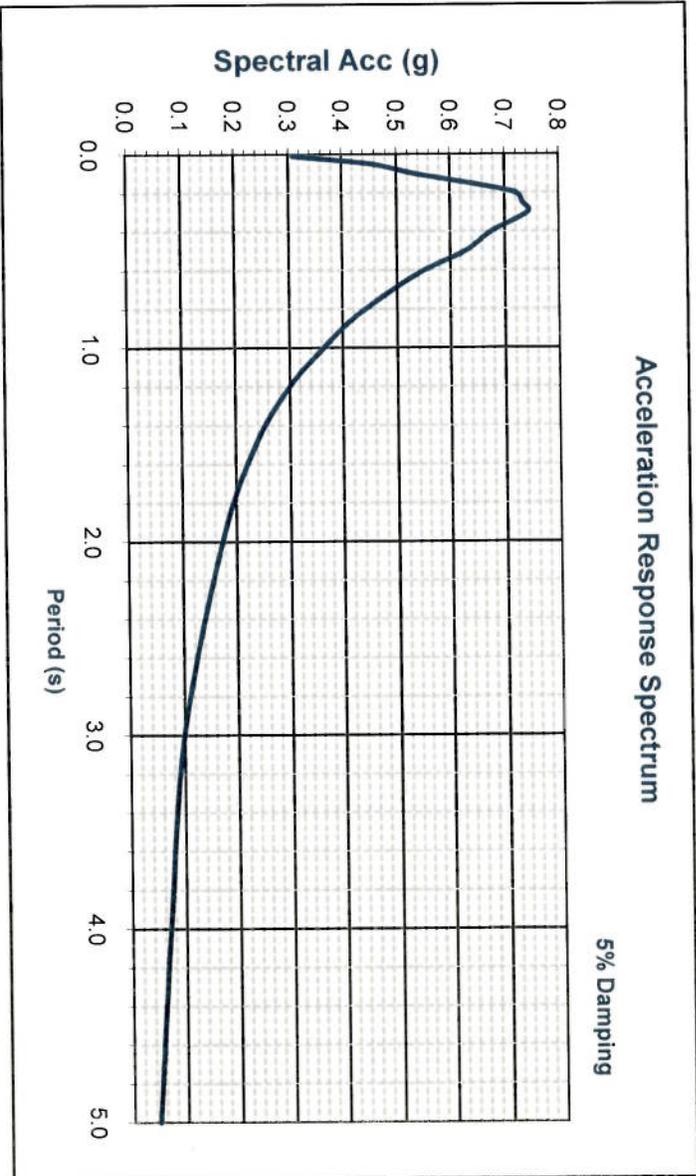
Bridge No. 02-0200

Latitude 41.8647
Longitude -123.2581

Control Probabilistic

EFIS 02-021200010

Period (s)	Sa(g)
0.010	0.308
0.050	0.451
0.100	0.531
0.150	0.635
0.200	0.720
0.250	0.732
0.300	0.742
0.400	0.676
0.500	0.628
0.600	0.550
0.700	0.492
0.850	0.419
1.000	0.364
1.200	0.299
1.500	0.236
2.000	0.174
3.000	0.099
4.000	0.070
5.000	0.047



Nearest Deterministic Fault Data

Fault	Cascadia Subduction Zone
Fault ID	5
Style	Rev
Mmax	8.3
Dip	15 deg
Z-TOR	5 km

R _{rup}	105	km
R _{jb}	103	km
R _x	158	km
V _{s30}	340	m/s
Z _{1.0}	N/A	m
Z _{2.5}	N/A	km

Notes
Please note the Design ARS curve is based on the USGS 5% Probability of Exceedance in 50 years (975 years return period).

Final

Design Response Spectrum

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE OF GEOTECHNICAL SUPPORT
 GEOTECHNICAL LABORATORY

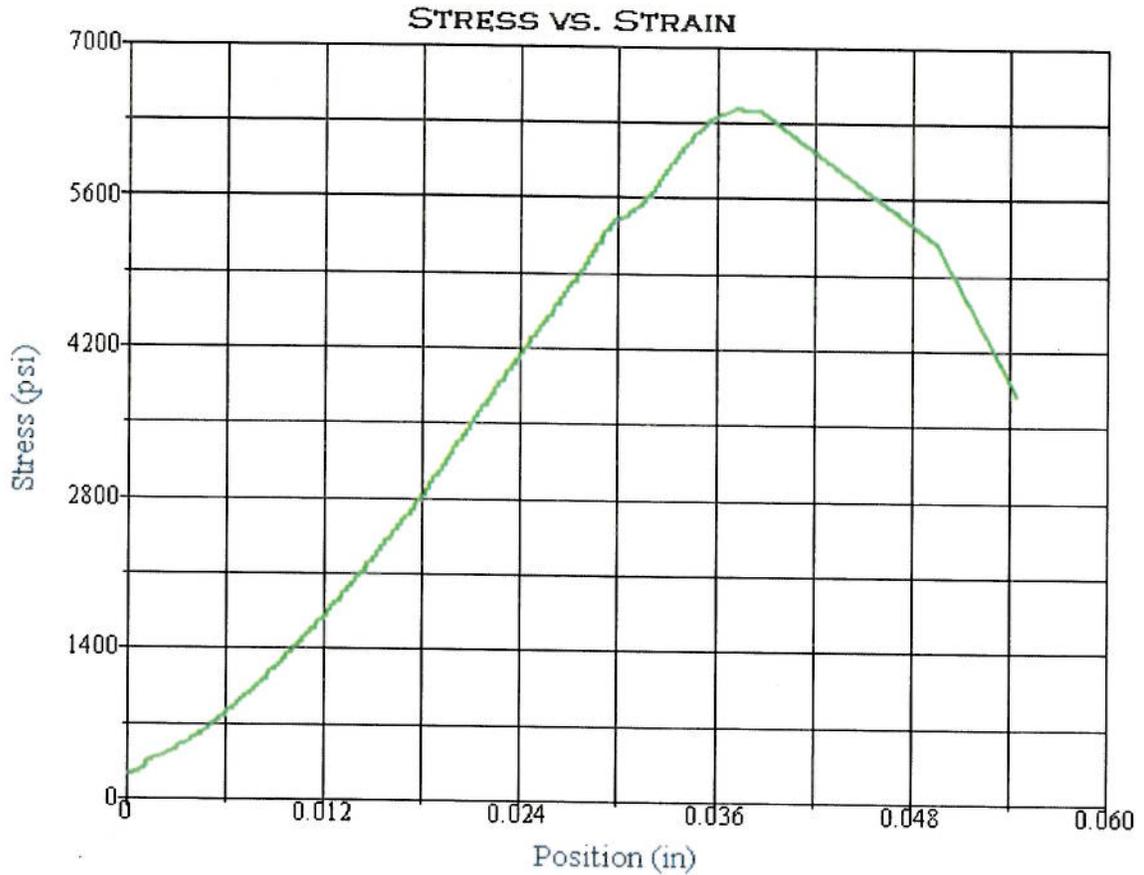
02-4E6300

UNCONFINED COMPRESSION TEST RESULTS (ASTM D7012-07 Method C)

JOB LOCATION 02-Sis-96 PM 56 GL No. 12-017 DATE 3/13/2012
 JOB NUMBER 02-4E6300 Fort Goff Creek Bridge Bridge No. 02-0200 TEST BY AZM
 CHECKED BY _____

SAMPLE NO.	DEPTH FT.	DIA. IN.	LENGTH IN.	LD RATIO	WEIGHT LBS.	LOAD LBS.	DENSITY PCF	STRENGTH PSI	REMARKS
RC-11-001-02	38-38.4	2.40	3.83	1.60	1.8	29054	181	6422	**
RC-11-001-03	38.4-39	2.40	4.63	1.93	2.1	42658	176	9429	**
RC-11-001-05	41-41.4	2.39	4.54	1.90	2.1	9435	179	2103	** (cracks)
RC-11-001-06	41.6-42	2.40	3.81	1.59	1.7	37225	174	8229	**
RC-11-001-12	34.2-35	2.39	4.57	1.91	2.2	34359	186	7659	**
RC-11-002-02	34-35	2.39	4.85	2.03	2.2	57558	176	12830	
RC-11-002-04	39.2-40	2.40	4.53	1.89	2.1	43147	178	9538	**

Note: No moistures recorded
 * Sample fell apart while preparing for testing -- Not suitable for testing
 ** The test specimen length/diameter ratio was not in compliance with the test method



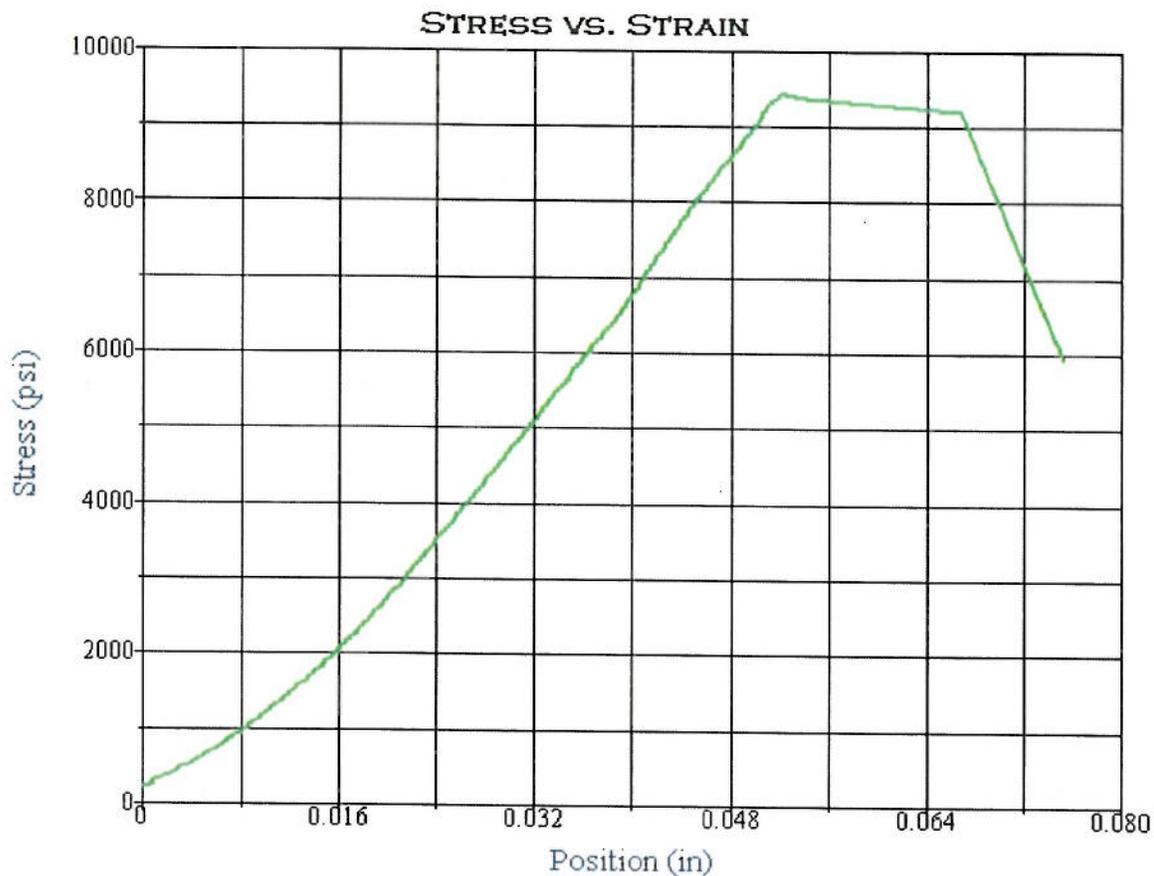
Test Summary

Counter: 1885
 Elapsed Time: 00:02:54
 Operator: AZM
 Sample: RC-11-001-02
 Resident Engineer:
 Ticket: GL# 12-017
 E.A. NUMBER: 02-4E6300
 Procedure Name: Cores test
 Start Date: 3/14/2012
 Start Time: 3:35:22 PM
 End Date: 3/14/2012
 End Time: 3:38:16 PM
 Workstation: DIK00YB1
 Tested By: AZM
 Lab: Q12-001

Test Results

Specimen Gage Length: 3.8300 in
 Diameter: 2.4000 in
 Area: 4.5239 in²
 Maximum Load: 29054 lbf
 Compressive Strength: 6422 psi





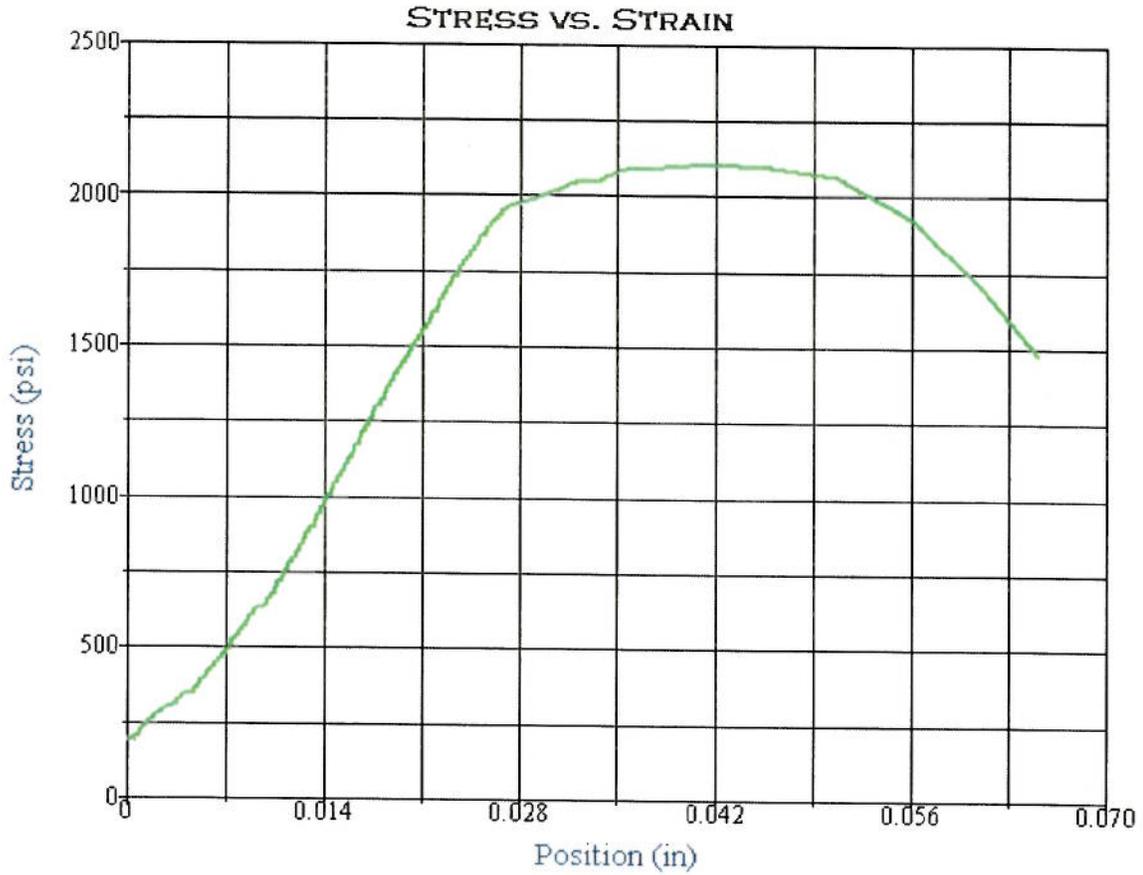
Test Summary

Counter: 1886
 Elapsed Time: 00:04:21
 Operator: AZM
 Sample: RC-11-001-03
 Resident Engineer:
 Ticket: GL# 12-017
 E.A. NUMBER: 02-4E6300
 Procedure Name: Cores test
 Start Date: 3/14/2012
 Start Time: 3:46:30 PM
 End Date: 3/14/2012
 End Time: 3:50:51 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q12-002

Test Results

Specimen Gage Length: 4.6300 in
 Diameter: 2.4000 in
 Area: 4.5239 in²
 Maximum Load: 42658 lbf
 Compressive Strength: 9429 psi





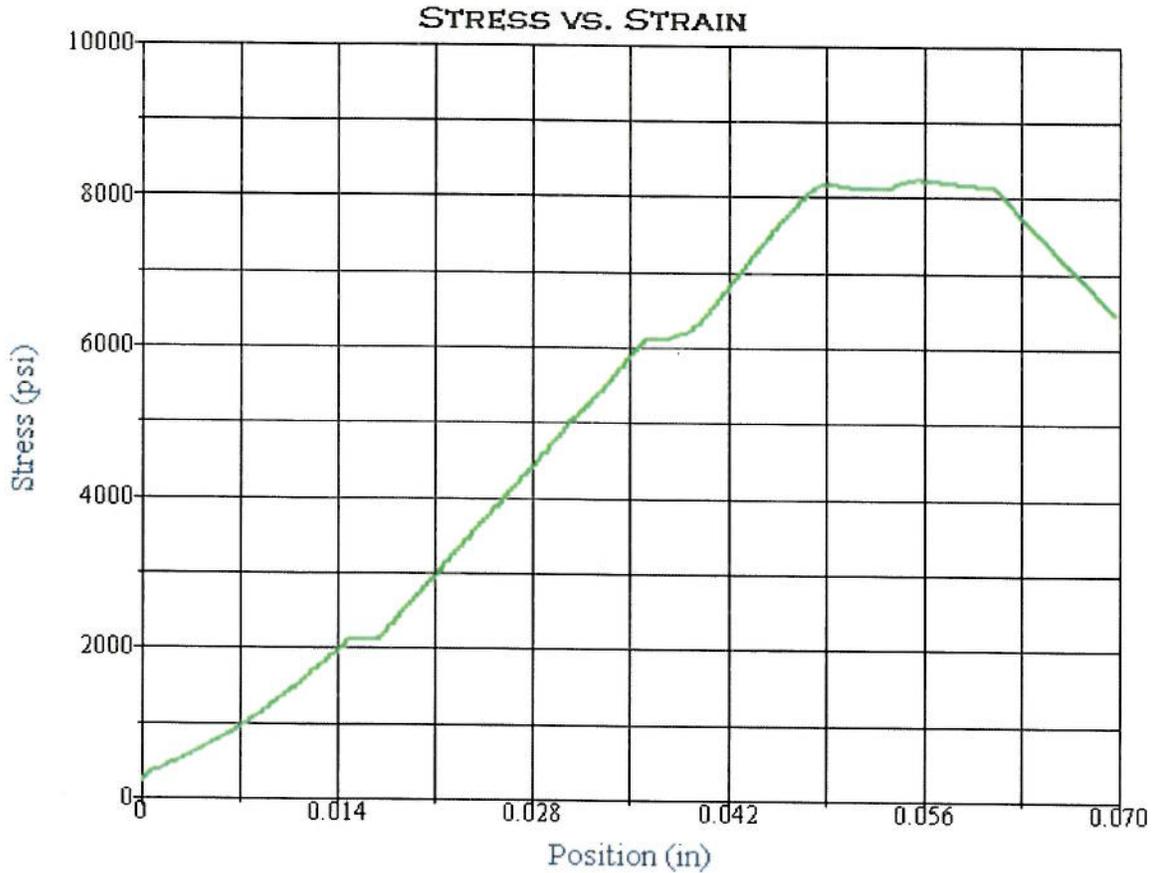
Test Summary

Counter: 2406
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 Operator: AZM
 Sample: RC-11-001-05
 Resident Engineer:
 Ticket: GL# 12-017
 E.A. NUMBER: 02-4E6300
 Procedure Name: Cores test
 Start Date: 2/19/2013
 Start Time: 1:09:02 PM
 End Date: 2/19/2013
 End Time: 1:09:56 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q12-004

Test Results

Specimen Gage Length: 4.5400 in
 Diameter: 2.3900 in
 Area: 4.4863 in²
 Maximum Load: 9435 lbf
 Compressive Strength: 2103 psi





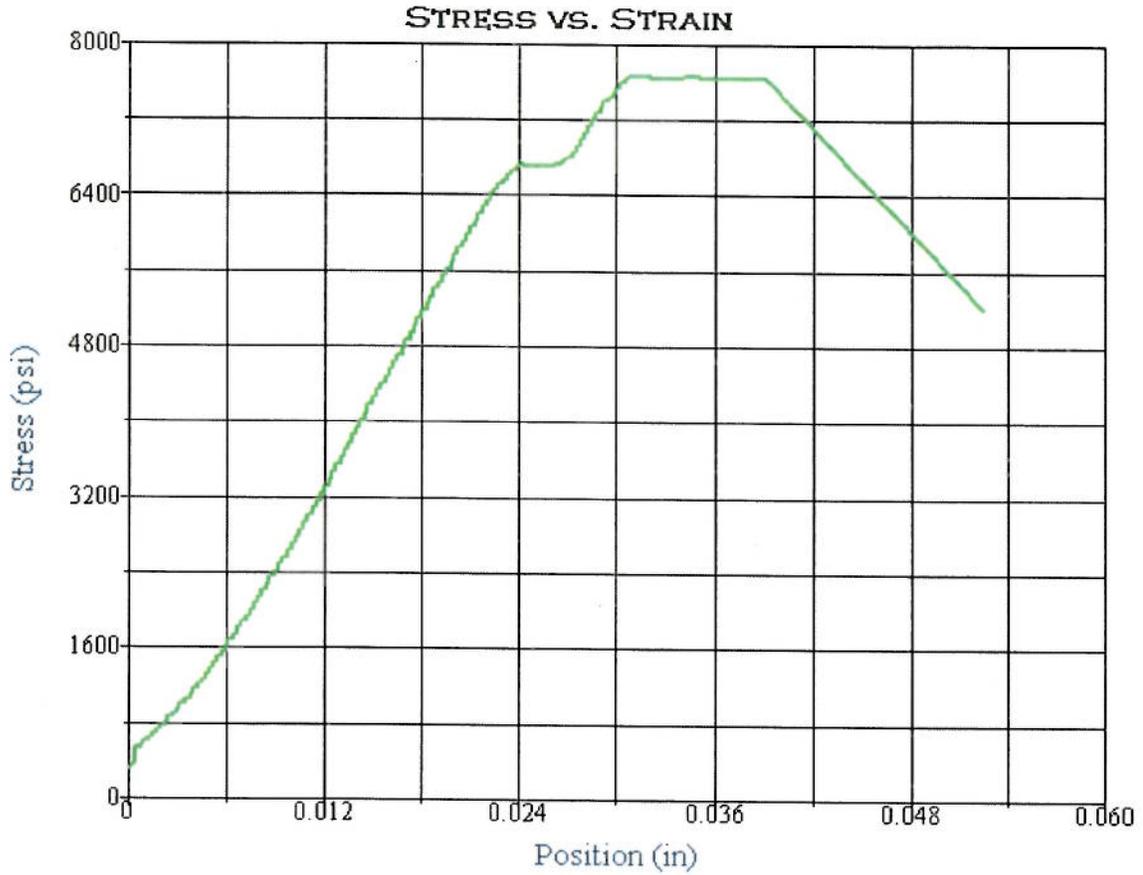
Test Summary

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 Operator: AZM
 Sample: RC-11-001-06
 Resident Engineer:
 Ticket: GL# 12-017
 E.A.NUMBER: 02-4E6300
 Procedure Name: Cores test
 Start Date: 2/19/2013
 Start Time: 1:34:10 PM
 End Date: 2/19/2013
 End Time: 1:37:56 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q12-005
 RATIO: L/D<2

Test Results

Specimen Gage Length: 3.8100 in
 Diameter: 2.4000 in
 Area: 4.5239 in²
 Maximum Load: 37225 lbf
 Compressive Strength: 8229 psi





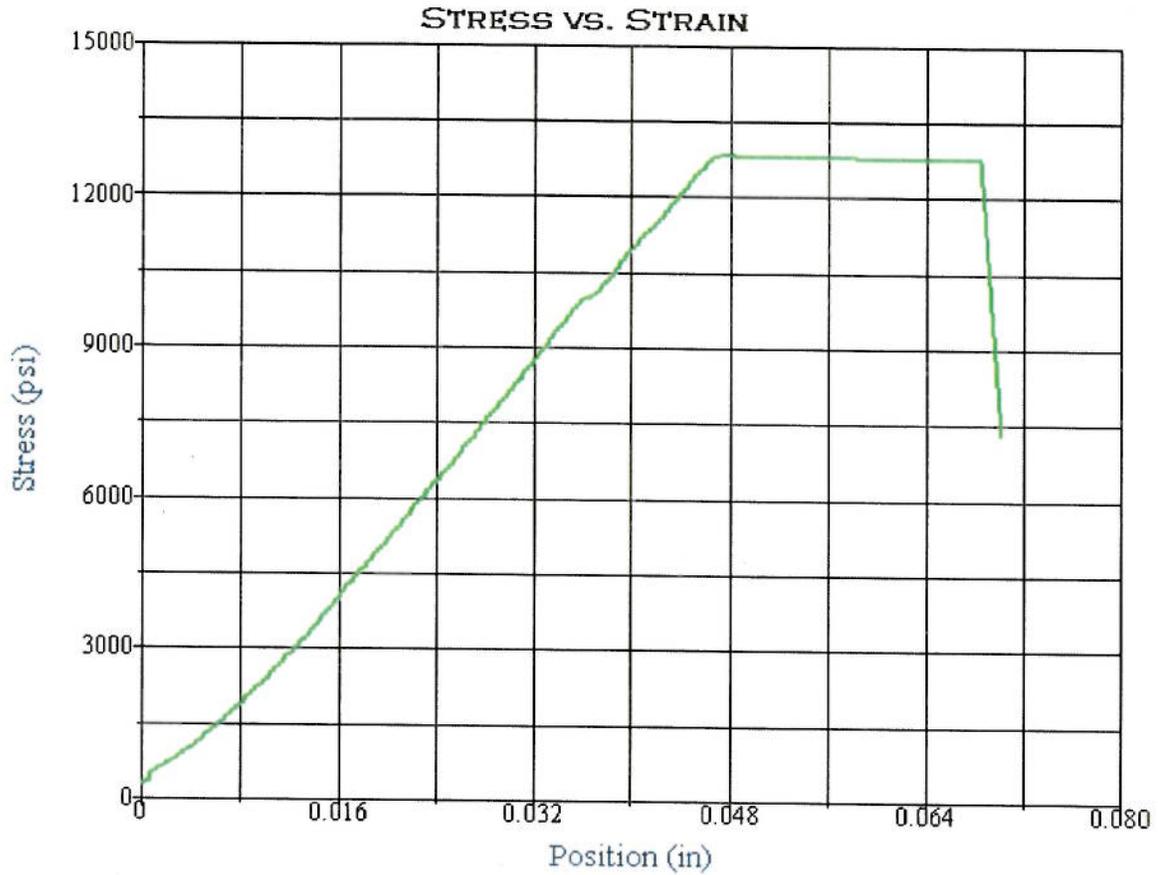
Test Summary

Counter: 2408
Elapsed Time: 00:03:25
Operator: AZM
Sample: RC-11-001-12
Resident Engineer:
Ticket: GL# 12-017
E.A.NUMBER: 02-4E6300
Procedure Name: Cores test
Start Date: 2/19/2013
Start Time: 4:01:38 PM
End Date: 2/19/2013
End Time: 4:05:03 PM
Workstation: D1K00YB1
Tested By: AZM
Lab: Q12-008
RATIO: L/D < 2

Test Results

Specimen Gage Length: 4.5700 in
Diameter: 2.3900 in
Area: 4.4863 in²
Maximum Load: 34359 lbf
Compressive Strength: 7659 psi





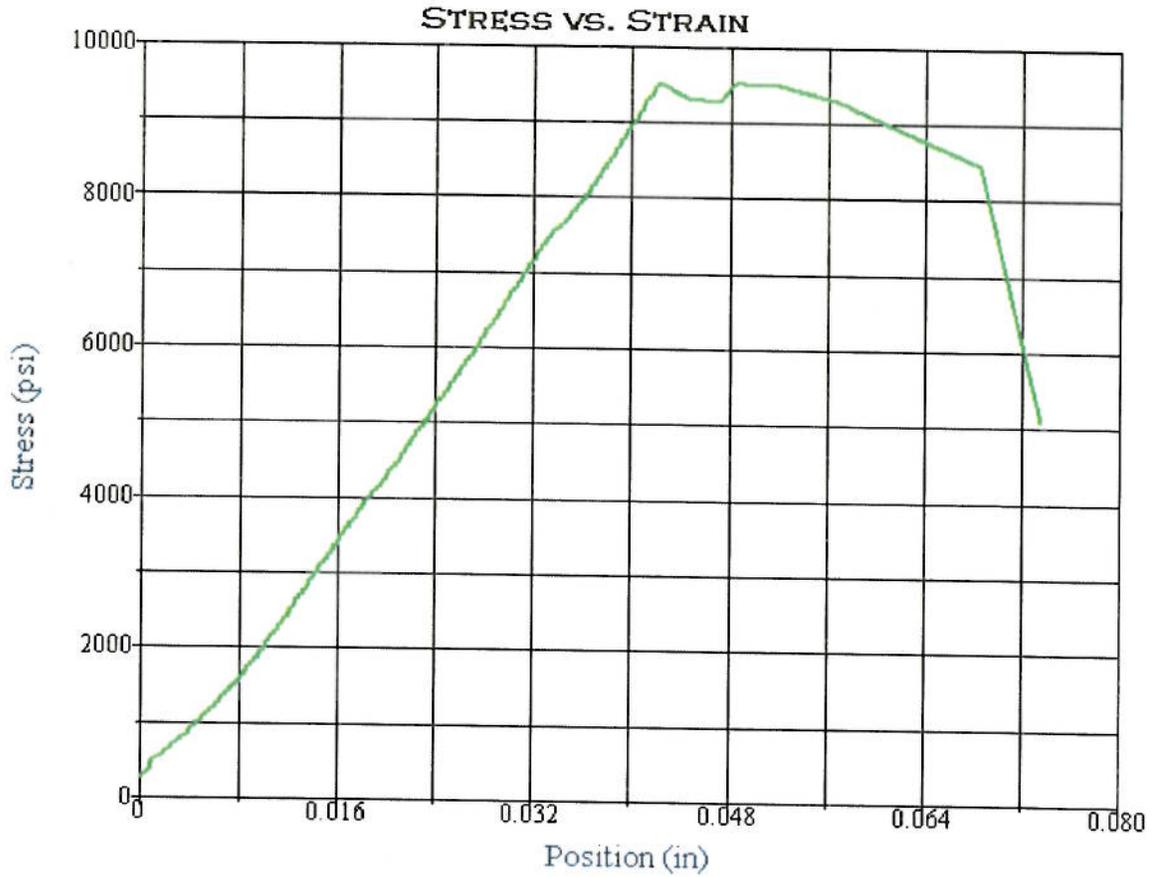
Test Summary

Counter: 2409
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 Operator: AZM
 Sample: RC-11-002-02
 Resident Engineer:
 Ticket: GL# 12-017
 E.A. NUMBER: 02-4E6300
 Procedure Name: Cores test
 Start Date: 2/19/2013
 Start Time: 4:25:35 PM
 End Date: 2/19/2013
 End Time: 4:31:29 PM
 Workstation: D1K00YB1
 Tested By: AZM
 Lab: Q12-009

Test Results

Specimen Gage Length: 4.8500 in
 Diameter: 2.3900 in
 Area: 4.4863 in²
 Maximum Load: 57558 lbf
 Compressive Strength: 12830 psi





Test Summary

Counter: 2410
Elapsed Time: 00:04:21
Operator: AZM
Sample: RC-11-002-04
Resident Engineer:
Ticket: GL# 12-017
E.A. NUMBER: 02-4E6300
Procedure Name: Cores test
Start Date: 2/19/2013
Start Time: 4:49:42 PM
End Date: 2/19/2013
End Time: 4:54:03 PM
Workstation: DIK00YB1
Tested By: AZM
Lab: Q12-010
RATIO: L/D<2

Test Results

Specimen Gage Length: 4.5300 in
Diameter: 2.4000 in
Area: 4.5239 in²
Maximum Load: 43147 lbf
Compressive Strength: 9538 psi





Division of Engineering Services
Geotechnical Laboratory

Point Load Strength Index

Dist-EA: 02-4E6300
Dist-Co-Rte-PM: SIS-96-56/

GI Tracking No.: 12-017
Report Date: January 10, 2013

Sample ID	Test Type	Length, L (mm)	Width, W (mm)	Initial Distance Between Contact Points, D (mm)	Final Distance Between Contact Points, D' (mm)	Equivalent Diameter, De (mm)	Failure Load, P (lbs)	Uncorrected Point Load Strength Index Is (psi)	Point Load Strength Index Is (50) (psi)	Remarks
RC-11-001_01	D-L	61.6		58.5	54	56.2	3344	682.94	720	
RC-11-001_03	A-L		61.4	42.5	38	54.5	968	210.22	219	• visible fissure
RC-11-001_04	D-L	54.5		60	55	57.45	528	103.23	110	• visible fissure
RC-11-001_07	A-L		61	52	49	61.69	2024	343.12	377	



RC-11-001_01



RC-11-001_03



RC-11-001_04



RC-11-001_07

Test Type Abbreviations: D- Diametral, A - Axial, B - Block, I - Irregular Lump

Orientation of Load Direction (if anisotropic): P - Perpendicular to plane of weakness, L - Parallel to plane of weakness



Division of Engineering Services
Geotechnical Laboratory

Point Load Strength Index

Dist-EA: 02-4E6300
Dist-Co-Rie-PM: SIS-96-56/

GI Tracking No.: 12-017
Report Date: January 10, 2013

Sample ID	Test Type	Length, L (mm)	Width, W (mm)	Initial Distance Between Contact Points, D _i (mm)	Final Distance Between Contact Points, D _f (mm)	Equivalent Diameter, D _e (mm)	Failure Load, P (lbs)	Uncorrected Point Load Strength Index I _s (psi)	Point Load Strength Index I _s (50) (psi)	Remarks
RC-11-001_08	D-L	38.4		58	55	56.48	1056	213.57	226	
RC-11-001_09	D-L	57.1		58.5	56	57.24	528	103.98	111	• visible fissure
RC-11-001_10	D-L	31.2		58.5	53.5	55.94	2112	435.36	458	• visible fissure
RC-11-001_11	D-L	35		58	54	55.96	792	163.14	172	



02-4E6300
RC-11-001_08



02-4E6300
RC-11-001_09



02-4E6300
RC-11-001_10



02-4E6300
RC-11-001_11

Test Type Abbreviations: D- Diametral, A - Axial, B - Block, I - Irregular Lump

Orientation of Load Direction (if anisotropic): P - Perpendicular to plane of weakness, L - Parallel to plane of weakness



Division of Engineering Services
Geotechnical Laboratory

Point Load Strength Index

Dist-EA: 02-4E6300
Dist-Co-Rte-PM: SIS-96-56/

GI Tracking No.: 12-017
Report Date: January 10, 2013

Sample ID	Test Type	Length, L (mm)	Width, W (mm)	Initial Distance Between Contact Points, D _i (mm)	Final Distance Between Contact Points, D _f (mm)	Equivalent Diameter, D _e (mm)	Failure Load, P (lbs)	Uncorrected Point Load Strength Index I _s (psi)	Point Load Strength Index I _s (50) (psi)	Remarks
RC-11-001_12	A-L		60.6	34.5	31	48.91	1584	427.25	423	
RC-11-002_01	D-L	55.8		58	55	56.48	528	106.79	113	● visible fissure
RC-11-002_02	A-L		60.8	37	33	50.54	2200	555.6	558	
RC-11-002_03	A-L		60.8	55	51	62.83	616	100.66	112	



02-4E6300
RC-11-001_12



02-4E6300
RC-11-002_01



02-4E6300
RC-11-002_02



02-4E6300
RC-11-002_03

Test Type Abbreviations: D- Diametral, A - Axial, B - Block, I - Irregular Lump

Orientation of Load Direction (if anisotropic): P - Perpendicular to plane of weakness, L - Parallel to plane of weakness



Division of Engineering Services
Geotechnical Laboratory

Point Load
Strength Index

Dist-EA: 02-4E6300
Dist-Co-Rte-PM: SIS-96-56/

GI Tracking No.: 12-017
Report Date: January 10, 2013

Sample ID	Test Type	Length, L (mm)	Width, W (mm)	Initial Distance Between Contact Points, D _i (mm)	Final Distance Between Contact Points, D _f (mm)	Equivalent Diameter, D _e (mm)	Failure Load, P (lbs)	Uncorrected Point Load Strength Index I _s (psi)	Point Load Strength Index I _s (50) (psi)	Remarks
RC-11-002_04	A-L		61	49	43	57.79	4840	934.98	998	
RC-11-002_05	D-L	55.3		58	52	54.92	580.8	124.24	130	
RC-11-002_06	D-L	56.7		58.5	55	56.72	440	88.23	93	● visible fissure



RC-11-002_04



RC-11-002_05



RC-11-002_06

No Image
Available

Test Type Abbreviations: D- Diametral, A - Axial, B - Block, I - Irregular Lump

Orientation of Load Direction (if anisotropic): P - Perpendicular to plane of weakness, L - Parallel to plane of weakness

TEST SUMMARY REPORT - Soil/Water

Bridge Name: **Fort Goff Creek Br.**

Bridge Number: **TBD**

EA No.: **02-4E6300**

EFIS No.: **0212000010**

Dist/Co/Rte/PM or KP: **02 / SIS / 96 / 55.98**

SIC Number (TL101)	Sample Location	Sample Type	Sample Depth	Minimum Resistivity¹(ohm-cm)	pH²	C Cont
C4698512	RC-11-001	SOIL	1.9-5.0' ABUTMENT 1 (WEST)	6969	7.30	
C4698513	RC-11-002	SOIL	0-3.5' ABUTMENT 2 (WEST)	9754	7.43	

This site is not corrosive to foundation elements (see note below for MSE wall backfill).

Note: For MSE wall structure backfill material, minimum resistivity must be 2000 ohm-cm or greater,
pH must be between 5.5 and 10.0, chloride content must not be greater than 250 ppm,
and sulfate content must not be greater than 500 ppm.

¹,²CTM 643, ³CTM 422, ⁴CTM 417